

Information Technology Training Package ICA99

Endorsed Competency Standards, Assessment Guidelines and Qualifications

Supporting Qualifications

ICA10101	Certificate I in Information Technology
ICA10201	Certificate I in Information Technology (E-Consumer)
ICA20199	Certificate II in Information Technology
ICA20201	Certificate II in Information Technology (Applications)
ICA30199	Certificate III in Information Technology (Software Applications)
ICA30299	Certificate III in Information Technology (General)
ICA30399	Certificate III in Information Technology (Network Administration)
ICA40199	Certificate IV in Information Technology (Client Support)
ICA40299	Certificate IV in Information Technology (Database Administration)
ICA40399	Certificate IV in Information Technology (Network Management)
ICA40499	Certificate IV in Information Technology (Multimedia)
ICA40599	Certificate IV in Information Technology (Technical Support)
ICA40699	Certificate IV in Information Technology (Programming)
ICA40799	Certificate IV Information Technology (Systems Analysis & Design)
ICA40801	Certificate IV Information Technology (Helpdesk)
ICA40901	Certificate IV Information Technology (Telesales)
ICA41001	Certificate IV in Information Technology (Website Administration)
ICA41101	Certificate IV in Information Technology (Website Design)
ICA50199	Diploma of Information Technology (Systems Administration)
ICA50299	Diploma of Information Technology (Software Development)
ICA50399	Diploma of Information Technology (Business Analysis)
ICA50499	Diploma of Information Technology (Network Engineering)
ICA50599	Diploma of Information Technology (Multimedia Integration)
ICA50601	Diploma of Information Technology (Website Development)
ICA50701	Diploma of Information Technology (Internetworking)
ICA50801	Diploma of Information Technology (E-Business Development)
ICA50901	Diploma of Information Technology (Knowledge Management)
ICA51001	Diploma of Information Technology (Database Design & Development)
ICA51101	Diploma of Information Technology (Project Management)
ICA60101	Advanced Diploma of Information Technology (E-Business Development)
ICA60201	Advanced Diploma of Information Technology (E-Business Analysis)
ICA60301	Advanced Diploma of Information Technology (E-Learning Development)
ICA60401	Advanced Diploma of Information Technology (E-Security)
ICA60501	Advanced Diploma of Information Technology (Project Management)

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Published by: Australian Training Products Ltd
Level 25, 150 Lonsdale St
Melbourne 3000
Phone: +61 3 96550600 Fax: +61 3 9639 4684
www.atpl.net.au e-mail: sales@atpl.net.au

First Published May, 1999

STOCKCODE: 8025003S

ISBN: 0 642 79700 5

Information Technology Training Package ICA99 (Vol 1 of 2)

Printed for Australian Training Products Ltd by Document Printing Australia, Melbourne, Australia

AESharenet: P
Version 3.00
April, 2002

IMPORTANT

Training packages are not static documents. Changes are made periodically to reflect the latest industry practices.

Before commencing any form of training or assessment, you must ensure delivery is from the *current version* of the Training Package.

To ensure you are complying with this requirement :

- Check the Print Version Number just below the copyright statement on the imprint pages of your current Training Package.
- Access the ATP website (<http://www.atpl.net.au>) and check the latest Print Number.
- In cases where the Print Version Number is later than yours, the Print Version Modification History in the Training Package sample on the ATP website will indicate the changes that have been made.

The Modification History is also available on the website of the developer of the Training Package: IT & Titab Australia <http://www.ittitab.com.au>

The National Training Information Service (<http://www.ntis.gov.au>) also displays any changes in Units of Competency and the packaging of qualifications.

MODIFICATION HISTORY – ENDORSED MATERIALS			
Please refer to the National Training Information Service for the latest version of Units of Competency and Qualification information (http://www.ntis.gov.au).			
Information Technology Training Package ICA99			Sheet: 1 of 1
Version	Date of Release	Authorisation:	Comments
1.00	1/05/1999	NTFC	Primary Release
2.00	1/11/2001	NTQC	minor changes to several of the existing qualifications and additions in the Range of Variables and Evidence Guides for a significant number of existing standards. Additionally, ten new competency standards and four new qualifications were added to the Training Package
3.00	30/4/2002	NTQC	Addition of 14 new IT e-business qualifications and 80 new competency standards. Additionally, minor modifications/inclusions to a number of existing qualifications and standards.

Forms control: All endorsed training packages will have a version number displayed on the imprint page of every volume constituting that training package. Every training package will display an up-to-date copy of this modification history form, to be placed immediately after the contents page of the first volume of the training package. Comments on changes will only show sufficient detail to enable a user to identify the nature and location of the change. Changes to training packages will generally be batched at quarterly intervals. This modification history form will be included within any displayed sample of that training package and will constitute all detail available to identify changes.

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Introduction

Enhancing the skills of the workplace improves the Information Technology industry's ability to compete internationally. Enterprises face ever-increasing demands for an effective and efficient workplace, with an emphasis on continuous improvement, higher productivity and a client focus. For this to succeed the industry needs a highly skilled and flexible work force.

National competency standards provide a benchmark for enterprises when selecting and developing staff. Competency standards enable organisations to accurately identify the skills required for a particular position and to guarantee that potential staff meet the standards required by business.

A quality training system is central to ensuring the industry has the skills and flexibility to adapt to change and improve the quality of goods and services. A quality training system has three important elements: national competency standards, competency-based training and a national assessment system for quality assurance all of which are contained in the IT Training Package.

Training Package Overview

Training Packages are a government initiative to make training more flexible, relevant and affordable for the IT industry. The Training Package concept is designed to provide industry and those servicing industry with greater flexibility in gaining competency to the standard required by the Information Technology industry.

IT&Titab has previously developed industry Training Packages in Information Technology Client Support (ICA98) and earlier versions of ICA99 focused on the IT industry areas of Systems Development, Systems Integration, Systems Installation and Systems Maintenance.

This version of ICA99 adds fourteen new qualifications and eighty new competency standards as a result of the ANTA E-Business Initiative project.

There are thirty-four national qualifications contained within this Training Package, as follows;

ICA10101	Certificate I in Information Technology
ICA10201	Certificate I in Information Technology (E-Consumer)
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ICA60301	Advanced Diploma of Information Technology (E-Learning Development)
ICA60401	Advanced Diploma of Information Technology (E-Security)
ICA60501	Advanced Diploma of Information Technology (Project Management)

This Training Package contains 328 Units of Competence.

35 Units were sourced from the IT Client Support Training Package (ICA98) and enhanced to comply with the style and purpose of the units contained in this package.

26 Units were sourced from the Project Management Competency Standards developed by the Australian Institute of Project Management and endorsed in June 1996. These Standards are unchanged, within the context of the Updated Guidelines for Training Package Developers March 1998, and are identified by the prefix BSX

19 Multimedia units were drawn from the pre-press section of the National Printing Training Package ICP98

104 Units were developed as new competencies for the first version of ICA99 where no similar or suitable competencies existed.

11 Call Centre units were drawn from the Telecommunications Training Package ICT97 (Call Centre Stream).

6 Sales and Marketing units were drawn from the Business Services Training Package.

3 Sales units were drawn from the Retail Training Package

The “B” and “C” suffixes mean that the units of competence are respectively in the second and third versions.

124 competency standards were added for ICA99 version 3.0 comprising:

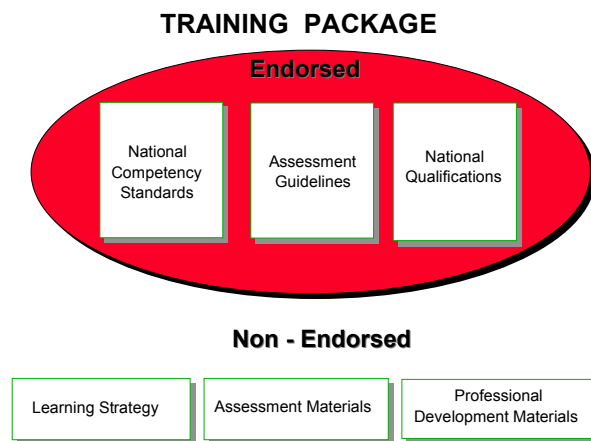
- 80 IT e-business units across most ICA99 streams
- 22 e-business units drawn from the Business Services Training Package
- 9 units in design, create and graphics from the CREATE ITAB
- 8 training units from the Business Services Training Package
- 5 security units from Property Services Training Australia

Training Package features

The Information Technology Training Package:

- indicates which groups of competencies meet a qualification level
- allows enterprises and training providers to develop customised training programs to suit particular needs
- allows for individual assessment against the competency standards
- provides guidance on all aspects of assessment
- enables existing and future courses to be aligned to the Training Package and to incorporate the assessment guidelines and learning resources
- contains learning resources, trainer professional development material and assessment material.

The following diagram details the components of the Training Package that make up the final product.



What makes up the Training Package?

Endorsed Components

National Competency Standards

National competency standards form a vital role within the Training Package, as they identify industry standards for the skills, knowledge and attributes required to perform a job. The Training Package provides employers with the benefit of having an industry benchmark for training and assessment that can provide useful guidance for workplace appraisal, training and development. Employees will also benefit by being able to access national qualifications through a variety of pathways.

National Qualifications

Through collaborative development methods, the Training Package allows industry to agree that when a number of aligned and packaged core and elective competencies are achieved, (either on or off the job) a qualification may be awarded and accepted by industry. The Training Package will have a range of associated qualifications depending on what level of training and mix of competencies an individual undertakes. This will allow individuals wishing to enter the Information Technology industry to identify various career pathways. Employers will have a greater understanding of which competencies are involved in gaining particular qualifications.

Assessment Guidelines

Within the Training Packages, competency standards endeavour to advance quality and consistency in current and future work practices. The standards form the basis for thorough, consistent and valid assessment. The assessment guidelines provide overall guidance on the relationship of competency standards to the conditions for assessment to occur. The assessment guidelines also articulate what qualifications and training is required of trainers and assessors.

The above three components of the Training Package are developed with extensive industry consultation to ensure the final product meets the quality expected by the industry. Subject matter experts have been called upon to provide technical detail during the development and subsequent validation of the competency standards.

Non-endorsed Components

Learning Strategies

The Learning Strategy component of a Training Package provides information on how training programs may be organised in workplaces and training institutions. The Learning Strategy complements the endorsed components of a Training Package by providing additional support for Registered Training Organisations seeking to put together specific training programs to assist trainees attain the required competencies. The learning strategies may include curricula, good practice examples for implementing workplace training and training within the production (work) process. The training resources may include self study guides, distance learning materials, assessment resources and guidance for workplace mentors.

Assessment Materials

Assessment materials are evidence gathering tools. They are designed to provide assessors with information for making judgements on whether competency has been attained. These resources can take a number of forms including: observation schedules, simulation activities, practical projects, demonstrations, individual projects, written / oral tests and/ or portfolios. Some assessment materials incorporate a number of evidence gathering tools. Assessment materials are based on the endorsed assessment guidelines.

Professional Development Materials

Professional Development materials are integral to the development and effective implementation of related training programs. These may include information and resources for trainers on how to develop training programs for the industry or enterprise for use, how to use the endorsed and non-endorsed Training Package components, train the trainer, and train the assessor courses.

The National Industry Training Advisory Body

IT&Titab provides advice on education and training matters to the federal government and enterprises on behalf of the Information Technology industry. Membership is representative of a range of vendor, recruitment agencies, industry associations and user organisations within the Information Technology industry.

IT&Titab periodically receives funding from the Australian National Training Authority for the development and update of competency standards and qualifications in a wide range of IT workforce areas. In 2001 the IT&Titab received funding from ANTA to develop additional competency standards and national qualifications in foundation, help desk, and e-business areas. The results of these projects are contained in this version of ICA99.

Training Packages are a government initiative to complement a flexible and industry relevant regulatory environment. Training Packages are seen as major aid for the delivery of New Apprenticeships, national benchmarks for courses and the identification of national qualifications.

The national Information Technology and Telecommunications Industry Training Advisory Body supports the direction of Training Packages as it:

- gives weight to competency standards;
- ties qualifications to competencies rather than curriculum;
- gives a greater degree of flexibility to the industry in the way it develops and conducts training; and
- has great potential for wider people management and development purposes.

Methodology

The National IT Systems Competency Standards and Training Package Project Steering Committee

A national Steering Committee was established by the IT&T itab to oversee the initial ICA99 development project and ensure the products developed were in accordance with the needs of the IT industry. Individuals who were representative of the IT industry nationally were invited by the Chair of the IT&T itab to form the Steering Committee. The Steering Committee provided direction and guidance in the development of all aspects of the project.

The following guiding principles provided the basis for the effective facilitation of the national IT Systems Competency Standards and Training Package project and for decision making by the Steering Committee.

The Steering Committee enhanced the opportunity for good practice in developing the final product by:

- providing strategic advice;
- identifying best practice examples for gathering information; and
- suggesting networks and individuals to enhance the relevancy of the final product.

More specifically the Steering Committee provided strategic advice to advance the project by:

- suggesting practitioners who could provide technical comment on the standards;
- suggesting methods for obtaining data from the IT industry;
- identifying technology trends that needed to be considered during the development of the competency standards;
- identifying appropriate networks to approach for input into the project;
- ensuring all key stakeholders were consulted during the project; and
- determining the quality standards for the final product.

The Enhancements Project Steering Group

A small Steering group was established to oversee the first major re-development of ICA99 during 2000/2001. Under its guidance, the project delivered significant enhancements to existing standards with improved guidance for RTOs and learners. Additionally, new qualifications and standards at the “foundation” skills level and in the emerging IT helpdesk and telesales areas ensured that the revised package addressed a number of strategically important workforce and community needs.

Steering Committee Members

Initial ICA99 Development

CHAIR: Jenny Mowatt (National Training & Development Manager, Woolworths, Board Member IT ITAB)

Sunara Agee (Regional Education & Certification Program Manager, Microsoft Pty Ltd)

Richard Brincat (Education Services, I.B.M. Aust. Ltd)

Jeff Bond (Manager, Customer Data Exchange Systems, Optus)

Gary Clark (Department of Employment, Education and Training)

Patricia Crawford (Area Education Manager, Novell)

Noel Crichton (Director, InfComP Training)

Frank Cselko (Education Director, Australasia, Oracle)
 Michel Hedley (Australian Information Industries Association)
 Graeme Johnston (Regional Educational Manager, Lotus Development Pty Ltd)
 Robyn Merchant (Human Resources Development Manager, Fuji Xerox)
 Brian Henderson-Sellers (Professor of Computer Science (Object Technology) Swinburne University of Technology)
 Lyn Montgomery (Vice President, Australasia AFSM International)
 Cheryl Nash (Director, Onyx Consulting Group)
 Margaret Price (General Manager Strategic Planning & Policy, SA Department IT Services)
 Margaret Ryan (Director, Curriculum Development Resources, DTEC)
 Ron Schmid (Australian Computer Society)
 Tony Whittingham (Director IT, Arts, Media ESC, NSW TAFE)
 Margaret Williams (Consultant, Digital Network and System Integration Services)
 Jennifer Thompson (Australian Services Union)
 Sharon Coates and Warwick Newson, (Australian National Training Authority)
 Rob Gage (Information Technology Industry Training Advisory Body)
 Belinda Smith (SmithComyn & Associates)

Organisations involved in the initial ICA99 competency standards development:

Microsoft	Australian Computer Society
Novell	AFSM International
Oracle	Woolworths
IBM Aust	Onyx Consulting Group
Lotus Development	Australia Post
Fuji Xerox Australia	Armstrong Fleming
Optus	Colonial Mutual
Digital Network and System Integration Services	Centre for Information Systems Research
Australian Information Industries Association	Swinburne
Drake International	CSR Sugar
Fujitsu Integration	Global Vision
KNK Office Admin. Services	Prodoc Pty Ltd
Kimberly Clark	F & S Management Services
Martin Ridge and Associates	Pegasus Networks
Open Net Pty. Ltd	COTAR (Victoria)
Australian Broadcasting Commission	Y2K Integration
Panasonic Aust. Pty. Ltd	Telstra
Faulding	Dymaxion PTY Ltd
Services SA	Solution 6
Kronos Australia	Silicon Graphics
Mercantile Mutual	British Aerospace
Zibaboo Multimedia	Ferntree
Ricoh Office Automation	Integrated Research
Salmat	Roads and Traffic Authority of NSW
Sun Microsystems Australia	University of Western Sydney Nepean
Multi-Concepts Pty. Ltd	

The representatives from these companies were very supportive of the concept of Training Packages and the development process. They volunteered their involvement and were willing to supply practitioners to provide input into the development of the competency standards meaning that often several colleagues from the one organisation would provide feedback on the content.

The Australian Computer Society and the Australian Information Industry Association (AIIA) offered strong support for the project and provided practitioners from their networks to comment on the technical detail in the competency standards. The AIIA was particularly helpful in publicising the project to its network through newsletters and on the AIIA web site.

Enhancements Project

The Steering Committee for the enhancements project included:

Trudi Turnbull (Australian Computer Society)

Don Carlson (Microsoft Pty Ltd)

Neil Harbridge (NSW Board of Adult and Community Education)

Shane Earls (South Australian Information Industries Training Advisory Board)

Cherry Cole (IT&Titab)

Leo Van Neuren (IT&Titab)

Belinda Smith (SmithComyn & Associates)

Warwick Newson (ANTA)

ANTA E-Business Initiative Project Steering Group

The Australian National Training Authority established the first outsourcing of its project management activities through this project. In this case the contracted Project Management organisation was Catalyst Interactive, which has undertaken this role in connection with the development activities of the two principal ITABs, IT&Titab and Business Services. Additionally, the project introduced a role of Evaluator/Moderator which was also outsourced, in this case to John Mitchell & Associates. The roles/relationships of the various parties in respect of project governance were defined contractually.

The joint ITAB E-Business Project Steering Group was assembled in August 2000 and met periodically over the course of the project, generally in conjunction with various Working Groups. The Steering Group provided valuable advice and guidance on project process and execution over the duration of the project. Additionally, the IT&Titab's developer, SmithComyn and Associates consulted widely with industry, providers and other stakeholders at all stages of research, development and validation.

Over the course of the E-Business project a number of people contributed as members of the Steering Group and as part of working groups. The IT&Titab takes this opportunity to formally acknowledge the contributions and guidance provided by industry members and the project teams.

Belinda Smith	SmithComyn & Associates
Greg Black	AuctionsPlus Pty Ltd
Helen Organ	ANTA
Leo van Neuren	IT&Titab
Cherry Cole	IT&Titab
Megan Lilly	Business Services Training
Lyndon Shea	Business Services Training
Dawn Howard	Business Services Training
John Mitchell	John Mitchell & Associates (Evaluator/Moderator)
Margaret Clark	Focus on People Pty Ltd (QA Evaluator)
Tara Hannon	IBM Australia

John Ridge	Australian Computer Society
John Rodgers	Training Design Consultants Pty Ltd
Jenifer Scott	Trader Systems International
Paul Hackett	Coles Myer Ltd
Warwick Newson	ANTA
Jacqui Spencer	ANTA
Jodii Anderson	Catalyst Interactive (ANTA Project Manager)
Anthony Stiff	Business Services Training
Agnes Vukovic	NSW TAFE (Support Materials)
Shane Earls	SA ITAB (Support Materials)

The Development

The development of various versions of the endorsed components of the Training Package has been undertaken primarily by SmithComyn & Associates.

Project management has been provided by the Information Technology and Telecommunications Industry Training Advisory Body (IT&Titab).

Evolution of the Information technology Training Package

In Australia, the development of IT competencies within a Training Package framework commenced with the Jackson Doyle report of 1996 which was commissioned by the Information Technology ITAB (a predecessor organisation to the IT&Titab).

1996

The Beginnings of an IT Training Package: Jackson Doyle

The Jackson Doyle Report was commissioned by the IT ITAB in 1996 and aimed to establish a framework for the development of national industry competencies for the IT industry. The project led to the development of a report titled *National Competencies in the IT industry* in December 1996. This report presented a draft framework for the development of national competency standards.

The report identified ten major competency groupings, which formed the draft framework:

- project management;
- working with clients/ customers;
- marketing and selling IT products and services;
- supporting and managing the IT business;
- IT systems support and administration;
- systems development and integration;
- IT installation and maintenance;
- on-line services;
- hardware and peripherals production and assembly; and
- research and development.

As a result of this analysis, grant monies were sought to commence the development of vocational education and training (VET) standards and qualifications.

1996/
1997

Initial Funding

An initial IT Training Package project was funded in 1997 to develop competency standards and qualifications in accordance with the two groupings identified in the Jackson Doyle Report:

- systems development and integration; and
- IT installation and maintenance.

Building on the Jackson Doyle research, it became apparent that incorporating the competency grouping, systems support and administration into IT systems installation and maintenance was advantageous to the overall objectives of the Training Package. However, during the competency standards development process it became evident that project management competencies were required in each of the competency areas and these were consequently included as a separate grouping on their own.

The following features were identified and guided the development of IT standards in the earlier Training Package version.

1996/
1997
Cont.

Key features of national competencies in IT as identified in the Jackson Doyle Report

National IT competencies need:

- to be broad and generic to take account of the rapid changes in the industry including trends such as convergence and to ensure that the competencies are not quickly out of date. The broad generic nature of the competencies will be balanced against the need to describe actual workplace activities in the IT industry. They should also be forward looking to capture the skills and knowledge required for the future.
- to support an international focus. While the competencies must suit domestic requirements, they also need to be capable of fitting into the broader international picture.
- to be broad and flexible enough to be of assistance to both large and small companies.
- a strong client focus to support the strength of the software and service sectors in the Australian IT industry and the importance of selling and marketing IT products.
- to be flexible enough to apply to all employment contexts including consultancy, contracting and outsourcing arrangements and the range of environments in which people work.
- a strong research and development focus to reflect the importance of research and development in every facet and level of work in the IT industry.
- to recognise the importance of commercial imperatives and to understand the relationship of IT to broader business goals.
- to support the industry's relationship to other industries and its close interconnection with its users.
- to avoid conflict with or undermine the integrity of enterprise competencies.
- to meet the full range of education and training needs of the IT industry, national competencies should encompass the continuum of vocational education including schools, TAFE, universities, private training providers and industry provision.

Footnote: Many of the above features are still important issues for the industry today and have provided a conceptual framework for the development of subsequent Training Package iterations. A number of the features reflect market forces and for this reason are explicitly embedded into the units of competency. The importance of IT to the critical functions of business and the need for a strong client focus are both examples of this.

The first IT Training Package was completed in 1998.

1997/
1998

ICA98

IT Client Support Training Package ICA98

The IT ITAB subsequently developed the IT Client Support Training Package in 1998 (ICA98). Comprising two qualifications, one each at Certificate II and IV, this package was instrumental in forging strong competency based training linkages with industry and the provider sector at a time of transition from module and curriculum based delivery and in the context of considerable growth for VET level IT training.

Almost before ICA98 had been published, rapid and widespread change in the information industries sector suggested the need for a major revision and expansion.

**1998/
1999**

ICA99

Re-development and formation of ICA99

ICA98 and its 2 qualifications proved to be too limited in light of rapid changes in the IT&T sector. There was a need for considerable expansion in the range and scope of IT package qualifications and standards. The earlier ICA98 package was subsequently rolled into the significantly re-developed and expanded IT Training Package (ICA99) which was endorsed by ANTA in May 1999 and subsequently launched by the then Federal Minister Dr David Kemp in May 1999.

The package at that time comprised 16 qualifications from Certificate II to Diploma levels, with a total of 174 competency standards. The competency standards are configured into 9 streams within the competency framework and draw from a number of other Training Packages to round out the more “technical” nature of the package’s IT standards.

Competency Framework Streams in ICA99

- Strategy Planning
- Project Management
- Analysis & Design
- Build
- Test
- Implement
- Support
- Use
- Team Work

Sources of Competency Units in ICA99

- 35 units from the predecessor package (IT TP ICA98)
- 26 units from the Project Management Standards (Business Services ITAB)
- 19 units from Multimedia (pre-press National Printing TP ICP98)
- 94 new units developed for ICA99

With a background of constant industry change, rapid technological advances and recent history of implementation experiences and feedback once again the national ITAB recognised the need for revision and update to cater for industry and user requirements. The following reflects more contemporary and recent changes to the package.

**2000/
2001**

ICA99

IT&Titab Enhancements Project

Following consideration of the rapidly changing IT training landscape and emerging skills formation needs identified through the process of implementing ICA99 over 18 months, the IT&Titab received funding from the Australian National Training Authority (ANTA) in 2000 to develop additional competency standards and national qualifications for inclusion in the current package. This project became known as the Enhancements project. The project proposed 4 new qualifications, 10 new competency standards and additional assessment guidance on simulation and resources within a large number of existing standards. These changes were endorsed by the NTQC and Ministers in November 2001.

By implementing the proposed Enhancements qualifications and competency standards in ICA99, the IT&Titab commenced a strategically important phase of the package's evolution. In a very tangible way, the re-developments are recognising and responding to 3 important factors:

1. The fundamental importance of foundation computing skills in the education sector, for the community at large and in Australian workplaces in particular
2. The need to maintain the integrity of the Training Package whilst assisting implementers with guidance in critical areas such as simulation, assessment, learning resources, assessment conditions and expected workplace outcomes.
3. The blending of traditionally separate disciplines including specialist IT expertise, call centre methodologies and customer contact skills

The Enhancement project outcomes established a strong foundation for the new e-business qualifications and standards that were the subject of a subsequent submission.

Whilst operating somewhat along parallel development pathways, the IT&Titab kept its two Training Package projects (Enhancements and E-Business) separate in respect of endorsement processes.

- The Enhancement changes were important in their own right and were targeted at resolving particular issues for a number of user sectors.
- There was a degree of urgency in the implementation of the outcomes of the Enhancements project in preparation for their rollout in the 2002 education year.
- The E-Business project had a different timeline for endorsement and was subject to a complex and external project management process.
- It was anticipated that the rollout of IT E-Business project outcomes will form part of a wider PR campaign including the involvement of diverse, non-IT stakeholders. It was inappropriate to subsume the Enhancements project outcomes in that wider process.

2001/
2002

ICA99

IT E-Business project

The broad aim of the project was to extend the Information Technology Training Package (ICA99) with Endorsed Components for e-business as part of the *ANTA E-commerce Initiative* * for the National Training Framework

Tasks

In order to accomplish the above objective, the IT&Titab project team was charged with undertaking a number of activities:

1. Liaison with, participation in and contribution to activities, products and events arranged by the ANTA Project Manager and ANTA Moderator-Evaluator in accordance Schedule 5 of the ANTA/IT&Titab contract
2. Validation of the draft technical competencies in the *E-Competent Australia* report
3. Conduct of two rounds of national consultations with industry, RTOs, STAs and other relevant stakeholders
4. Drafting and validation of approximately 85 new and 35 revised Competency Standards for inclusion in ICA99 (and ultimately, in other industry Training Packages)
5. Packaging and alignment of Competency Standards into 4 new E-commerce Qualifications in ICA99 (at Diploma, Advanced Diploma, Graduate Certificate and Graduate Diploma levels)
6. Revision of ICA99 to include the E-Business Competency Standards and Qualifications
7. Preparation of necessary documentation including Transition Guide for submission of variations and additions to the NTQC for endorsement.

* The project is now known as the *ANTA E-Business Initiative*

Business Services Connection

From its inception, the IT E-Business project has had a fundamental connection with a “sister” project, that of the Business Services ITAB's (BST) E-Business project which has operated in parallel with and under the same management regime as the IT&Titab project.

Over the duration of the Endorsed Component phase, the two ITABs have shared and collaborated to maximise the synergies between and within the projects. The result has been a number of “blended” qualifications utilising standards developed by the two ITABs as well as significant importation of each other’s standards into various proposed qualifications. The IT&Titab continued to work closely with BST as part of the separate but related E-Business Support Materials development phase which will also conclude during 2002.

The E-Business project resulted in eighty new competency standards and fourteen new qualifications being incorporated into ICA99. A summary of the detail is provided later in this section of ICA99.

Coincident with the Enhancements and E-Business package projects and in accordance with normal ANTA Training Package review principles, the IT package is now due for substantive review. In other industry sectors, this review could very well be operating as the sole re-development of a package. However, in IT, this review is running concurrent with existing projects.

**2001/
2002**

Information Technology Training Package Review

Contractual negotiations were completed between the IT&Titab and an external consultant during 2001. The review is segmented into two phases and the IT&Titab had nearly completed Phase 1 at the time of publication. This Phase involved comprehensive consultation, research and analysis and the subsequent development of a proposal for the re-development of the Training Package and was undertaken in accordance with ANTA's *Brief for the Review of a Training Package*. Phase 2 will involve the implementation of Phase 1 recommendations once they are accepted. It is anticipated that Phase 2 will commence later in 2002.

IT Functional Area Definitions

The IT industry

The Information Technology industry is defined as the development and application of computers and communications-based technologies for processing, presenting and managing data and information¹. This includes computer hardware and component manufacturing; computer software development and various computer related services; together with communications equipment, component manufacturing and services. The diffusion of the Information Technology industry is throughout the economy and society.²

Systems Development

The processes involved in planning, sourcing and creating the components of a system. These include:

- Analysis of needs
- Design of system and components
- Acquiring, coding or building and testing system components
- Documenting processes, decisions and outcomes

Systems Integration

The processes involved in bringing together the separate parts of a system to ensure that the system as a whole functions correctly. Activities include:

- Integration planning
- Integration analysis and design
- Integration testing
- Fault correction
- Version control

Systems integration may also involve the interfacing of existing systems and possibly new systems such that they become sub-systems of a larger system.

Systems Installation

The processes involved in installing system components in accordance with the project requirements. Activities include:

- Installation planning
- System testing
- Handover

Systems may involve software, hardware, people, procedures, communications etc. and thus require skills from a variety of functional expert groupings.

¹ Nov 92 The ACS Towards 2000, Taskforce Report

² Jackson & Doyle, Dec 1996, National Competencies in the IT Industry

Systems Maintenance

The processes involved in providing continuing management, fault detection, correction and enhancements to the installed system. Activities include:

- Technical advice and service delivery
- User training
- Bug fixes and work-arounds
- Minor enhancements and customisation
- Version control

Systems Management and Control

The processes involved in managing the infrastructure between the network and the system.

- Production maintenance
- Service level assessment
- Monitoring against predefined thresholds
- Security
- Change control
- Alert management
- Inventory
- Capacity planning

Competency Framework Overview

Strategy Planning

(Code SP)

ICAITSP036B	IT strategy meets business solution requirements
ICAITSP037B	Contribute to the development of a strategy plan
ICAITSP038B	Set strategic plans
ICAITSP039B	Match the IT needs with the strategic direction of the enterprise
ICAITSP040B	Manage and review contracts-

Analysis and Design

(Code AD)

ICAITAD041B	Determine client business expectations and needs
ICAITAD042B	Confirm client business needs
ICAITAD043B	Develop and present a feasibility report
ICAITAD044B	Develop system infrastructure design plan
ICAITAD045B	Produce network/communication design
ICAITAD046B	Model preferred system solutions
ICAITAD047B	Determine specifications for the project
ICAITAD048C	Develop configuration management
ICAITAD049A	Develop logical abstraction from requirements (OOA)
ICAITAD050A	Develop detailed component specifications from project specifications
ICAITAD051B	Develop client user interface
ICAITAD052B	Design IT security framework
ICAITAD053B	Design system security and controls
ICAITAD054B	Validate quality and completeness of design
ICAITAD055B	Determine transition strategy
ICAITAD056B	Prepare disaster recovery/contingency plans
ICAITAD057A	Manage a reuse library
ICAITAD058A	Apply skills in object oriented design
ICAITAD138A	Determine acceptable solution providers for e-business projects
ICAITAD139A	Design a Database
ICAITAD140A	Design a Server
ICAITAD141A	Design dynamic websites to meet technical requirements
ICAITAD142A	Design a website to meet technical requirements
ICAITAD143A	Implement process re-engineering strategies for e-business
ICAITAD144A	Determine best fit topology for a local network
ICAITAD145A	Identify best fit topology for WAN network
ICAITAD146A	Develop web site information architecture
ICAITAD147A	Determine that database functionality and scalability suits business requirements
ICAITAD148A	Identify new technology models for e-business
ICAITAD149A	Implement quality assurance process for e-business solutions
ICAITAD150A	Evaluate vendor products and equipment
ICAITAD151A	Gather data to identify business requirements
ICAITAD152A	Implement risk management processes
ICAITAD153A	Model data objects
ICAITAD154A	Model data processes
ICAITAD155A	Plan process re-engineering strategies for e-business
ICAITAD156A	Review and plan for risk to e-business solution providers
ICAITAD157A	Develop technical requirements for an e-business solution
ICAITAD158A	Translate business needs into technical requirements

Build
(Code B)

ICAITB059B	Develop detailed technical design
ICAITB060B	Identify physical database requirements
ICAITB061B	Monitor physical database implementation
ICAITB062B	Perform data conversion
ICAITB063B	Monitor data conversion
ICAITB064B	Prepare software development review
ICAITB065B	Prepare for the build phase
ICAITB066B	Coordinate the build phase
ICAITB067B	Prepare for Software Development using RAD
ICAITB068B	Build using RAD
ICAITB069B	Develop software
ICAITB070B	Create code for applications
ICAITB071B	Review developed software
ICAITB072B	Develop integration blueprint
ICAITB073B	Pilot the developed system
ICAITB074B	Monitor the system pilot
ICAITB075A	Use a library or pre-existing components
ICAITB076B	Implement configuration management
ICAITB135A	Create a simple mark-up language document to specification
ICAITB136A	Use SQL to create database structures and manipulate data
ICAITB137A	Produce basic client side script for dynamic web pages
ICAITB159A	Build a security shield for a network
ICAITB160A	Build and configure a server
ICAITB161A	Build a document using eXtensible Markup Language
ICAITB162A	Configure a Payment Gateway
ICAITB163A	Create a Common Gateway Interface (CGI) script
ICAITB164A	Create a Data Warehouse
ICAITB165A	Create dynamic pages
ICAITB166A	Create utility programs
ICAITB167A	Create code for networking
ICAITB168A	Compile and run an application
ICAITB169A	Use development software & IT tools to build a basic website to specification
ICAITB170A	Build a database
ICAITB171A	Develop cascading style sheets (CSS)
ICAITB172A	Install Asynchronous Transfer Mode (ATM) Local Area Network (LAN)
ICAITB173A	Install intelligent hub
ICAITB174A	Install network bridges/ switches
ICAITB175A	Select and install a router
ICAITB176A	Install and configure router
ICAITB177A	Build Java applets
ICAITB178A	Build a Graphical User Interface (GUI)
ICAITB179A	Build decks using wireless markup language (WML)
ICAITB180A	Integrate a database with a website
ICAITB181A	Write and document program modules
ICAITB182A	Write and compile code based on requirements
ICAITB210A	Analyse information and assign meta-tags
ICAITB212A	Implement quality assurance process for web sites

Test (Code T)	ICAITT077C	Develop detailed test plan
	ICAITT078B	Perform unit test
	ICAITT079B	Perform integration test
	ICAITT080B	Perform specific unit test for OO Class
	ICAITT081B	Perform systems test
	ICAITT082C	Manage the testing process
	ICAITT083B	Develop and conduct client acceptance test
	ICAITT084B	Perform stress and loading test of integrated platform
	ICAITT183A	Confirm accessibility of web site design
	ICAITT184A	Ensure site usability
	ICAITT185A	Validate basic website performance
	ICAITT186A	Conduct operational acceptance tests of web sites
	Implement (Code I)	ICAITI085B
ICAITI086B		Scope implementation requirements
ICAITI087B		Acquire system components
ICAITI088B		Evaluate and negotiate vendor offerings
ICAITI089B		Implement and hand over system components
ICAITI090B		Conduct pre-installation audit for software installation
ICAITI091B		Conduct post implementation review
ICAITI092B		Document operational procedures
ICAITI093A		Prepare structured training for clients
ICAITI094A		Deliver structured training for clients
ICAITI095A		Review structured training for clients
ICAITI096B		Complete data transition
ICAITI097B		Install and configure a network
ICAITI098B		Install and manage complex networks
ICAITI099B		Build an intranet
ICAITI100B		Build an Internet infrastructure
ICAITI101B		Install and manage network protocols
ICAITI187A		Implement change management processes
ICAITI188A		Install and maintain a server
ICAITI189A		Ensure website content meets appropriate technical protocols & standards
ICAITI190A	Maintain information standards	
ICAITI212A	Monitor and improve new or existing knowledge management system	

Support
(Code S)

ICAITS008B	Maintain equipment/software inventory
ICAITS009B	Interact with clients
ICAITS010C	Apply problem solving techniques to achieve organisation goals
ICAITS014C	Connect hardware peripherals
ICAITS015B	Install software applications
ICAITS016C	Record client support requirements
ICAITS017C	Maintain system integrity
ICAITS020C	Install and optimise system software
ICAITS021C	Connect internal hardware components
ICAITS022B	Determine client computing problems and action
ICAITS023B	Provide one to one instruction
ICAITS024C	Provide basic system administration
ICAITS025B	Run standard diagnostic tests
ICAITS029B	Install network hardware to a network
ICAITS030B	Install software to networked computers
ICAITS031B	Provide advice to clients
ICAITS032B	Provide network systems administration
ICAITS033B	Assist with policy development for client support procedures
ICAITS034B	Determine and action network problem
ICAITS035C	Assist with analysis of emerging technology
ICAITS102B	Establish and maintain client user liaison
ICAITS103B	Establish and maintain client user liaison during support activity
ICAITS104B	Determine maintenance coverage
ICAITS105B	Coordinate change requests
ICAITS106B	Action and complete change requests
ICAITS107B	Rectify system faults on a live system
ICAITS108B	Complete database back-up and recovery
ICAITS109B	Evaluate system status
ICAITS110B	Implement system software changes
ICAITS111B	Manage and review delivery of maintenance services
ICAITS112B	Optimise system performance
ICAITS113B	Identify and resolve common database performance problems
ICAITS114B	Implement maintenance procedures
ICAITS115B	Maintain equipment and software in working order
ICAITS116B	Undertake capacity planning
ICAITS117B	Maintain custom software
ICAITS118B	Manage system security
ICAITS119B	Monitor and administer systems security
ICAITS120B	Administer and configure a network operating system
ICAITS121A	Administer network peripherals
ICAITS122A	Troubleshoot and resolve network problems
ICAITS123B	Manage network security
ICAITS124B	Monitor and administer network security
ICAITS125B	Monitor and administer a database
ICAITS134A	Provide remote helpdesk support
ICAITS191A	Maintain web site performance
ICAITS192A	Configure an Internet Gateway
ICAITS193A	Connect a workstation to the internet
ICAITS194A	Ensure basic web site security
ICAITS195A	Ensure dynamic website security
ICAITS196A	Implement secure encryption technologies
ICAITS197A	Install and maintain valid authentication processes
ICAITS198A	Develop guidelines for updating and loading information to a web site
ICAITS199A	Manage e-business websites
ICAITS200A	Monitor traffic and compile specified site traffic reports
ICAITS201A	Transfer content to a web site using commercial applications
ICAITS202A	Ensure privacy for users
ICAITS203A	Choose a web hosting service

Use	ICAITU004C	Apply Occupational Health and Safety Procedures
	ICAITU005C	Operate computer hardware
	ICAITU006C	Operate computing packages
	ICAITU007B	Maintain equipment and consumables
	ICAITU012C	Design organisational documents using computing packages
	ICAITU013C	Integrate commercial computing packages
	ICAITU018C	Develop macros and templates for clients using standard products
	ICAITU019C	Migrate to new technology
	ICAITU028C	Customise packaged software applications for clients
	ICAITU126B	Use advanced features of computer applications
	ICAITU127B	Support system software
	ICAITU128A	Operate a personal computer
	ICAITU129A	Operate a word processing application
	ICAITU130A	Operate a spreadsheet application
	ICAITU131A	Operate database application
	ICAITU132A	Operate a presentation package
	ICAITU133A	Send and retrieve information over the Internet using browsers and email
	ICPMM11bA	Identify components of multimedia
	ICPMM13cA	Author a multimedia sequence
	ICPMM15dA	Develop a multimedia script
	ICPMM21cA	Capture a digital image
	ICPMM41cA	Incorporate text into multimedia presentations
	ICPMM42cA	Incorporate 2D graphics into multimedia presentations
	ICPMM43cA	Incorporate digital photography into multimedia presentations
	ICPMM44cA	Incorporate audio into multimedia presentations
	ICPMM45cA	Incorporate animation into multimedia presentations
	ICPMM46cA	Incorporate video into multimedia presentations
	ICPMM47dA	Incorporate 3D modelling into multimedia presentations
	ICPMM61dA	Prepare multimedia for different platforms
	ICPMM63bA	Access the Internet
	ICPMM65dA	Create web pages with multimedia
	ICPMM67dA	Plan interface design
	ICPMM81eA	Manage multimedia production
	ICPMM82eA	Manage multimedia projects
	ICPPP11cA	Develop a detailed design concept
	ICPPP11dA	Undertake a complex design brief
	ICTTC200A	Use telecommunications technology in receiving/making calls in the call centre environment
	ICTTC201A	Use basic computer technology to process enterprise and customer data
	ICTTC202A	Use specific enterprise systems to satisfy customer requirements
	ICTTC203A	Navigate and interrogate specific enterprise systems to satisfy customer requirements
	ICTTC204A	Provide quality customer service
	ICTTC213A	Provide support and assistance to customers on matters relating to a particular product(s)/service
	ICTTC214A	Process general inquiries from customers and provide associated support and assistance
	ICTTC217A	Action reports of product/service faults reported by customers
	ICTTC218A	Negotiate with customers on major product/service faults
ICTTC220A	Resolve customer complaints	
ICTTC221A	Resolve the more complex customer complaints	
ICAITU204A	Locate and evaluate online information	
ICAITU205A	Select and employ software and hardware multimedia tools	
ICAITU206A	Check site security	
ICAITU207A	Apply a web authoring tool to convert client data	
ICAITU208A	Use site server tools for e-business	
ICAITU211A	Operate accounting applications	
ICAITU213A	Conduct online transactions	
ICAITU215A	Use personal productivity tool	

Team Work (Code TW)	ICAITTW001B Work effectively in an Information Technology environment ICAITTW002B Communicate in the workplace ICAITTW011B Participate in a team and individually to achieve organisation goals ICAITTW026B Coordinate and maintain teams ICAITTW027B Relate to clients on a business level ICAITTW214A Maintain ethical conduct
Documentation (Code D)	ICAITD003B Receive and process oral and written communication ICAITD128A Create user and technical documentation ICAITD209A Writing for the world wide web ICAITD210A Prepare technical documentation
Project Management	ICAITPM129A Apply skills in project integration BSX154L402 Apply skills in scope management BSX154L403 Apply skills in time management BSX154L404 Apply skills in cost management BSX154L405 Apply skills in quality management BSX154L406 Apply skills in human resources management BSX154L407 Apply skills in communications management BSX154L408 Apply skills in risk management BSX154L409 Apply skills in procurement management BSX154L501 Guide application of project integrative processes BSX154L502 Guide application of scope management BSX154L503 Guide application of time management BSX154L504 Guide application of cost management BSX154L505 Guide application of quality management BSX154L506 Guide application of human resources management BSX154L507 Guide application of communications management BSX154L508 Guide application of risk management BSX154L509 Guide application of procurement management BSX154L601 Manage project integration BSX154L602 Manage scope BSX154L603 Manage time BSX154L604 Manage cost BSX154L605 Manage quality BSX154L606 Manage human resources BSX154L607 Manage communications BSX154L608 Manage risk BSX154L609 Manage procurement

Other

BSBADV401A	Profile a target audience
BSBMKG403A	Analyse market data
BSBSLS301A	Develop product knowledge
BSBSLS302A	Identify sales prospects
BSBSLS304A	Secure prospect commitment
BSBSLS306A	Self-manage sales performance
WRRS.1A	Sell Products and Services
WRRS.3A	Co-ordinate Sales Performance
WRRSS.9A	Recommend Computer Products and Services
BSBEBUS406A	Monitor and maintain records in an online environment
BSBEBUS408A	Implement and monitor delivery of quality customer service online
BSBEBUS501A	Evaluate e-business opportunities
BSBEBUS503A	Design an e-business
BSBEBUS504A	implement an e-business strategy
BSBEBUS505A	Implement new technologies for business
BSBEBUS506A	Plan and develop a business website
BSBEBUS508A	Build a virtual community
BSBEBUS509A	Implement e-business outsourcing arrangements
BSBEBUS510A	Manage e-business outsourcing
BSBEBUS511A	Implement a knowledge management strategy for an e-business
BSBEBUS512A	Implement electronic communication policy
BSBEBUS518A	Manage an e-business supply chain
BSBEBUS601A	Develop an e-business strategy
BSBEBUS602A	Develop an action plan for an e-business strategy
BSBEBUS603A	Evaluate new technologies for business
BSBEBUS604A	Develop a business website strategy
BSBEBUS605A	Identify and implement e-business innovation
BSBEBUS607A	Develop e-business outsourcing policy and guidelines
BSBEBUS609A	Develop a knowledge management strategy for an e-business
BSBEBUS613A	Develop online customer service strategies
BSBEBUS616A	Plan an e-business supply chain
BSZ406A	Plan a series of training sessions
BSZ501A	Analyse competency requirements
BSZ502A	Design and establish the training system
BSZ503A	Design and establish the assessment system
BSZ505A	Evaluate the training and assessment system
BSZ506A	Develop assessment procedures
BSZ507A	Develop assessment tools
BSZ508A	Design training courses
CUFIMA01A	Produce and manipulate digital images
CUFIMA04A	Create 3D digital animation
CUFIMA05A	Create 3D digital models and images
CUFMEM06A	Design a multimedia product
CUFMEM07A	Apply principles of visual design and communication to the development of a multimedia product
CUFMEM08A	Apply principles of instructional design to a multimedia product
CUFMEM10A	Design and create a multimedia interface
CUFMEM11A	Design the navigation for a multimedia product
CULLB412A	Undertake cataloguing activities
PRAS01A	Undertake security assessment
PRAS02A	Assess security requirements in complex or high risk environments
PRAS03A	Specify and configure security system
PRSIR11A	Monitor security risk management plan
PRSIR12A	Review security risk management plan

Competency Standards

Format and structure of the competency standards

Competency standards identify the minimum skills and knowledge required by an employee to perform a particular function. Different enterprises can customise national standards to suit their requirements or benchmark their enterprise standards against the Information Technology competency standards. Competency standards comprise of units of competency. The last three sections of a unit of competency provide guidance for assessment. Assessment can occur for a range of reasons, for example: for advanced standing in an educational program; for recruitment purposes; for career path purposes.

During the development of the competency standards it became apparent that by going to a particular level of detail the competencies would become product and version specific. This would mean competencies would date within twelve to eighteen months in many areas; the number of units could become endless and significantly increase the cost of maintaining the competency standards and Training Package overall. It was agreed that the best approach would be to come up a level of detail and make the units more generic, rather than product or technology specific. This approach was discussed at each of the national consultations and supported by those attending.

UNITS OF COMPETENCIES

Identify the range of skills and knowledge needed, in a range of workplaces, to achieve the quality required by industry. They are expressed as outcomes. Units of competency make up standards. Units of competency should be transferable. Different enterprises and different industry sectors may use standards in different ways. Units of competency should be relevant to the workplace now and in the future. Units of competency are interdependent.



ELEMENTS OF COMPETENCY

Are the building blocks of the unit. Each element describes in outcome terms the purpose of the unit. That is the function of work to be performed. An element can be in more than one unit.



PERFORMANCE CRITERIA

Are evaluative statements specifying what is to be assessed and the required level of performance. Activities that provide evidence of competent performance are detailed. Performance criteria capture the evaluative aspects of competency. Performance criteria are expressed precisely to avoid unnecessary interpretation. Performance criteria avoid unnecessary repetition by linking with the range of variables.



RANGE OF VARIABLES

Contextualise competencies, provide a focus for assessment and a link to enterprise requirements, particular legislation and industry / enterprise guidelines.



EVIDENCE GUIDES

Guide assessment of the unit of competency in the workplace. Evidence guides relate directly to the performance criteria and range of variables to guide assessment. Evidence guides contain critical evidence to be considered during an assessment and indicate interdependent competencies for concurrent (or holistic) assessment. They outline methods of assessment and identify underpinning knowledge and skills.

Unit coding

All units of competency have a code for identification, for example take the ICAITTW002B. The first three letters, ICA, indicate the name of the Training Package—the IT Training Package code. The following IT means Information Technology. The letters following IT indicate which sub-functional area the unit comes from (e.g. TW Team Work); the number that follows indicates a unique number for easy reference, and the final letter (e.g. B) indicates the version of the unit.

Final letters such as “B” and “C” mean that the units of competence are respectively in the second and third versions.

The Information Technology Training Package divides its competency standards into streams. Individual unit codes reflect those streams as follows.

Streams in ICA99

- **Strategy Planning** e.g. ICAITSP036B *IT strategy meets business solution requirements*
- **Analysis and Design** e.g. ICAITAD041B *Determine client business expectations and needs*
- **Build IT** e.g. ICAITB059B *Develop detailed technical design*
- **Test IT** e.g. ICAITT077C *Develop detailed test plan*
- **Implement IT** e.g. ICAITI085B *Review site for implementation*
- **Support IT** e.g. ICAITS102B *Establish and maintain client user liaison*
- **Use IT** e.g. ICAITU004C *Apply Occupation Health and Safety procedures, and competency standards from other Training Packages (TP) with “home” TP codes*
- **Teamwork IT** e.g. ICAITTW001B *Work effectively in an Information Technology environment*
- **Documentation IT** e.g. ICAITD128A *Create user & technical documentation*
- **Project Management** e.g. ICAITPM129A *Apply skills in project integration, and competency standards from other Training Packages with “home” TP codes*
- **Other** competency standards from other Training Packages with “home” TP codes

The Australian Qualifications Framework

The Australian Qualifications Framework (AQF) provides a nationally consistent and flexible framework for all qualifications gained through the workplace, post compulsory education and training. This means that qualifications are designed to be consistent and to be recognised across Australia. Organisations and individuals will be certain of what competencies each AQF qualification includes.

A range of qualifications and Statements of Attainment can be issued in accordance with the Information Technology Training Package.

Competency standards are grouped according to the level of complexity and autonomy that is required to apply the knowledge and skills in the workplace. The Australian Qualifications Framework (AQF) is a national framework that is based on achieving competency.

Certificate I

Work is likely to be carried out under direct supervision. Breadth, depth and complexity of knowledge and skills would prepare a person to perform a defined range of activities most of which may be routine and predictable.

Certificate II

An individual demonstrating these competencies would be able to: demonstrate knowledge by recall in a narrow range of areas; demonstrate basic practical skills, such as the use of relevant tools; perform a sequence of routine tasks given clear direction; and receive and pass on messages/ information.

Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of options to be applied.

An individual demonstrating these competencies would be able to:

- demonstrate basic operational knowledge in a moderate range of areas;
- apply a defined range of skills;
- apply known solutions to a limited range of predictable problems;
- perform a range of tasks where choice between a limited range of options is required;
- assess and record information from varied sources; and
- take limited responsibility for one's own outputs in work and learning.

Certificate III

Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of options to be applied.

An individual demonstrating these competencies would be able to:

- demonstrate some relevant theoretical knowledge;
- apply a range of well developed skills;
- apply known solutions to a variety of predictable problems;
- perform processes that require a range of well developed skills where some discretion and judgement is required;
- interpret available information, using discretion and judgement;
- take responsibility for one's own outputs in work and learning; and
- take limited responsibility for the output of others.

Certificate IV

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications includes requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices, and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for one's own outputs in relation to specified quality standards; and
- take limited responsibility for the quantity and quality of the output of others.

Diploma

Breadth, depth and complexity cover planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.

The self directed application of knowledge and skills involves substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.

Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas;
- analyse and plan approaches to technical problems or management requirements;
- transfer and apply theoretical concepts and/or technical or creative skills to a range of situations;
- evaluate information using it to forecast for planning or research purposes;
- take responsibility for own outputs in relation to broad quantity and quality parameters; and
- take limited responsibility for the achievement of group outcomes.

Advanced Diploma

Breadth, depth and complexity involve analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.

The application of a significant range of fundamental principles and complex techniques is demonstrated across a wide and often unpredictable variety of contexts in relation to either varied or highly highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is accepted.

Applications involve significant judgement in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of specialised knowledge with depth in some areas;
- analyse, diagnose, design and execute judgements across a broad range of technical or management functions;
- demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills
- generate ideas through the analysis of information and concepts at an abstract level;
- demonstrate accountability for personal outputs within broad parameters; and
- demonstrate accountability for group outcomes within broad parameters.

Qualifications in the IT Training Package

The following qualification framework has been developed in consultation with the Information Technology industry and confirmed with those servicing the training needs of the industry. These qualifications reflect areas of current and future employment demand. The competency grouping of each qualification provides the context for each particular unit of competency as individual units are not mapped directly against the AQF.

The suggested entry competencies are not prerequisites nor are they compulsory in any way. During the national consultations the IT industry consistently stated that it wanted as much flexibility as possible in the delivery of training. One of the complaints regularly targeted at current arrangements was the time it takes to complete a course and therefore, fill industry skill shortages. The addition of suggested entry competencies was a compromise by industry who, whilst acknowledging that educationalists need to develop learning pathways, were concerned not to create a linear approach to training and learning. The suggested entry competencies are not prerequisites and therefore are optional extras for the particular course they are listed in.

Defining Qualifications (packaging units of competency)

The qualifications identified in this Training Package consist of particular combinations of units of competency that are meaningful to the Information Technology industry's current and future employment requirements. The identified competency groupings reflect workplace outcomes that are meaningful to the industry generally, yet offer flexibility to meet the needs of enterprises and individuals. The competency groupings are based on skill shortages identified by the Information Technology industry during national consultations. Training organisations were invited to comment on content and implementation issues associated with the proposed qualifications identified within the Training Package. This information was fed back to industry groups for consideration.

Sixteen different qualifications have been identified and opportunity now exists to include vendor training within mainstream vocational education and training and New Apprenticeship training. This will increase the ability of mainstream vocational education and training to meet skill gaps in areas of employment demand and deliver industry recognised training.

Relationship of Initial ICA99 Qualifications to Qualifications in ICA98

The Certificate II in Information Technology and the Certificate IV in IT Client Support in the previous IT Training Package, ICA98 are also within the Training Package ICA99. The competency standards contained within ICA98 on which the qualifications were designed remain largely unchanged; however, they assumed a new version (B) because they were incorporated into the new Training Package. The major difference in the qualifications from ICA98 to ICA99 is the range of available competencies that make up the qualifications. The new qualifications contained in ICA99 follow a model of identifying the core competencies required and offering a bank of elective competencies that can be included, thus providing greater flexibility for shaping the qualification to meet local or specific needs.

For the purposes of recognition and articulation the qualifications contained in ICA98, Certificate II in information Technology ICA20198 and Certificate IV in Information Technology (Client Support) ICA40198 are complete and will receive full recognition for pathway progression in this Training Package ICA99.

The National Endorsement of this Training Package ICA99 will result in ICA98 ceasing to be an endorsed Training Package. Students currently undertaking qualifications in ICA98 will be permitted to complete their studies under the guidelines contained in ICA98; however, no new enrolments should take place for qualifications contained in ICA98.

The following tables provide a comparison between the two qualifications that were contained in the previous IT Training Package, ICA98 and the equivalent qualifications in this Training Package ICA99.

Certificate II in Information Technology ICA20198

Certificate II ICA20198 Standards (All Core)	Certificate II ICA20199 Core Standards	Certificate II ICA20199 Elective Standards
ICAITTW001B	ICAITTW001B	
ICAITTW002B	ICAITTW002B	
ICAITD003B		ICAITD003B
ICAITU004A	ICAITU004C	
ICAITU005C	ICAITU005C	
ICAITU006C	ICAITU006C	
ICAITU007A	ICAITU007B	
ICAITS008B		ICAITS008B
ICAITS009B		ICAITS009B
ICAITS010C		ICAITS010C
ICAITTW011B		ICAITTW011B
ICAITU012C	ICAITU012C	
ICAITU013C	ICAITU013C	
ICAITS016C		ICAITS016C
ICAITS017C	ICAITS017C	
ICAITS014C	ICAITS014C	
ICAITS015B	ICAITS015B	
		ICAITS022B
		ICPMM11bA
		ICPMM63bA
		ICAITS121A

Certificate IV in Information Technology (Client Support) ICA40198

Certificate IV, ICA40198 Standards (All Core)	Certificate IV, ICA40199 Core Standards	Certificate IV, ICA40199 Elective Standards
ICAITU018A	ICAITU018C	
ICAITU019A	ICAITU019C	
ICAITS020C		ICAITS020C
ICAITS021C		ICAITS021C
ICAITS022B		ICAITS022B
ICAITS023B	ICAITS023B	
ICAITS024C	ICAITS024C	
ICAITS025B	ICAITS025B	
ICAITTW026B		ICAITTW026B
ICAITTW027B	ICAITTW027B	
ICAITU028A	ICAITU028C	
ICAITS029B		ICAITS029B
ICAITS030B	ICAITS030B	
ICAITS031B	ICAITS031B	
ICAITS032B	ICAITS032B	
ICAITS033B		ICAITS033B
ICAITS034B	ICAITS034B	
ICAITS035C		ICAITS035C
	ICAITPM129A	
	PMX403A	

Relationship of New Qualifications to Existing Qualifications in ICA99

Changes to the existing qualifications have been kept to a minimum. Any additional units of competence have been added to the electives rather than the core. This approach was settled on to reduce the work for RTOs and State Recognition Authorities in implementing the changes.

Changes Implemented in ICA99 Version 2.0

Certificate III in Information Technology (Software Applications) ICA30199

Changes to the elective competency units:

- ICAITB070B Create code for applications is no longer an elective in this qualification

Certificate III in Information Technology (General) ICA30299

Changes to the elective competency units:

- ICAITS116B Undertake capacity planning is no longer an elective in this qualification
- ICAITS117B Maintain custom software is no longer an elective in this qualification
- ICAITI100B Build an Internet infrastructure is no longer an elective in this qualification

Certificate III in Information Technology (Network Administration) ICA30399

Changes to the elective competency units:

- ICAITS117B Maintain custom software is no longer an elective in this qualification

Certificate IV in Information Technology (Database Administration) ICA40299

Changes to the elective competency units:

- ICAITB136A Use SQL to create database structures and manipulate data is now available as an elective in this qualification
- ICAITB137A Produce basic client side script for dynamic web pages is now available as an elective in this qualification

Certificate IV in Information Technology (Network Management) ICA40399

Changes to the core group of competency units:

- ICAITI100B Build an Internet infrastructure can be substituted by ICAITI099B Build an intranet
If this substitution is made, ICAITI100B Build an Internet infrastructure must replace ICAITI099B Build an intranet in the Diploma of Information Technology (Network Engineering)

Certificate IV in Information Technology (Multimedia) ICA40499

Changes to the elective competency units

- ICAITB135A Create a simple mark-up language document to specification is now available as an elective in this qualification
- ICAITB137A Produce basic client side script for dynamic web pages is now available as an elective in this qualification

Certificate IV in Information Technology (Programming) ICA40699

Changes to the elective competency units:

- ICAITB135A Create a simple mark-up language document to specification is now available as an elective in this qualification
- ICAITB137A Produce basic client side script for dynamic web pages is now available as an elective in this qualification
- ICAITB136A Use SQL to create database structures and manipulate data is now available as an elective in this qualification

Certificate IV in Information Technology (Systems Analysis and Design) ICA40799

Changes to the elective competency units:

- ICAITB136A Use SQL to create database structures and manipulate data is now an elective in this qualification

Diploma of Information Technology (Systems Administration) ICA50199

Changes to the electives:

- ICAITB136A Use SQL to create database structures and manipulate data, is now an elective

Diploma of Information Technology (Network Engineering) ICA50499

Changes to the core:

- ICAITI099B Build an intranet can be substituted with ICAITI100B Build an Internet infrastructure
If this substitution is made, ICAITI099B Build an intranet must replace ICAITI100B Build an Internet infrastructure in the Certificate IV in Information Technology (Network Management)

Summary of new Qualifications and Competency Standards for ICA99 V3.0

As a result of the IT e-business project, fourteen new qualifications and eighty new units of competence have been introduced into ICA99 V3.0. Some minor changes have also been made to existing qualifications, these are noted later in the section under the relevant qualification.

A number of standards from other Training Packages have also been published in this new ICA99 version. They are contained in the standards section “Other” and represent units of competence referenced in the new IT qualifications listed below.

New Qualifications

1. ICA10201 Certificate I in Information Technology (E-Consumer)
2. ICA41001 Certificate IV in Information Technology (Website Administration)
3. ICA41101 Certificate IV in Information Technology (Website Design)
4. ICA50601 Diploma of Information Technology (Website Development)
5. ICA50701 Diploma of Information Technology (Internetworking)
6. ICA50801 Diploma of Information Technology (E-Business Development)
7. ICA50901 Diploma of Information Technology (Knowledge Management)
8. ICA51001 Diploma of Information Technology (Database Design & Development)
9. ICA51101 Diploma of Information Technology (Project Management)
10. ICA60101 Advanced Diploma of Information Technology (E- Business Development)
11. ICA60201 Advanced Diploma of Information Technology (E-Business Analysis)
12. ICA60301 Advanced Diploma of Information Technology (E-Learning Development)
13. ICA60401 Advanced Diploma of Information Technology (E-Security)
14. ICA60501 Advanced Diploma of Information Technology (Project Management)

New Units of Competence

Analysis and Design

(Code AD)

ICAITAD138A	Determine acceptable developers for e-business projects
ICAITAD139A	Design a Database
ICAITAD140A	Design a Server
ICAITAD141A	Design dynamic websites to meet technical requirements
ICAITAD142A	Design a website to meet technical requirements
ICAITAD143A	Implement process re-engineering strategies for e-business
ICAITAD144A	Determine best fit topology for a local network
ICAITAD145A	Identify best fit topology for WAN network
ICAITAD146A	Develop web site information architecture
ICAITAD147A	Determine that database functionality & scalability suit business requirements
ICAITAD148A	Identify new technology models for e-business
ICAITAD149A	Implement quality assurance process for e-business solutions
ICAITAD150A	Evaluate Vendor Products and Equipment
ICAITAD151A	Gather data to identify business requirements
ICAITAD152A	Implement risk management processes
ICAITAD153A	Model data objects
ICAITAD154A	Model Data Processes
ICAITAD155A	Plan process re-engineering strategies for e-business
ICAITAD156A	Review and plan for risk to e-business solution providers
ICAITAD157A	Develop technical requirements for an e-business solution
ICAITAD158A	Translate the business needs into technical requirements

Build

(Code B)

ICAITB159A	Build a security shield for a network
ICAITB160A	Build and configure a server
ICAITB161A	Build a document using extensible markup language (XML)
ICAITB162A	Configure a Payment Gateway
ICAITB163A	Create a Common Gateway Interface (CGI) script
ICAITB164A	Create a Data Warehouse
ICAITB165A	Create dynamic pages
ICAITB166A	Create utility programs
ICAITB167A	Create code for networking
ICAITB168A	Compile and run an application
ICAITB169A	Use development software & IT tools to build a basic website to specification
ICAITB170A	Build a database
ICAITB171A	Develop Cascading Style Sheets (CSS)
ICAITB172A	Install Asynchronous Transfer Mode (ATM) Local Area Network (LAN)
ICAITB173A	Install intelligent hub
ICAITB174A	Install network bridges/ switches
ICAITB175A	Select and install a router
ICAITB176A	Install and configure router
ICAITB177A	Build Java applets
ICAITB178A	Build a Graphical User Interface (GUI)
ICAITB179A	Build decks using wireless markup language (WML)
ICAITB180A	Integrate a database with a website
ICAITB181A	Write and document program modules
ICAITB182A	Write and compile code based on requirements
ICAITB210A	Analyse information and assign meta-tags
ICAITB212A	Implement quality assurance process for web sites

Test (Code T)	ICAITT183A Confirm accessibility of web site design ICAITT184A Ensure site usability ICAITT185A Validate basic website performance ICAITT186A Conduct operational acceptance tests of web sites
Implement (Code I)	ICAITI187A Implement change management processes ICAITI188A Install and maintain a server ICAITI189A Ensure website content meets appropriate technical protocols & standards ICAITI190A Maintain information standards ICAITI212A Monitor and improve new or existing knowledge management system
Support (Code S)	ICAITS191A Maintain web site performance ICAITS192A Configure an Internet Gateway ICAITS193A Connect a workstation to the internet ICAITS194A Ensure basic web site security ICAITS195A Ensure dynamic website security ICAITS196A Implement secure encryption technologies ICAITS197A Install and maintain valid authentication processes ICAITS198A Develop guidelines for updating and loading information to a web site ICAITS199A Manage e-business websites ICAITS200A Monitor traffic and compile specified site traffic reports ICAITS201A Transfer content to a website using commercial applications ICAITS202A Ensure privacy for users ICAITS203A Choose a web hosting service
Use (Code U)	ICAITU204A Locate and evaluate online information ICAITU205A Select and employ Software and Hardware Multimedia Tools ICAITU206A Check site security ICAITU207A Apply a web authoring tool to convert client data ICAITU208A Use site server tools for e-business ICAITU211A Operate accounting applications ICAITU213A Conduct online transactions ICAITU215A Use personal productivity tool
Team Work (Code TW) and Documen- tation (Code D)	ICAITTW214A Maintain ethical conduct ICAITD209A Writing for the World Wide Web ICAITD210A Prepare technical documentation

Alignment to the Australian Qualifications Framework

The alignment of the competency groupings to the Australian Qualifications Framework (AQF) has involved pushing the competency units down rather than up levels in the AQF. This is important in the Information Technology industry where changes in technology are making tasks easier to perform and technology is continually becoming more user-friendly. Many secondary schools require students to work on laptops and many of these pre year 11 and 12 students are already competent in the majority of the competency standards in the Certificate II in Information Technology.

The qualifications are designed to meet skill gaps identified during the consultation process. Different competency units can be chosen from the electives for specialisation and for organisational requirements. As the potential exists to include vendor training in public training courses higher employment outcomes should be anticipated from courses containing vendor training. The outcome of a public course, which incorporates vendor training, will include the possibility of dual outcomes, an AQF and vendor certification.

Titles of Qualifications

The qualification title indicates the AQF level of each qualification, for example, Certificate II equates to AQF 2 and so on. The industry descriptor in the title, Information Technology, is followed by the functional group title, for example, networking.

Each qualification is given a national code, such as, ICA20199. The ICA indicates the qualification is identified in this Training Package, the 2, means it is a Certificate II qualification, the 01, is the unique number for that particular qualification and the 99 indicates the year in which the Training Package was endorsed.

Customisation of Qualifications

Customisation contains two components, the customisation of individual units of competency and the customisation of qualifications. Customisation may be required to meet individual enterprise requirements and/or regional specific requirements. During the development of the competency standards it became apparent that by going to a particular level of detail the competencies would become product and version specific. This would mean competencies in many areas would date within twelve to eighteen months; the number of units could become endless and significantly increase the cost of maintaining the competency standards and Training Package overall. It was agreed that the best approach would be to come up one level of detail and make the units more generic, rather than product or technology specific. This approach was discussed at each of the national consultations and supported by those attending.

The generic nature of the units of competency means that individual enterprises can customise the individual units to incorporate the particular products, technologies and systems they employ in their workplace. This will not detract from the integrity of the competency standards.

Each qualification can be customised by contextualising the unit groupings to meet particular vendor products, technologies and versions. For example, one workplace may have a Novell network and another might have a Microsoft NT, but each enterprise could customise the Certificate III in Information Technology (Network Administration) ICA30499 to incorporate the required brand and product version for each particular enterprise. Most qualifications identified in this Training Package can incorporate units from other Training Packages: this has been left open to acknowledge the variety of environments in which Information Technology is employed. For example, one workplace may request an individual to undertake a Certificate III in Information Technology (Network Administration) ICA30499, and incorporate two elective units from the (ICT97) Telecommunications Training Package. The workplace may consider the following elective units, (ICTTC014A) Handover systems and equipment to customer satisfaction, (ICTTC053A) Train customers, to be relevant to the enterprise's operations. Another individual may wish to undertake a Certificate III in Information Technology (Software Applications) ICA30299. The person may be working primarily in an office environment and decide to incorporate an elective unit from the (BSB01) Business Services Training Package, for example, the following unit, (BSBADM504A) Plan or review office administration systems to meet changing demands.

Qualifications and Pathways

The movement of workers within and across IT is readily acknowledged as being horizontal as well as vertical. The IT workforce is highly mobile, though there appears to be little intelligence on why, where or how people are moving. The following qualifications are designed to be as flexible as possible to reflect the dynamic nature of the IT workforce. The possibility of completing all of these qualifications through a New Apprenticeship pathway has been accommodated; however, state and federal policy determinations may influence the availability and/or desirability of some qualifications to be undertaken as New Apprenticeships. The qualifications are structured to achieve a desired mix of competencies in areas where there is the highest probability of an immediate employment outcome.

Certificate I in Information Technology ICA10101 The Certificate I in Information Technology is seen as an equity and access course designed to attract new people into IT courses. People gaining a basic qualification in IT (as opposed to Business Services) are more likely to continue on in a higher IT course rather than switch across to IT from Business Services. This qualification can also be obtained during Year 10 in secondary school.

Certificate I in Information Technology (E-Consumer) ICA10201 This qualification is designed to deliver foundation employment and general computing skills which enable participation in the knowledge economy within an online environment. Whilst there are a number of competency standards shared with the other ICA99 Certificate I, the e-consumer qualification is designed to increase the number of individuals participating in an online environment as distinct from enabling people to operate and use a computer.

Certificate II in Information Technology (Applications) ICA20201 provides fundamental skills in IT and is seen as foundation skills for anyone. This qualification can be obtained through a variety of on and off the job combinations. This qualification can also be obtained during the final years of secondary school education.

Certificate II in Information Technology ICA20199 provides fundamental skills in IT and is seen as foundation skills for anyone. This qualification can be obtained through a variety of on and off the job combinations. This qualification can also be obtained during the final years of secondary school education.

Certificate III in Information Technology (Software Applications) ICA30199 provides skills in advanced use of applications. A person with these competencies could provide basic software support to a unit or branch within an organisation. Once completing this group of competencies, an individual should hold the suggested entry competencies for the Certificate IV in Information Technology (Client Support). This qualification can be obtained through a variety of on and off the job combinations.

Suggested entry competencies:

During the national consultations for the Client Support Training Package and this, the Information Technology Training Package, the following units of competency were seen as being fundamental for anyone working with information technology:

ICAITTW001B Work effectively in an Information Technology environment; ICAITTW002B Communicate in the workplace; ICAITU004C Apply Occupational Health and Safety procedures; ICAITU005C Operate computer hardware; ICAITU006C Operate computing packages; ICAITU007B Maintain equipment & consumables; ICAITU012C Design organisational documents using commercial computing packages; ICAITU013C Integrate commercial computing packages; ICAITS014C Connect hardware peripherals; ICAITS015B Install software applications; ICAITS017C Maintain system integrity

Certificate III in Information Technology (General) ICA30299 provides skills in basic use of a range of technologies. A person competent in these competencies could provide basic diagnostic support in an organisation with a range of technologies. Once completing this group of competencies, an individual should hold the suggested entry competencies for the Certificate IV in Information Technology (Database Administration), Certificate IV in Information Technology (Multimedia), Certificate IV in Information Technology (Technical Support) or Certificate IV in Information Technology (Programming).

Suggested entry competencies:

ICAITTW001B Work effectively in an Information Technology environment; ICAITTW002B Communicate in the workplace; ICAITU004C Apply Occupational Health and Safety procedures; ICAITU005C Operate computer hardware; ICAITU006C Operate computing packages; ICAITU007B Maintain equipment & consumables; ICAITU012C Design organisational documents using commercial computing packages;

ICAITU013C Integrate commercial computing packages; ICAITS014C Connect hardware peripherals; ICAITS015B Install software applications; ICAITS017C Maintain system integrity.

Certificate III in Information Technology (Network Administration) ICA30399 provides skills in network administration. A person competent in these competencies could work as a network administrator within an organisation. There are several vendor courses that equate to this qualification. A person completing this group of competencies should hold the suggested entry competencies for the Certificate IV in Information Technology (Network Management). This qualification can be obtained through a variety of on and off the job combinations.

Suggested entry competencies:

ICAITTW001B Work effectively in an Information Technology environment; ICAITTW002B Communicate in the workplace; ICAITU004C Apply Occupational Health and Safety procedures; ICAITU005C Operate computer hardware; ICAITU006C Operate computing packages; ICAITU007B Maintain equipment & consumables; ICAITU012C Design organisational documents using commercial computing packages; ICAITU013C Integrate commercial computing packages; ICAITS014C Connect hardware peripherals; ICAITS015B Install software applications; ICAITS017C Maintain system integrity.

Certificate IV in Information Technology (Client Support) ICA40199 provides skills for support roles within organisations. A person competent in these competencies could work in a range of support roles. This qualification can be obtained through a variety of on and off the job combinations.

Suggested entry competencies:

ICAITTW001B Work effectively in an Information Technology environment; ICAITTW002B Communicate in the workplace; ICAITU004C Apply Occupational Health and Safety procedures; ICAITU005C Operate computer hardware; ICAITU006C Operate computing packages; ICAITU007B Maintain equipment & consumables; ICAITU012C Design organisational documents using commercial computing packages; ICAITU013C Integrate commercial computing packages; ICAITS014C Connect hardware peripherals; ICAITS015B Install software applications; ICAITS017C Maintain system integrity.

Certificate IV in Information Technology (Database Administration) ICA40299 provides skills for database administration. A person competent in these competencies could work in database administration for an organisation. There are several vendor courses that service this qualification.

Suggested entry competencies:

ICAITTW001B Work effectively in an Information Technology environment; ICAITTW002B Communicate in the workplace; ICAITU004C Apply Occupational Health and Safety procedures; ICAITU005C Operate computer hardware; ICAITU006C Operate computing packages; ICAITU007B Maintain equipment & consumables; ICAITU012C Design organisational documents using commercial computing packages; ICAITU013C Integrate commercial computing packages; ICAITS014C Connect hardware peripherals; ICAITS015B Install software applications; ICAITS017C Maintain system integrity.

Certificate IV in Information Technology (Network Management) ICA40399 provides skills for network management. A person competent in these competencies could work as a network manager within an organisation. This qualification can be obtained through a variety of on and off the job combinations. A person completing this group of competencies should hold the suggested entry competencies for the Diploma of Information Technology (Network Engineering).

Suggested entry competencies:

ICAITTW001B Work effectively in an Information Technology environment; ICAITTW002B Communicate in the workplace; ICAITU004C Apply Occupational Health and Safety procedures; ICAITU005C Operate computer hardware; ICAITU006C Operate computing packages; ICAITU007B Maintain equipment & consumables; ICAITU012C Design organisational documents using commercial computing packages; ICAITU013C Integrate commercial computing packages; ICAITS014C Connect hardware peripherals; ICAITS015B Install software applications; ICAITS017C Maintain system integrity; ICAITS025B Run standard diagnostic tests; ICAITS121A Administer network peripherals; ICAIT0S31B Provide advice to clients; ICAITS032B Provide network systems administration; ICAITD128A Create user & technical documentation; ICAITS120B Administer and configure a network operating system; ICAITI101B Install and manage network protocols; ICAITS024C Provide basic system administration.

Certificate IV in Information Technology (Multimedia) ICA40499 provides skills in designing, developing and utilising basic multimedia briefs. A person competent in these competencies could work as a web designer or on-line service support. A person completing this group of competencies should hold the suggested entry competencies for the Diploma of Information Technology (Multimedia). This qualification can be obtained through a variety of on and off the job combinations.

Suggested entry competencies:

ICAITTW001B Work effectively in an Information Technology environment; ICAITTW002B Communicate in the workplace; ICAITU004C Apply Occupational Health and Safety procedures; ICAITU005C Operate computer hardware; ICAITU006C Operate computing packages; ICAITU007B Maintain equipment & consumables; ICAITU012C Design organisational documents using commercial computing packages; ICAITS017C Maintain system integrity; ICAITS025B Run standard diagnostic tests.

Certificate IV in Information Technology (Technical Support) ICA40599 provides skills for support roles within organisations. A person competent in these competencies could work in a range of technical support roles. A person completing this group of competencies should hold the suggested entry competencies for the Diploma of Information Technology (Systems Administration). This qualification can be obtained through a variety of on and off the job combinations.

Suggested entry competencies:

ICAITTW001B Work effectively in an Information Technology environment; ICAITTW002B Communicate in the workplace; ICAITU004C Apply Occupational Health and Safety procedures; ICAITU005C Operate computer hardware; ICAITU006C Operate computing packages; ICAITU007B Maintain equipment & consumables; ICAITU012C Design organisational documents using commercial computing packages; ICAITU013C Integrate commercial computing packages; ICAITS014C Connect hardware peripherals; ICAITS015B Install software applications; ICAITS017C Maintain system integrity, ICAITS025B Run standard diagnostic tests; ICAITD128A Create user & technical documentation.

Certificate IV in Information Technology (Programming) ICA40699 provides skills for basic programming requirements. A person competent in these competencies could work as a junior team member in an implementation project or in a technical support role. A person completing this group of competencies should hold the suggested entry competencies for the Diploma of Information Technology (Software Development).

Suggested entry competencies:

ICAITTW001B Work effectively in an Information Technology environment; ICAITTW002B Communicate in the workplace; ICAITU004C Apply Occupational Health and Safety procedures; ICAITU005C Operate computer hardware; ICAITU006C Operate computing packages; ICAITU007B Maintain equipment & consumables; ICAITU012C Design organisational documents using commercial computing packages; ICAITU013C Integrate commercial computing packages; ICAITU018C Develop macros and templates for clients using standard products ICAITS014C Connect hardware peripherals; ICAITS015B Install software applications; ICAITS017C Maintain system integrity; ICAITS025B Run standard diagnostic tests; ICAITD128A Create user & technical documentation; ICAITS031B Provide advice to clients.

Certificate IV Information Technology (Systems Analysis and Design) ICA40799 provides skills for business analysis and design. . A person competent in these competencies could work as a junior team member in a range of IT departments or IT projects. A person completing this group of competencies should hold the suggested entry competencies for the Diploma of Information Technology (Business Analysis).

Suggested entry competencies:

ICAITTW001B Work effectively in an Information Technology environment; ICAITTW002B Communicate in the workplace; ICAITU004C Apply Occupational Health and Safety procedures; ICAITU005C Operate computer hardware; ICAITU006C Operate computing packages; ICAITU007B Maintain equipment & consumables; ICAITU012C Design organisational documents using commercial computing packages; ICAITU013C Integrate commercial computing packages; ICAITS014C Connect hardware peripherals; ICAITS015B Install software applications; ICAITS017C Maintain system integrity; ICAITS025B Run standard diagnostic tests; ICAITD128A Create user & technical documentation; ICAITS031B Provide advice to clients.

Certificate IV in Information Technology (Helpdesk) ICA40801 provides skills for working in as a remote Helpdesk person in a Customer Contact Centre.

Suggested entry competencies:

ICAITTW001B Work effectively in an Information Technology environment; ICAITTW002B Communicate in the workplace; ICAITU004C Apply Occupational Health and Safety procedures; ICAITU005C Operate computer hardware; ICAITU006C Operate computing packages; ICAITU007B Maintain equipment & consumables; ICAITU012C Design organisational documents using commercial computing packages; ICAITU013C Integrate commercial computing packages; ICAITS014C Connect hardware peripherals; ICAITS015B Install software applications; ICAITS017C Maintain system integrity; ICAITS025B Run standard diagnostic tests; ICAITD128A Create user & technical documentation; ICAITS031B Provide advice to clients.

Certificate IV in Information Technology (Telesales) ICA40901 provides skills required for working in telesales selling equipment and services. A person working in this role would work within a Customer Contact Centre.

Suggested entry competencies:

ICTTC200A Use telecommunications technology in receiving and making calls in the call centre environment, ICTTC201A Use basic computer technology to process enterprise and customer data in a call centre environment, ICTTC202A Use specific enterprise systems to satisfy customer requirements, ICTTC204A Provide quality customer service, ICTTC213A Provide support and assistance to customers on matters relating to particular product(s)/service.

Certificate IV in Information Technology (Website Administration) ICA41001 is designed to provide the skills and competence to effectively manage and maintain a website. Depending on the level of responsibility and the particular job role involved a Web Administrator graduate would be expected to manage the various technical aspects of the website including technical performance analysis and reporting, development of protocols for transferring content, maintenance of standards and security, building basic sites and creating basic script and other technical elements for a website. Additionally, such a role may also include developing custom programs to extend the function of the website and administering the day to day operation of the server software, monitoring logs and usage statistics, adjusting configuration settings and backing up the system.

Electives:

The electives in this qualification allow for a degree of specialisation, for example in database work, content development or basic programming. The provision for selecting some electives from elsewhere in the Training Package enables other IT oriented skill areas (e.g. design or e-business database) to also be included in the qualification.

Job Roles:

Examples of contemporary Job Roles might include: Client Support, Internet/Intranet Administrator, Internet Webmaster, Reporting Analyst (US), Web Development Officer, Website Coordinator, Website or Web Administrator

Relations with BST qualifications:

Business and IT platforms and work processes have converged with points of overlap. The employment outcomes of the IT and Business Services Training Packages can be similar but are significantly different in the context and emphasis depending on the learner's industry. This qualification may have some overlap with BSA41101 Certificate IV in E-Business.

Relations with other IT qualifications:

This qualification can provide:

- 3 units of competence towards the Diploma of Information Technology (Project Management).
- 3 to 5 units of competence towards the Diploma of Information Technology (Website Development)
- 2 to 4 units of competence towards the Diploma of Information Technology (Database Design and Development)
- 3 units of competence towards the Advanced Diploma of Information Technology (E-Learning Development)

Pathways:

An effective pathway into this qualification could be from the existing Certificate III in Information Technology (General) ICA30299 or Certificate III (Network Administration) ICA30399.

Certificate IV Information Technology (Website Design) ICA41101 This qualification is configured to contain a higher proportion of design competencies than the Certificate IV Website Administration as evidenced by more design oriented competencies and a number of imported instructional design and multimedia standards.

This role involves designing and constructing web pages and creating the look and feel of the site. The role creates, in consultation with the client, the flow or “story” of the website and how information will be displayed.

The role requires training in the specific design tools, but not necessarily a technical IT background, unless there is an expectation that the person will also undertake the building of any database which can sit behind a webpage. The tools used are user friendly. It is possible to come into this area without qualifications but this is likely to be difficult. Individual job roles appraised spanned a range of IT technical expertise.

From a technical perspective, a Web Designer will make use of graphical knowledge, knowledge of specific technologies and various platforms, creative flair and ability to put down an image, layout and design skills, technical knowledge of hardware, software and specific web languages. The provision for selecting some electives from elsewhere in the Training Package enables other IT oriented skill areas (e.g. network development or e-business strategy) to also be included in the qualification.

Job Roles:

Examples of contemporary job roles might include: E-business Technical Consultant, E-commerce Consultant, Multimedia Content Author, Multimedia Graphic Designer, Online Producer, Tester, Web Applications Developers, Web Developer/Technical Writer, Web Graphic Designer, Webmaster/Assistant, Website Coordinator.

Relations with BST qualifications:

Business and IT platforms and work processes have converged with points of overlap. The employment outcomes of the IT and Business Services Training Packages can be similar but are significantly different in the context and emphasis depending on which industry a learner is part of. This qualification may have some overlap with BSB41101 Certificate IV in E-Business

Relations with other IT qualifications:

This qualification can provide:

- 3 units of competence towards the Diploma of Information Technology (Project Management)
- 4 to 6 units of competence towards the Diploma of Information Technology (Website Development)
- 2 to 4 units of competence towards the Diploma of Information Technology (Database Design and Development)
- 6 to 9 units of competence towards the Advanced Diploma of Information Technology (E-Learning Development)

Pathways:

Possible pathways from within the IT Training Package could be from the Certificate II ICA20199 or Certificate II (Applications) ICA20201 or via the Certificate III (Software Applications) ICA30199 or Certificate III (General) ICA30299. There may be some cross over from the Certificate IV (Multimedia) ICA40499.

Diploma of Information Technology (Systems Administration) ICA50199 provides skills for the management and maintenance of systems. A person competent in these competencies could work in the area of systems management. There are several suggested entry competencies identified in the competency groupings, which would assist a person to complete this course.

Suggested entry competencies:

ICAITS025B Run standard diagnostic tests; ICAITD128A Create user & technical documentation; ICAITS031B Provide advice to clients; ICAITPM129A Apply skills in project integration; BSX154L403 Apply skills in time management; BSX154L405 Apply skills in quality management; ICAITS107B Rectify system faults on a live system; ICAITS021C Connect internal hardware components; ICAITTW027B Relate to clients on a business level; ICAITS109B Evaluate system status; ICAITU019C Migrate to new technology; ICAITS023B Provide one to one instruction; ICAITS022B Determine client computing problems and action.

Diploma of Information Technology (Software Development) ICA50299 provides skills in programming and software development. A person competent in these competencies could work in the area of programming. There are several suggested entry competencies identified in the competency groupings, which would assist a person to complete this course.

Suggested entry competencies:

ICAITS025B Run standard diagnostic tests; ICAITD128A Create user & technical documentation; ICAITS031B Provide advice to clients; ICAITPM129A Apply skills in project integration; BSX154L403 Apply skills in time management; BSX154L404 Apply skills in cost management; BSX154L405 Apply skills in quality management; ICAITAD058A Apply skills in object orientated design; ICAITB075A Use a library or pre-existing component; ICAITTW027B Relate to clients on a business level; ICAITB064B Prepare software development review; ICAITB070B Create code for applications, ICAITB076B Implement configuration management.

Diploma of Information Technology (Business Analysis) ICA50399 provides skills in business analysis and information systems. A person competent in these competencies could work in the area of information systems, business analysis. There are several suggested entry competencies identified in the competency groupings, which would assist a person to complete this course.

Suggested entry competencies:

ICAITS025B Run standard diagnostic tests; ICAITD128A Create user & technical documentation; ICAITS031B Provide advice to clients; ICAITPM129A Apply skills in project integration; BSX154L403 Apply skills in time management; BSX154L404 Apply skills in cost management; BSX154L405 Apply skills in quality management; ICAITAD048C Develop configuration management; ICAITSP037B Contribute to the development of a strategy plan; ICAITAD041B Determine client business expectations and needs; ICAITTW027B Relate to clients on a business level.

Diploma of Information Technology (Network Engineering) ICA50499 provides skills in network engineering. A person competent in these competencies could work in the area of network engineering. There are several suggested entry competencies identified in the competency groupings, which would assist a person to complete this course.

Suggested entry competencies:

ICAITS025B Run standard diagnostic tests; ICAITU127B Support system software; ICAITD128A Create user & technical documentation; ICAITS031B Provide advice to clients; ICAITTW027B Relate to clients on a business level.

Diploma of Information Technology (Multimedia) ICA50599 provides skills in designing, developing, utilising and securing multimedia. A person competent in these competencies could work in the area of online services, multimedia development. There are several suggested entry competencies identified in the competency groupings, which would assist a person to complete this course.

Suggested entry competencies:

ICAITS025B Run standard diagnostic tests; ICAITD128A Create user and technical documentation; ICAITS031B Provide advice to clients; ICAITTW027B Relate to clients on a business level.

Diploma of Information Technology (Website Development) ICA50601 Graduates from the Diploma (Website Development) function at a senior operative level with responsibilities spanning design, development, site performance, database integration through to implementation and acceptance testing.

Depending on the level of responsibility and the particular job roles involved, duties may include integration of internal business systems with a browser interface, designing the processes and architecture of an enterprise's Internet presence, aligning the client's web presence with its business strategy and specifying e-business application system requirements. At a project management level, a person may provide advice to business units and coordinate related activities, coordinate the on-time, on-budget delivery of e-business solutions or oversee the technical and creative team from conception to delivery.

The recent development of the web/internet technologies and e-business as an emerging career stream within the IT industry has meant that there are not traditional career paths in place. Typically, Web Developers have

experience in programming and systems design, with e-commerce/e-business roles generally calling for experience in either business systems analysis and systems development.

Job Roles:

Examples of contemporary Job Roles might include: Analyst/Systems Analyst, Analyst Programmer, E-Commerce Programmer, E-Commerce Architect, eServices – Web Programmer, Intranet Engineer, Java Developer, Perl Programmer, Project Manager, Senior Architect – Ecommerce, Solutions/Applications Architect, Web Usability Engineer (US), Web Programmer, Webmaster/”Internet Developer”, Web Development Manager, Web Architect, Web Programmer/Software Engineer, Web Developer, WAP Designer/Developer, Web Production Manager (CANADA).

Pathways:

Pathways from existing IT Training Package qualifications might include Certificate IV (Systems Analysis and Design) ICA40799 or Certificate IV (Programming) ICA40699. The qualification has some similarities with the existing Diploma (Business Analysis) and Diploma (Software Development).

Suggested entry competencies:

In view of the technical nature of this qualification, it is suggested that candidates for this qualification be able to demonstrate competency in the following:

- ICAITT184A Ensure site usability
- ICAITT183A Confirm accessibility of web site design
- ICAITB135A Create a simple mark-up language document to specification
- ICAITU207A Apply a web-authoring tool to convert client data
- ICAITB137A Produce basic client side script for dynamic web pages

Diploma of Information Technology (Internetworking) ICA50701 At an individual level, the standards composition of the Internetworking Diploma reflects the integrative nature of the role with emphasis on gateways, bridges/switches and installation/configuration of routers and networks. This would be unlikely to suit an entry level position unless the individual had other networking or installation/configuration experience. The provision for selecting some electives from elsewhere in the Training Package enables other IT oriented skill areas (eg. business development or e-business strategy) to also be included in the qualification.

To be successful, integrators and internetworking specialists cannot operate in a vacuum, they need to be familiar with the offerings of technology providers that have the product set on which to build the solutions and be experienced and accountable as their work is often pivotal to a wider project or business strategy

Job Roles:

Depending on the level of responsibility some examples of contemporary job roles could include: Configuration Specialist, E-Commerce Consultant, Enterprise Application Integration Consultants (CANADA), E-Security Analyst/Manager, Integration Analyst, Integration Centre Specialist, Internet Administrator, Internet Systems Administrator, Intranet Administrator, Intranet Engineer, Middleware Integration Specialist, Network/systems Engineer, Senior Java Developer (major systems integration), Solutions Architect, Team Leader QA/Software testing, Test Analyst, Tester, Web Tester.

Diploma of Information Technology (E-Business Development) ICA50801 Note: there are fundamental differences between the Diploma and Advanced Diploma (both in E-Business Development) which would be recognised in particular job roles in business. Differences might include the level of hands on implementation versus strategic thinking or the day to day management versus policy development aspects which may be evident in some roles. Similarly, the IT qualifications would have a more fundamental IT “technical” base when compared with related Business Services qualifications at the same levels.

Job Roles:

Depending on the level of responsibility some common job titles could be as follows: Applications Architect, E-Business Development Manager, E-Commerce Architect, E-Commerce Consultant, e-Learning Business Development Manager, Manager Business Development, Manager, Project Development for E-commerce, Programme Delivery Manager, Project Manager, Web Business Development Manager, Web Developer, Web Development Manager.

Relations with BST qualifications:

Business and IT platforms and work processes have converged with points of overlap. The employment outcomes of the IT and Business Services Training Packages can be similar but are significantly different in the

context and emphasis depending on which industry a learner is part of. This qualification may have some overlap with BSA51101 Diploma of E-Business and BSB51201 Diploma of Strategic E-Business Development.

This qualification provides for the incorporation of 6 units of competency from Diploma level in either the Financial Services Training Package or the Business Services Training Package in recognition of the need for heightened business and financial acumen in some job roles. Additionally, there are a number of Business Services e-business competency standards as part of the electives selection in recognition of the need for well-rounded individuals in this field. The provision for selecting some electives from elsewhere in the Training Package enables other IT oriented skill areas (eg. e-learning or e-business strategy) to also be included in the qualification.

Relations with other IT qualifications:

This qualification can provide:

- 5 to 6 units of competence towards the Advanced Diploma of Information Technology (E-Business Analysis); and
- 4 to 7 units of competence towards the Advanced Diploma of Information Technology (E-Business Development).

Pathways:

This qualification could have three distinct pathways into it:

- a person with a business background who is working in an IT environment (in an IT company or with the technology implementation of an e-business solution); or
- an IT technical person who is working in a business environment with the technology implementation of an e-business solution; or
- an individual who has completed a lower level national IT Training Package qualification.

Diploma of Information Technology (Knowledge Management) ICA50901 People managing the acquisition, analysis and distribution of information and knowledge need to have both a broad business perspective and a deep understanding of underpinning systems and processes.

In the context of growing commercial needs in this area, the IT Knowledge Management qualification is designed to provide individuals with the fundamental IT skills to develop, implement and manage a range of systems, procedures and work practices to capture, share and leverage business information and knowledge. Based on a core of strong IT skills covering fields such as data modelling, database design and warehousing, the qualification also recognises other necessary skills by incorporating cataloguing, privacy, ethics, communication and business strategy and policy formulation. The provision for selecting some electives from elsewhere in the Training Package enables other IT oriented skill areas (eg. business development or e-business strategy) to also be included in the qualification.

Job Roles:

Several examples of contemporary Job Roles could be: Business Intelligence Consultant, IS Manager, IT Manager, Information Architect, Knowledge Manager, Report Writer.

Relations with other IT qualifications:

This qualification can provide:

- 10 to 16 units of competence towards the Advanced Diploma of Information Technology (E-Business Analysis);
- 1 to 4 units of competence towards the Advanced Diploma of Information Technology (Project Management); and
- 5 to 7 units of competence towards the Advanced Diploma of Information Technology (E-Learning Development).

Diploma of Information Technology (Database Design and Development) ICA51001 is designed to deliver an individual that has a detailed knowledge of the technical intricacies of database development and design, but who is also well-rounded in a range of other competencies such as change management, process re-engineering, QA, business needs analysis and client expectations. The new e-business core units are drawn primarily from the Analysis and Design and Built streams of the IT Training Package which reflects the technical nature of this qualification. The provision for selecting some electives from elsewhere in the Training Package enables other IT oriented skill areas (eg. business development or e-business strategy) to also be included in the qualification.

Job Roles:

Some examples of contemporary Job Roles include: A/P Consultant: Data warehousing and Business Intelligence, Business Intelligence/Data Warehousing Consultants, Coldfusion Developer, Database Developer, Database Specialist, Data Warehouse Trainer, Designer, Developer, Senior Project manager – Datawarehousing CRM, Website Group Manager (US)

Relations with other IT qualifications:

This qualification can provide:

- 4 to 12 units of competence towards the Advanced Diploma of Information Technology (E-Security)
- 8 to 15 units of competence towards the Advanced Diploma of Information Technology (E-Business Analysis)

Pathways:

The Certificate IV in Information technology (Database Administration) could provide a pathway into this new e-business Diploma level qualification.

Diploma of Information Technology (Project Management) ICA51101 Typically, IT project leaders and managers have experience as business analysts and/or research analysts and programmer / analysts although other professionals from line functions are sometimes trained in the project management discipline and promoted into project management positions. The title of Project Director is generally reserved for senior and very experienced Project Managers, often with multi-million dollar or multiple projects under their control. This would be more appropriate for the Advanced Diploma level qualification.

The Diploma of Project Management is structured to include a significant proportion of Business Services project management competency standards, whilst maintaining a level of IT technical competence with the other core units. At the electives level, there are a choice of technical specialities to suit the individual or enterprise including database, server and website design and architecture. Credibility in the technical component of projects is most important in the IT sector. The provision for selecting some electives from elsewhere in the Training Package enables other IT oriented skill areas (eg. business development or e-business strategy) to also be included in the qualification.

Job Roles:

Examples of contemporary Job Roles could include: E-Comm Production Support Manager (RF), IT Business Manager, IT Procurement Manager, IS Procurement Manager, Online Production Co-Ordination, Project Manager – Development, Project Manager (Small Projects), Quality Assurance manager – IT Projects.

Relations with BST qualifications:

The Project Management qualification incorporates a significant number of Business Services project management competencies both in core and electives.

Relations with other IT qualifications:

This qualification can provide 6 to 15 units of competence towards the Advanced Diploma of Information Technology (E-Business Analysis).

Advanced Diploma of Information Technology (E-Business Development) ICA60101 Note: there are fundamental differences between the Diploma and Advanced Diploma (both in E-Business Development) which would be recognised in particular job roles in business. Differences might include the level of hands on implementation versus strategic thinking or the day to day management versus policy development aspects which may be evident in some roles. Similarly, the IT qualifications would have a more fundamental IT “technical” base when compared with related Business Services qualifications at the same levels. A number of the following positions require “technical expertise” or “solutions knowledge” in IT technologies.

Job Roles:

Some examples of contemporary job roles might include: Applications Architect, Business Development Manager Back End Software, Business Development Manager BroadBand & On-line Services, Business Development Manager – Ecommerce, E-Business Architect, E-Business Development Manager, E-Commerce Architect, Incubator/Early Stage Company Specialist eBusiness, IT Strategy & Architecture Consulting Manager (CANADA), Major Account Manager, Manager Business Development, Manager, Project Development for E-commerce, Project Manager, Web Business Development Manager, Web Project Leader – Business Development

Relations with BST qualifications:

Business and IT platforms and work processes have converged with points of overlap. The employment outcomes of the IT and Business Services Training Packages can be similar but are significantly different in the context and emphasis depending on which industry a learner is part of. This qualification may have some overlap with BSB60701 Advanced Diploma of E-Business and BSB62001 Advanced Diploma of Strategic E-Business Development

This qualification provides for the incorporation of 6 units of competency from Diploma level in either the Financial Services Training Package or the Business Services Training Package in recognition of the need for heightened business and financial acumen in some job roles. Additionally, there are a number of Business Services e-business competency standards as part of the electives selection in recognition of the need for well-rounded individuals in this field. The provision for selecting some electives from elsewhere in the Training Package enables other IT oriented skill areas (eg. e-business strategy) to also be included in the qualification.

Advanced Diploma of Information Technology (E-Business Analysis) ICA60201 In the case of this qualification, the configuration of standards is based around a technical IT e-business core with several Business Services knowledge management and business innovation units, plus a suite of electives which allow for either an IT or business specialisation to suit the individual. The provision for selecting some electives from elsewhere in the Training Package enables other IT oriented skill areas (eg. business development) to also be included in the qualification.

The role of business analysts is critical in contemporary system development as a key partner with project managers and system developers. Business analysts assist in providing more detailed project objectives, system requirements, business process analysis and cost-benefit analysis. They typically utilise an integrated set of analysis and modelling techniques designed to help the business analyst understand and document the complex areas of project scope, objectives, added value or benefit expectations. There are also powerful modelling tools for translating the business objectives into system requirements. Business analysis differs from traditional information systems analysis because of its focus. Business analysis is about identifying and understanding the problem and the impact of the solution on the organisation's business.

The business analyst is usually a more senior position in enterprises. Professional qualifications will vary but a good understanding of IT&T is essential. In a number of advertised positions, employers do specify the essential or desirable IT background for their particular role for example, database deployment, IT consulting or e-Procurement systems. Invariably, there is a strong business focus sometimes with a marketing or sales bias.

Job Roles:

Some examples of contemporary job titles are: Business Analyst, Business Development Manager, Business Process Re-engineering Consultant, E-Business Analyst, e-Procurement specialist, IT Change Manager, Principal Consultant, Senior Business Solutions Manager, Senior HR Manager – e-HR/HRIS/System, Strategic Business Consultant, Systems Analyst, Technical Consultant

Relations with BST qualification:

Business and IT platforms and work processes have converged with points of overlap. The employment outcomes of the IT and Business Services Training Packages can be similar but are significantly different in the context and emphasis depending on which industry a learner is part of. This qualification may have some overlap with BSB60701 Advanced Diploma of E-Business and BSB62001 Advanced Diploma of Strategic E-business Development

Advanced Diploma of Information Technology (E-Learning Development) ICA60301 This qualification could be described as a “blended” qualification. Based on a core of IT analysis, design and build competencies, it adds a significant number of “training” standards from the Business Services package as well as several CREATE multimedia standards to give a 60/40/20 blend. This qualification has a design and development focus and employs the appropriate IT technical foundations for online and interactive delivery.

The qualification includes electives from an extensive array of IT including security, interface and database standards or more specialised multimedia and digital application standards in order to provide for a sufficient degree of specialisation. The provision for selecting some electives from elsewhere in the Training Package enables other IT oriented skill areas (eg. business development or e-business strategy) to also be included in the qualification.

Job Roles:

Depending on the level of responsibility some common job titles could include: CBT Developer, Competency Manager/Deployment manager, Consultant – HR, Learning & Development, E-Commerce Project Manager, eLearning Consultant, E-Learning Developer, Instructional designer (US), IT Project Management Trainers, Multimedia Developer, Online Producer, Practice Manager – eLearning , Training Developer/Team Leader – CBT, Web Technical Writer.

Suggested entry competencies:

In view of the technical nature of this qualification it is suggested that candidates for this qualification be able to demonstrate competency in the following:

- ICAITT184A Ensure site usability
- ICAITT183A Confirm accessibility of web site design
- ICAITU207A Apply a web-authoring tool
- ICAITB135A Create a simple mark-up language document to specification
- ICAITB137A Produce basic client side script for dynamic web pages

Advanced Diploma of Information Technology (E-Security) ICA60401 Within the IT Training Package, security of networks and systems have always had a priority. A number of existing IT standards are of a “generic” nature with application across many IT roles and accordingly these form part of the core of this new Advanced Diploma qualification. Additionally, a number of new IT standards in the areas of risk management, websites and privacy have been developed through the course of the e-business project and are also included in the core along with several more traditional Property Services units. A number of server, network and interface electives are offered to allow a further level of specialisation as required. The facility for selecting some electives from elsewhere in the Training Package also enables other IT oriented skill areas (eg. programming or database development) to also be included in the qualification.

Job Roles:

At an IT “technical” level, roles become quite complex and involve business, data and Internet security. The security of online transactions and associated records is of immense interest to business and individuals alike. Depending on the level of responsibility some common job titles could include: E-Risk manager, Internal Computer Audit Specialist, Information Risk Manager (IRM), IT Security Consultants, IT Security Person, Lead Security Analyst, Network Security, Security Administrator, Security Engineer, Senior Software Engineer (Security), Systems Security Analyst, Web Security Administrator.

Advanced Diploma of Information Technology (Project Management) ICA60501 This qualification is structured to include a significant proportion of Business Services project management competency standards, whilst maintaining a level of IT technical competence with the other core units. The Advanced Diploma project management standards emphasise the “management” of the various project elements such as quality, time and cost, whereas the Diploma level “guides application”. Similarly, where Business Services standards have been introduced, they are at a more senior management and strategic level than those of an implementation nature in the Diploma.

At the electives level, there are a choice of some technical specialities to suit the individual or enterprise but there are also a significant number of e-business strategy and planning units which emphasises the slightly more managerial nature compared with the Diploma level qualification. The provision for selecting some electives from elsewhere in the Training Package enables other IT oriented skill areas (eg. business development or e-business strategy) to also be included in the qualification.

Typically, IT project leaders and managers have experience as business analysts and/or research analysts and programmer/analysts although other professionals from line functions are sometimes trained in the project management discipline and promoted into project management positions.

Job Roles:

Project Managers have the responsibility for scheduling, controlling and directing the resources, people, funding and facilities to achieve the customer's business objectives for the particular information technology project. These projects may cover the full spectrum of the IT&T industry including software and hardware development, web development or system development. Project Managers are also responsible for assembling the team as well as the transitioning of the team to other projects at the end. The "take off" and "landing" of the project are critical management activities.

Depending on the level of responsibility some common job titles could include: E-Business Project Manager, IS Manager, IT Manager, Middleware Project Manager, Project Director, Project Manager, Senior Project Manager (SOE).

New Apprenticeships

Commonwealth and State government policy generally determines the implementation and funding of Traineeships and New Apprenticeships. All of the following qualifications could be registered as Traineeships with the State Training Authorities. Market forces will determine the implementation of Traineeships, thus providing a direct correlation between learning pathways and employment outcomes.

Certificate II in Information Technology
Certificate II in Information Technology (Applications)
Certificate III in Information Technology (Software Applications)
Certificate III in Information Technology (Network Administration)
Certificate IV in Information Technology (Client Support)
Certificate IV in Information Technology (Database Administration)
Certificate IV in Information Technology (Network Management)
Certificate IV in Information Technology (Multimedia)
Certificate IV in Information Technology (Technical Support)
Certificate IV in Information Technology (Programming)
Certificate IV in Information Technology (Systems Analysis and Design)
Certificate IV in Information Technology (Helpdesk)
Certificate IV in Information Technology (Telesales)
Certificate IV in Information Technology (Website Administration) #
Certificate IV in Information Technology (Website Design) #

Subject to funding, several Diploma qualifications could also be delivered as New Apprenticeships or Traineeships. Note: it has been found that the IT industry generally relates more readily to the term Cadetships, which are being implemented in a number of states and territories.

Recognition

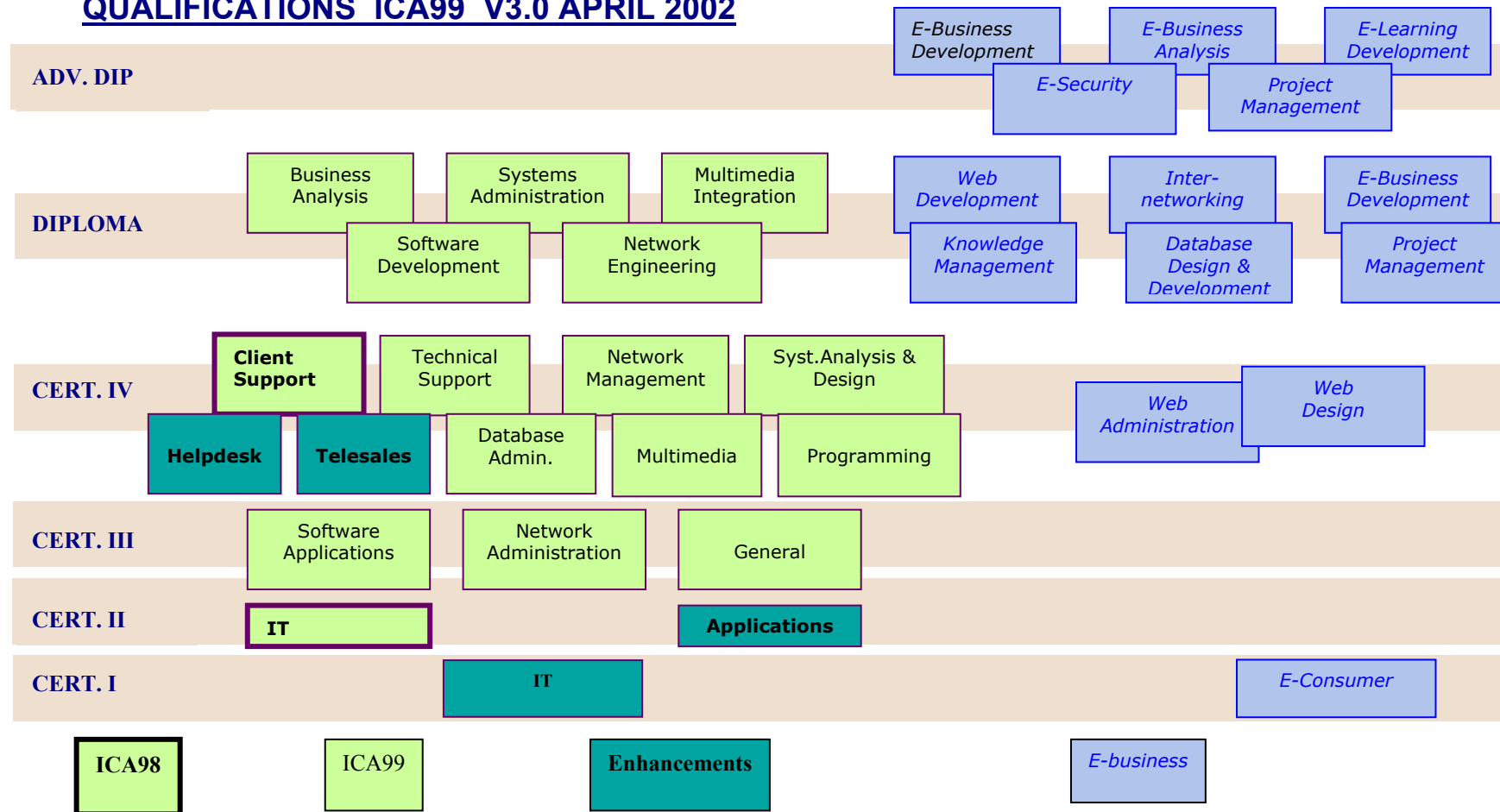
Qualifications contained in this Training Package are developed against the Australian Qualifications Framework and the Australian Recognition Framework. Qualifications issued by Registered Training Organisations are recognised throughout Australia in all States and Territories.

Every attempt has been made to accommodate the recognition of global standards and qualifications where they exist, by using the competency standards as the benchmarks for recognition.

The Australian Computer Society (ACS) has been involved in development and revision of this Training Package. Registered Training Organisations (RTOs) who provide approved programs at the Australian Qualifications Framework (AQF) Diploma level may apply to the ACS for Course Accreditation by that Society. Membership of the ACS at the Grade of Student is available to students undertaking AQF Certificate IV and Diploma courses of study.

Information Technology Training Package Qualifications Framework Diagram

QUALIFICATIONS ICA99 V3.0 APRIL 2002



The above diagram outlines the evolution of the Information Technology Training Package (TP) from the earlier ICA98 version with two qualifications, through iterations of the original ICA99 and the four qualifications added through the Enhancements project until the current configuration of V3 which has now incorporated fourteen new IT e-business qualifications.

Details of Qualifications

Certificate I in Information Technology ICA10101

This qualification provides computer literacy skills and provides the skills foundation for using a computer in any industry or activity.

This qualification will be issued on successful assessment of all core units of competency. There are no electives for this qualification.

Core:

ICAITU128A	Operate a personal computer
ICAITU129A	Operate a word processing application
ICAITU130A	Operate a spreadsheet application
ICAITU131A	Operate database application
ICAITU132A	Operate a presentation package
ICAITU133A	Send and retrieve information over the Internet using browsers and email

Certificate I in Information Technology (E-Consumer) ICA10201

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification is designed to deliver foundation employment and general computing skills which enable participation in the knowledge economy within an online environment.

Whilst there are a number of common competency standards with Certificate I in Information Technology ICA10101, the e-consumer qualification is specifically designed to impart basic skills for application in an online environment.

It can also be utilised to effectively commence an end-to-end pathway from basic to advanced IT skills within a single training package framework.

This qualification will be issued on successful assessment of all core units of competency. There are no electives for this qualification.

Core:

ICAITU128A Operate a personal computer
ICAITU133A Send and retrieve information over the Internet using browsers and email
ICAITU129A Operate a word processing application
ICAITU005C Operate computer hardware
ICAITS193A Connect a workstation to the internet
ICAITU204A Locate and evaluate on-line information
ICAITS206A Check site security
ICAITU213A Conduct online transactions
ICAITS014C Connect hardware peripherals

Certificate II in Information Technology ICA20199

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any four elective units, two of which can be drawn from any other nationally endorsed Training Package.

Core:

ICAITTW001B	Work effectively in an Information Technology environment
ICAITTW002B	Communicate in the workplace
ICAITU004C	Apply Occupational Health and Safety procedures
ICAITU005C	Operate computer hardware
ICAITU006C*	Operate computing packages
ICAITU007B	Maintain equipment & consumables
ICAITU012C	Design organisational documents using commercial computing packages
ICAITU013C	Integrate commercial computing packages
ICAITS014C	Connect hardware peripherals
ICAITS015B	Install software applications
ICAITS017C	Maintain system integrity

*ICAITU006C Operate computing packages may be substituted with any three units from the following group:

- ICAITU129A Operate a word processing application
- ICAITU130A Operate a spreadsheet application
- ICAITU131A Operate database application
- ICAITU132A Operate a presentation package

Or:

*ICAITU006C Operate computing packages may be assessed/taught in the context of an entry level helpdesk skill, where an individual needs to be competent in using three different applications so that they may navigate around the applications and resolve any basic issues/problems.

Electives:

ICAITD003B	Receive and process oral and written communication
ICAITS008B	Maintain equipment/software inventory
ICAITS009B	Interact with clients
ICPMM11bA	Identify components of multimedia
ICPMM63bA	Access the Internet
ICAITS016C	Record client support requirements
ICAITS010C	Apply problem solving techniques to achieve organisation goals
ICAITTW011B	Participate in a team and individually to achieve organisation goals
ICAITS022B	Determine client computing problems and action
ICAITS121A	Administer network peripherals

Certificate II in Information Technology (Applications) ICA20201

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core units of competency; and
- a minimum of four units of competence from the electives, two of which can be drawn from equivalent qualification levels in any other nationally endorsed Training Package

This qualification provides foundation skills for the Certificate III in Information Technology (Software Applications) ICA30199.

The following electives have been added to the list of electives for this qualification:

- ICAITU211A Operate accounting applications
- ICAITU215A Use personal productivity tool

Core:

ICAITB135A	Create a simple mark-up language document to specification
ICAITTW002B	Communicate in the workplace
ICAITU004C	Apply Occupational Health and Safety Procedures
ICAITU126B	Use advanced features of computer applications
ICAITU128A	Operate a personal computer
ICAITU129A	Operate a word processing application
ICAITU130A	Operate a spreadsheet application
ICAITU131A	Operate database application
ICAITU132A	Operate a presentation package
ICAITU133A	Send and retrieve information over the Internet using browsers and email

Electives:

ICAITU018C	Develop macros and templates for clients using standard products
ICAITU005C	Operate computer hardware
ICAITU211A	Operate accounting applications
ICAITU215A	Use personal productivity tool
ICAITS014C	Connect hardware peripherals
ICAITS009B	Interact with clients
ICPMM11bA	Identify components of multimedia
ICPMM21cA	Capture a digital image
ICPMM43cA	Incorporate digital photography into multimedia presentations
ICAITTW001B	Work effectively in an Information Technology environment

Certificate III in Information Technology (Software Applications) ICA30199

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any four elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Changes to the elective competency units:

ICAITB166A Create utility programs is now available as an elective in this qualification

Core:

ICAITU018C	Develop macros and templates for clients using standard products
ICAITU028C	Customise packaged software applications for clients
ICAITS031B	Provide advice to clients
ICAITU126B	Use advanced features of computer applications
ICAITD128A	Create user & technical documentation
ICAITS020C	Install and optimise system software
ICAITS025B	Run standard diagnostic tests
ICAITU019C	Migrate to new technology

Electives:

ICAITS115B	Maintain equipment and software in working order
ICAITS021C	Connect internal hardware components
ICAITS029B	Install network hardware to a network
ICAITU127B	Support system software
ICAITI101B	Install and manage network protocols
ICAITTW027B	Relate to clients on a business level
ICAITB137A	Produce basic client side script for dynamic web pages
ICAITB166A	Create utility programs
ICAITS024C	Provide basic system administration
ICAITS030B	Install software to networked computers
ICAITS032B	Provide network systems administration
ICAITS023B	Provide one to one instruction
ICAITS121A	Administer network peripherals
ICPMM65dA	Create web pages with multimedia
ICAITPM129A	Apply skills in project integration
ICAITB135A	Create a simple mark-up language document to specification

Certificate III in Information Technology (General) ICA30299

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any four elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Changes to the elective competency units:

ICAITS116B Undertake capacity planning is no longer an elective in this qualification.

ICAITS117B Maintain custom software is no longer an elective in this qualification.

ICAITI100B Build an Internet infrastructure is no longer an elective in this qualification.

ICAITB135A Create a simple mark-up language document to specification is now available as an elective in this qualification.

Core:

ICAITU019C	Migrate to new technology
ICAITS024C	Provide basic system administration
ICAITS025B	Run standard diagnostic tests
ICAITS115B	Maintain equipment and software in working order
ICAITS021C	Connect internal hardware components
ICAITU018C	Develop macros and templates for clients using standard products
ICAITD128A	Create user & technical documentation
ICAITS031B	Provide advice to clients
ICAITU126B	Use advanced features of computer applications
ICAITS032B	Provide network systems administration
ICAITS020C	Install and optimise system software

Electives:

ICAITS029B	Install network hardware to a network
ICAITU028C	Customise packaged software applications for clients
ICAITI101B	Install and manage network protocols
ICAITPM129A	Apply skills in project integration
ICAITS034B	Determine and action network problem
ICAITI097B	Install and configure a network
ICAITS030B	Install software to networked computers
ICAITS121A	Administer network peripherals
ICAITS023B	Provide one to one instruction
ICAITB060B	Identify physical database requirements
ICAITU127B	Support system software
ICAITB135A	Create a simple mark-up language document to specification

Certificate III in Information Technology (Network Administration) ICA30399

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any four elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Changes to the elective competency units:

ICAITS117B Maintain custom software is no longer an elective in this qualification.

Core:

ICAITS025B	Run standard diagnostic tests
ICAITS121A	Administer network peripherals
ICAITS031B	Provide advice to clients
ICAITS032B	Provide network systems administration
ICAITU126B	Use advanced features of computer applications
ICAITS020C	Install and optimise system software
ICAITD128A	Create user & technical documentation
ICAITS120B	Administer and configure a network operating system
ICAITI101B	Install and manage network protocols
ICAITS024C	Provide basic system administration
ICAITS034B	Determine and action network problem

Electives:

ICAITU019C	Migrate to new technology
ICAITS115B	Maintain equipment and software in working order
ICAITS021C	Connect internal hardware components
ICAITU028C	Customise packaged software applications for clients
ICAITU018C	Develop macros and templates for clients using standard products
ICAITS010C	Apply problem solving techniques to achieve organisation goals
ICAITS106B	Action and complete change requests
ICAITS023B	Provide one to one instruction
ICAITTW027B	Relate to clients on a business level
ICAITTW011B	Participate in a team and individually to achieve organisational goals
ICAITD003B	Receive and process oral and written communication
ICAITPM129A	Apply skills in project integration

Certificate IV in Information Technology (Client Support) ICA40199

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any four elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

ICAITPM129A	Apply skills in project integration
BSX154L403	Apply skills in time management
ICAITU018C	Develop macros and templates for clients using standard products
ICAITU019C	Migrate to new technology
ICAITS023B	Provide one to one instruction
ICAITS024C	Provide basic system administration
ICAITS025B	Run standard diagnostic tests
ICAITTW027B	Relate to clients on a business level
ICAITU028C	Customise packaged software applications for clients
ICAITS030B	Install software to networked computers
ICAITS031B	Provide advice to clients
ICAITS032B	Provide network systems administration
ICAITS034B	Determine and action network problem

Electives:

ICAITS035C	Assist with analysis of emerging technology
ICAITS022B	Determine client computing problems and action
ICAITS020C	Install and optimise system software
ICAITS021C	Connect internal hardware components
ICAITS121A	Administer network peripherals
ICAITS120B	Administer and configure a network operating system
ICAITS107B	Rectify system faults on a live system
ICAITS109B	Evaluate system status
ICAITTW026B	Co-ordinate and maintain work teams
ICAITS033B	Assist with policy development for client support procedures
ICAITS029B	Install network hardware to a network
ICAITS115B	Maintain equipment and software in working order
ICAITU127B	Support system software
ICAITS108B	Complete database back-up and recovery
ICAITS113B	Identify and resolve common database performance problems
ICAITS124B	Monitor and administer network security

Certificate IV in Information Technology (Database Administration) ICA40299

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any four elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

ICAITPM129A	Apply skills in project integration
ICAITS020C	Install and optimise system software
ICAITB060B	Identify physical database requirements
ICAITB061B	Monitor physical database implementation
ICAITU127B	Support system software
ICAITS024C	Provide basic system administration
ICAITS106B	Action and complete change requests
ICAITS119B	Monitor and administer system security
ICAITB070B	Create code for applications
ICAITD128A	Create user & technical documentation
ICAITS108B	Complete database back-up and recovery
ICAITS113B	Identify and resolve common database performance problems
ICAITS125B	Monitor and administer a database
ICAITS031B	Provide advice to clients
ICAITS030B	Install software to networked computers
ICAITS025B	Run standard diagnostic tests
ICAITU126B	Use advanced features of computer applications

Electives:

ICAITU019C	Migrate to new technology
ICAITU028C	Customise packaged software applications for clients
ICAITS022B	Determine client computing problems and action
ICAITS023B	Provide one to one instruction
ICAITS109B	Evaluate system status
ICAITTW027B	Relate to clients on a business level
ICAITS114B	Implement maintenance procedures
ICAITS115B	Maintain equipment and software in working order
ICPMM65dA	Create web pages with multimedia
ICAITS110B	Implement system software changes
ICAITB137A	Produce basic client side script for dynamic web pages
ICAITS107B	Rectify system faults on a live system
ICAITS112B	Optimise system performance
ICAITS032B	Provide network systems administration
ICAITS117B	Maintain custom software
ICAITS121A	Administer network peripherals
ICAITI101B	Install and manage network protocols
ICAITTW026B	Co-ordinate and maintain work teams
ICAITS035C	Assist with analysis of emerging technology
ICAITU018C	Develop macros and templates for clients using standard products
ICAITB136A	Use SQL to create database structures and manipulate data

Certificate IV in Information Technology (Network Management) ICA40399

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency;
- and any four elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Changes to the electives:

ICAITB175A Select and install a router is now offered as an elective.

Core:

ICAITI097B	Install and configure a network
ICAITS116B	Undertake capacity planning
ICAITS020C	Install and optimise system software
ICAITS124B	Monitor and administer network security
ICAITS107B	Rectify system faults on a live system
ICAITS112B	Optimise system performance
ICAITPM129A	Apply skills in project integration
ICAITS030B	Install software to networked computers
ICAITS029B	Install network hardware to a network
ICAITU126B	Use advanced features of computer applications
ICAITS034B	Determine and action network problem
ICAITU127B	Support system software
ICAITI100B*	Build an Internet infrastructure
ICAITS106B	Action and complete change requests
ICAITTW027B	Relate to clients on a business level

*ICAITI100B Build an Internet infrastructure can be substituted by ICAITI099B Build an intranet

*If this substitution is made, ICAITI100B Build an Internet infrastructure must replace ICAITI099B Build an intranet in the Diploma of Information Technology (Network Engineering)

Electives:

ICAITS110B	Implement system software changes
ICAITS114B	Implement maintenance procedures
ICAITS108B	Complete database back-up and recovery
ICAITS113B	Identify and resolve common database performance problems
BSX154L403	Apply skills in time management
BSX154L405	Apply skills in quality management
ICAITU019C	Migrate to new technology
ICPMM65dA	Create web pages with multimedia
ICAITS125B	Monitor and administer a database
ICAITTW026B	Co-ordinate and maintain work teams
ICAITS035C	Assist with analysis of emerging technology
ICAITS115B	Maintain equipment and software in working order
ICAITS109B	Evaluate system status
ICAITS021C	Connect internal hardware components
ICAITU028C	Customise packaged software applications for clients
ICAITB175A	Select and install a router

Certificate IV in Information Technology (Multimedia) ICA40499

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any four elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Changes to the core:

ICAITB070B Create Code for Applications can be replaced with the following three units of competence:

- ICAITB181A Write and document program modules
- ICAITB182A Write and compile code based on requirements
- ICAITB166A Create utility programs

Changes to the electives:

The following electives have been added to the list of electives for this qualification:

- ICAITU205A Select and Employ Software and Hardware Multimedia Tools
- ICAITB166A Create utility programs
- ICAITB178A Build a Graphical User Interface (GUI)

Core:

ICAITPM129A	Apply skills in project integration
BSX154L403	Apply skills in time management
BSX154L404	Apply skills in cost management
BSX154L405	Apply skills in quality management
ICAITTW027B	Relate to clients on a business level
ICAITD128A	Create user & technical documentation
ICAITS031B	Provide advice to clients
ICPMM65dA	Create web pages with multimedia
ICPMM67dA	Plan interface design
ICPMM21cA	Capture a digital image
ICPMM41cA	Incorporate text into multimedia presentations
ICPMM42cA	Incorporate 2D graphics into multimedia presentations
ICPMM43cA	Incorporate digital photography into multimedia presentations
ICAITU126B	Use advanced features of computer applications
ICAITU013C	Integrate commercial computing packages
ICPMM11bA	Identify components of multimedia
ICPPP11cA	Develop a detailed design concept
ICAITB070B*	Create code for applications
ICAITB075A	Use a library or pre-existing component
ICAITAD058A	Apply skills in object oriented design
ICAITAD041B	Determine client business expectations and needs
ICAITS124B	Monitor and administer network security
ICPMM44cA	Incorporate audio into multimedia presentations
ICPMM45cA	Incorporate animation into multimedia presentations
ICPMM46cA	Incorporate video into multimedia presentations
ICPMM47cA	Incorporate 3D modelling into multimedia presentations

*The following three units may be substituted for *ICAITB070B Create Code for Applications*:

- ICAITB181A Write and document program modules
- ICAITB182A Write and compile code based on requirements
- ICAITB166A Create utility programs

Certificate IV in Information Technology (Multimedia) ICA40499 (continued)**Electives:**

ICAITAD051B	Develop client user interface
ICAITTW026B	Co-ordinate and maintain work teams
ICAITB135A	Create a simple mark-up language document to specification
ICAITB137A	Produce basic client side script for dynamic web pages
ICAITS116B	Undertake capacity planning
ICAITI101B	Install and manage network protocols
ICAITS030B	Install software to networked computers
ICAITS035C	Assist with analysis of emerging technologies
ICAITU019C	Migrate to new technology
ICAITU028C	Customise packaged software applications for clients
ICAITI097B	Install and configure a network
ICAITI100B	Build an Internet infrastructure
ICAITU205A	Select and Employ Software and Hardware Multimedia Tools
ICAITB166A	Create utility programs
ICAITB178A	Build a Graphical User Interface (GUI)

Certificate IV in Information Technology (Technical Support) ICA40599

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any four elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

ICAITPM129A	Apply skills in project integration
BSX154L403	Apply skills in time management
BSX154L405	Apply skills in quality management
ICAITS107B	Rectify system faults on a live system
ICAITS021C	Connect internal hardware components
ICAITS031B	Provide advice to clients
ICAITS115B	Maintain equipment and software in working order
ICAITU127B	Support system software
ICAITS112B	Optimise system performance
ICAITTW027B	Relate to clients on a business level
ICAITS109B	Evaluate system status
ICAITU019C	Migrate to new technology
ICAITS023B	Provide one to one instruction
ICAITS022B	Determine client computing problems and action
ICAITS030B	Install software to networked computers
ICAITS032B	Provide network systems administration
ICAITS124B	Monitor and administer network security

Electives:

ICAITS029B	Install network hardware to a network
ICAITTW026B	Co-ordinate and maintain work teams
ICAITS120B	Administer and configure a network operating system
ICAITI101B	Install and manage network protocols
ICAITS033B	Assist with policy development for client support procedures
ICAITS035C	Assist with analysis of emerging technology
ICAITS034B	Determine and action network problem
ICAITI100B	Build an Internet infrastructure
ICPMM65dA	Create web pages with multimedia
ICAITS106B	Action and complete change requests
ICAITS024C	Provide basic system administration
ICAITS116B	Undertake capacity planning
ICAITS121A	Administer network peripherals
ICAITI099B	Build an intranet
ICAITS020C	Install and optimise system software
ICAITS108B	Complete database back-up and recovery
ICAITS113B	Identify and resolve common database performance problems

Certificate IV in Information Technology (Programming) ICA40699

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any three elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Changes to the core:

ICAITB070B Create Code for Applications can be replaced with the following three units of competence:

- ICAITB181A Write and document program modules
- ICAITB182A Write and compile code based on requirements
- ICAITB166A Create utility programs

Core:

ICAITPM129A	Apply skills in project integration
BSX154L403	Apply skills in time management
BSX154L404	Apply skills in cost management
BSX154L405	Apply skills in quality management
ICAITAD058A	Apply skills in object oriented design
ICAITB075A	Use a library or pre-existing component
ICAITTW027B	Relate to clients on a business level
ICAITB064B	Prepare software development review
ICAITB070B*	Create code for applications
ICAITB076B	Implement configuration management
ICAITAD041B	Determine client business expectations and needs
ICAITAD051B	Develop client user interface

*The following three units may be substituted for *ICAITB070B Create Code for Applications*:

- ICAITB181A Write and document program modules
- ICAITB182A Write and compile code based on requirements
- ICAITB166A Create utility programs

Certificate IV in Information Technology (Programming) ICA40699 (continued)

Electives:

ICAITU019C	Migrate to new technology
ICAITS115B	Maintain equipment and software in working order
ICAITS021C	Connect internal hardware components
ICAITT078B	Perform unit test
ICAITT079B	Perform integration test
ICAITT080B	Perform specific unit test for OO class
ICAITU127B	Support system software
ICAITU028C	Customise packaged software applications for clients
ICAITU018C	Develop macros and templates for clients using standard products
ICAITS030B	Install software to networked computers
ICAITS020C	Install and optimise system software
ICAIT091B	Conduct post implementation review
ICAITB135A	Create a simple mark-up language document to specification
ICAITB137A	Produce basic client side script for dynamic web pages
ICAITB136A	Use SQL to create database structures and manipulate data
ICAITS116B	Undertake capacity planning
ICAITS120B	Administer and configure a network operating system
ICAITAD057A	Manage a reuse library
ICAITI101B	Install and manage network protocols
ICAITS124B	Monitor and administer network security
ICAITS117B	Maintain custom software
ICAITS109B	Evaluate system status
ICAITTW026B	Co-ordinate and maintain work teams
ICAITS035C	Assist with analysis of emerging technology
ICAITS023B	Provide one to one instruction
ICPMM65dA	Create web pages with multimedia
ICAITI100B	Build an Internet infrastructure
ICAITU126B	Use advanced features of computer applications

Certificate IV in Information Technology (Systems Analysis and Design) ICA40799

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any four elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Changes to the elective competency units:

The following have been added to the list of electives available for this qualification:

- ICAITAD139A Design a Database
- ICAITB170A Build a database
- ICAITB136A Use SQL to create database structures and manipulate data

Core:

ICAITPM129A	Apply skills in project integration
BSX154L403	Apply skills in time management
BSX154L404	Apply skills in cost management
BSX154L405	Apply skills in quality management
ICAITB076B	Implement configuration management
ICAITSP037B	Contribute to the development of a strategy plan
ICAITAD041B	Determine client business expectations and needs
ICAITTW026B	Co-ordinate and maintain work teams
ICAITTW027B	Relate to clients on a business level
ICAITAD043B	Develop and present a feasibility report
ICAITB059B	Develop detailed technical design
ICAITAD042B	Confirm client business needs
ICAITU019C	Migrate to new technology

Electives:

ICAITS116B	Undertake capacity planning
ICAITB070B	Create code for applications
ICAITAD056B	Prepare disaster recovery/contingency plans
ICAITAD044B	Develop system infrastructure design plan
ICAITAD046B	Model preferred systems solutions
ICAITAD047B	Determine specifications for the project
ICAITS035C	Assist with analysis of emerging technology
ICAITS030B	Install software to networked computers
ICAITS020C	Install and optimise system software
ICAITS024C	Provide basic system administration
ICAITS023B	Provide one to one instruction
ICAITS109B	Evaluate system status
ICAITS021C	Connect internal hardware components
ICAITU127B	Support system software
ICAITU028C	Customise packaged software applications for clients
ICAITI091B	Conduct post implementation review
ICAITAD139A	Design a Database
ICAITB170A	Build a database
ICAITB136A	Use SQL to create database structures and manipulate data

Certificate IV in Information Technology (Helpdesk) ICA40801

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core units of competency; and
- a minimum of any three units of competence from the Group A electives, two of which can be drawn from equivalent qualification levels in any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package; and
- a minimum of any five units of competence from the Group B electives, two of which may be drawn from IT technical standards from other equivalent qualifications within this Training Package.

Core:

ICTTC200A	Use telecommunications technology in receiving/making calls in the call centre environment
ICTTC201A	Use basic computer technology to process enterprise and customer data
ICTTC202A	Use specific enterprise systems to satisfy customer requirements
ICAITS134A	Provide remote helpdesk support
ICTTC204A	Provide quality customer service
ICAITTW027B	Relate to clients on a business level.
ICTTC213A	Provide support and assistance to customers on matters relating to a particular product(s)/service
ICAITS023B	Provide one to one instruction
ICAITS024C	Provide basic system administration
ICAITS025B	Run standard diagnostic tests
ICAITS029B	Install network hardware to a network
ICAITS031B	Provide advice to clients
ICAITS106B	Action and complete change requests

Group A electives:

ICAITU133A	Send and retrieve information over the Internet using browsers and email
ICTTC214A	Process general inquiries from customers and provide associated support and assistance
ICTTC220A	Resolve customer complaints
ICTTC218A	Negotiate with customers on major product/service faults
ICTTC203A	Navigate and interrogate specific enterprise systems to satisfy customer requirements
ICTTC217A	Action reports of product/service faults reported by customers
ICTTC221A	Resolve the more complex customer complaints

Group B electives:

ICAITS108B	Complete database back-up and recovery
ICAITS113B	Identify and resolve common database performance problems
ICAITS125B	Monitor and administer a database
ICAITS112B	Optimise system performance
ICAITS032B	Provide network systems administration
ICAITS034B	Determine and action network problem
ICAITS120B	Administer and configure a network operating system

Certificate IV in Information Technology (Telesales) ICA40901

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core units of competency, and
- any four units of competence from the electives, two of which can be drawn from equivalent qualification levels in any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

ICTTC200A	Use telecommunications technology in receiving/making calls in the call centre environment
ICTTC201A	Use basic computer technology to process enterprise and customer data
ICTTC202A	Use specific enterprise systems to satisfy customer requirements
ICTTC204A	Provide quality customer service
ICTTC213A	Provide support and assistance to customers on matters relating to a particular product (s)/ service
BSBSLS301A	Develop product knowledge
BSBSLS302A	Identify sales prospects
BSBSLS306A	Self-manage sales performance
BSBSLS304A	Secure prospect commitment
WRRSS.9A	Recommend computer products and services
WRRS.1A	Sell products and services
WRRS.3A	Co-ordinate sales performance
ICAITU019C	Migrate to new technology
ICAITS031B	Provide advice to clients
ICAITTW027B	Relate to clients on a business level

Electives:

BSBADV401A	Profile a target audience
BSBMKG403A	Analyse market data
ICAITTW026B	Co-ordinate and maintain work teams
ICAITS120B	Administer and configure a network operating system
ICAITS107A	Rectify system faults on a live system
ICAITS109B	Evaluate system status
ICAITS029B	Install network hardware to a network
ICAITU127B	Support system software
ICAITS035C	Assist with analysis of emerging technology
ICAITS108B	Complete database back-up and recovery
ICAITS113B	Identify and resolve common database performance problems
ICAITU126B	Use advanced features of computer applications
ICAITS020C	Install and optimise system software
ICAITS024C	Provide basic system administration
ICAITAD041B	Determine client business expectations and needs
ICAITAD042B	Confirm client business needs

Certificate IV in Information Technology (Website Administration) ICA41001

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core (14) units of competency; and
- any four units of competence from the electives, two of which can be drawn from equivalent qualification levels in any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

ICAITT184A	Ensure site usability
ICAITS191A	Maintain web site performance
ICAITS200A	Monitor traffic and compile specified site traffic reports
ICAITT183A	Confirm accessibility of web site design
ICAITS201A	Transfer content to a web site using commercial applications
ICAITS194A	Ensure basic web site security
ICAITU207A	Apply a web authoring tool to convert client data
ICAITS198A	Develop guidelines for updating and loading information to a web site
ICAITI190A	Maintain information standards
ICAITI189A	Ensure website content meets appropriate technical protocols & standards
ICAITB169A	Use development software & IT tools to build a basic website to specification
ICAITT185A	Validate basic website performance
ICAITB135A	Create a simple mark-up language document to specification
ICAITB137A	Produce basic client side script for dynamic web pages

Electives:

ICAITD209A	Writing for the World Wide Web
ICAITAD142A	Design a website to meet technical requirements
BSBEBUS406A	Monitor and maintain records in an online environment
BSBEBUS512A	Implement electronic communication policy
BSBEBUS408A	Implement and monitor delivery of quality customer service on-line
ICAITT186A	Conduct operational acceptance tests of web sites
ICAITB161A	Build a document using extensible markup language (XML)
ICAITB163A	Create a Common Gateway Interface (CGI) script
ICAITB165A	Create dynamic pages
ICAITB171A	Develop Cascading Style Sheets (CSS)
ICAITU127B	Support system software
ICAITS119B	Monitor and administer system security
ICAITS108B	Complete database backup and recovery
ICAITS113B	Identify and resolve common database performance problems
ICAITS125B	Monitor and administer a database

Certificate IV Information Technology (Website Design) ICA41101

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core (17) units of competency; and
- any four units of competence from the electives, two of which can be drawn from equivalent qualification levels in any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

ICAITAD142A	Design a website to meet technical requirements
ICAITAD146A	Develop web site information architecture
ICAITT184A	Ensure site usability
ICAITB135A	Create a simple mark-up language document to specification
ICAITT183A	Confirm accessibility of web site design
ICAITU205A	Select and Employ Software and Hardware Multimedia Tools
ICAITB169A	Use development software and IT tools to build a basic website to specification
ICAITI189A	Ensure website content meets appropriate technical protocols and standards
ICAITT185A	Validate basic website performance
ICAITB171A	Develop Cascading Style Sheets (CSS)
ICAITB137A	Produce basic client side script for dynamic web pages
ICAITU207A	Apply a web authoring tool to convert client data
CUFMEM06A	Design a multimedia product
CUFMEM07A	Apply principles of visual design and communication to the development of a media product
CUFMEM08A	Apply the principles of instructional design to a media product
CUFMEM10A	Design and create a multimedia interface
ICAITS201A	Transfer content to a web site using commercial applications

Electives:

ICAITD209A	Writing for the World Wide Web
ICAITS198A	Develop guidelines for updating and loading information to a web site
CUFIMA01A	Produce and manipulate digital images
ICAITAD149A	Implement quality assurance process for e-business solutions
ICAITS191A	Maintain web site performance
ICAITS200A	Monitor traffic and compile specified site traffic reports
ICAITS194A	Ensure basic web site security
ICAITT186A	Conduct operational acceptance tests of web sites
ICAITB179A	Build decks using wireless markup language (WML)

Diploma of Information Technology (Systems Administration) ICA50199

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any six elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Changes to the electives:

ICAITTW214A Maintain ethical conduct has been added to the list of electives

Core:

ICAITS104B	Determine maintenance coverage
ICAITS105B	Coordinate change requests
ICAITS111B	Manage and review delivery of maintenance services
ICAITS118B	Manage system security
BSX154L508	Guide application of risk management
BSX154L507	Guide application of communications management
ICAITAD042B	Confirm client business needs
ICAITI089B	Implement system components and hand over
ICAITI090B	Conduct pre-installation audit for software installation
ICAITAD056B	Prepare disaster recovery/ contingency plans
ICAITT084B	Perform stress and loading test of integrated platform
ICAITS116B	Undertake capacity planning
ICAITTW026B	Coordinate and maintain work teams
ICAITS035C	Assist with analysis of emerging technology
ICAITT081B	Perform systems test
ICAITAD041B	Determine client business expectations and needs
ICAITT082C	Manage the testing process

Electives:

BSX154L501	Guide application of project integrative processes
BSX154L502	Guide application of scope management
BSX154L503	Guide application of time management
BSX154L504	Guide application of cost management
BSX154L505	Guide application of quality management
BSX154L506	Guide application of human resources management
BSX154L509	Guide application of procurement management
ICAITAD046B	Model preferred system solutions
ICAITB070B	Create code for applications
ICAITI092B	Document operational procedures
ICAITI093A	Prepare structured training for clients
ICAITI094A	Deliver structured training for clients
ICAITI095A	Review structured training for clients
ICAITI096B	Complete data transition
ICAITSP040B	Manage and review contracts
ICAITS033B	Assist with policy development for client support procedures
ICAITAD043B	Develop and present a feasibility report
ICAITB059B	Develop detailed technical design
ICAITT077C	Develop detailed test plan
ICAITS102B	Establish and maintain client user liaison
ICAITS103B	Establish and maintain client user liaison during support activity
ICAITSP038B	Set strategic plans
ICAITSP039B	Match the IT needs with the strategic direction of the enterprise
ICAITI091B	Conduct post implementation review
ICAITB136A	Use SQL to create database structures and manipulate data
ICAITTW214A	Maintain ethical conduct

Diploma of Information Technology (Software Development) ICA50299

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any six elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Changes to the electives.

ICAITW214A Maintain ethical conduct has been added to the list of electives.

Core:

BSX154L501	Guide application of project integrative processes
BSX154L602	Manage scope
BSX154L604	Manage cost
BSX154L605	Manage quality
ICAITAD048C	Develop configuration management
ICAITB069B	Develop software
ICAITAD041B	Determine client business expectations and needs
ICAITT082C	Manage the testing process
ICAITT083B	Develop and conduct client acceptance tests
ICAITAD050A	Develop detailed component specification from project specification
ICAITB059B	Develop detailed technical design
ICAITT077C	Develop detailed test plan
ICAITT079B	Perform integration test
ICAITAD042B	Confirm client business needs
ICAITAD043B	Develop and present a feasibility report
ICAITAD056B	Prepare disaster recovery/contingency plans
ICAITS117B	Maintain custom software

Electives:

ICAITAD044B	Develop system infrastructure design plan
ICAITAD046B	Model preferred system solutions
ICAITB065B	Prepare the build phase
ICAITAD049A	Develop logical abstraction from requirements (OOA)
ICAITAD051B	Develop client user interface
ICAITB072B	Develop integration blueprint
ICAITB073B	Pilot the developed system
ICAITB068B	Build using RAD
ICAITB074B	Monitor the system pilot
ICAITI090B	Conduct pre-installation audit for software installation
ICAITI091B	Conduct post implementation review
ICAITT078B	Perform unit test
ICAITT080B	Perform Specific unit test for OO Class
ICAITAD055B	Determine transition strategy
ICAITSP036B	IT strategy meets business solution requirements
ICAITSP037B	Contribute to the development of a strategy plan
ICAITB060B	Identify physical database requirements
ICAITB061B	Monitor physical database implementation
ICAITAD052B	Design IT security framework
ICAITAD054B	Validate quality and completeness of design
ICAITB071B	Review developed software
ICAITB066B	Coordinate the build phase
ICAITB067B	Prepare for software development using RAD
ICAITB062B	Perform data conversion
ICAITB063B	Monitor data conversion
ICAITAD053B	Design system security and controls
ICAITT084B	Perform stress and loading test of integrated platform
ICAITW214A	Maintain ethical conduct

Diploma of Information Technology (Business Analysis) ICA50399

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any six elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Changes to the electives:

ICAITTW214A Maintain ethical conduct has been added to the list of electives.

Core:

BSX154L501	Guide application of project integrative processes
BSX154L602	Manage scope
BSX154L604	Manage cost
BSX154L605	Manage quality
BSX154L606	Manage human resources
BSX154L607	Manage communications
BSX154L608	Manage risk
BSX154L609	Manage procurement
ICAITSP036B	IT strategy meets business solution requirements
ICAITAD050A	Develop detailed component specification from project specification
ICAITB059B	Develop detailed technical design
ICAITT077C	Develop detailed test plan
ICAITAD042B	Confirm client business needs
ICAITAD043B	Develop and present a feasibility report
ICAITB074B	Monitor the system pilot
ICAITAD056B	Prepare disaster recovery/ contingency plans

Electives:

BSX154L601	Manage project integration
BSX154L603	Manage time
ICAITT083B	Develop and conduct client acceptance tests
ICAITAD044B	Develop system infrastructure design plan
ICAITAD046B	Model preferred system solutions
ICAITB072B	Develop integration blueprint
ICAITB073B	Pilot the developed system
ICAITAD052B	Design IT security framework
ICAITAD054B	Validate quality and completeness of design
ICAITB064B	Prepare software development review
ICAITB071B	Review developed software
ICAITI090B	Conduct pre installation audit of software installation
ICAITB066B	Coordinate the build phase
ICAITB067B	Prepare for software development using RAD
ICAITI085B	Review site for implementation
ICAITI086B	Scope implementation requirements
ICAITI087B	Acquire system components
ICAITI088B	Evaluate and negotiate vendor offerings
ICAITS104B	Determine maintenance coverage
ICAITAD053B	Design system security and controls
ICAITSP038B	Set strategic plans
ICAITSP039B	Match the IT needs with the strategic direction of the enterprise
ICAITSP040B	Manage and review contracts
ICAITI091B	Conduct post implementation review
ICAITTW214A	Maintain ethical conduct

Diploma of Information Technology (Network Engineering) ICA50499

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any six elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Changes to the core:

ICAITB070B Create code for applications can be replaced by *ICAITB167A Create code for networking*, if required.

Changes to the electives:

ICAITW214A Maintain ethical conduct has been added to the list of electives.

Core:

BSX154L501	Guide application of project integrative processes
BSX154L602	Manage scope
BSX154L604	Manage cost
BSX154L605	Manage quality
BSX154L606	Manage human resources
BSX154L607	Manage communications
BSX154L608	Manage risk
BSX154L609	Manage procurement
ICAITI098B	Install and manage complex networks
ICAITAD043B	Develop and present a feasibility report
ICAITAD045B	Produce network/ communication design
ICAITAD044B	Develop system infrastructure design plan
ICAITI099B*	Build an intranet
ICAITS123B	Manage network security
ICAITS122A	Trouble shoot and resolve network problems
ICAITB070B#	Create code for applications
ICAITAD056B	Prepare disaster recovery/ contingency plans

*ICAITI099B Build an intranet can be substituted by ICAITI100B Build an Internet infrastructure

*If this substitution is made, ICAITI099B Build an intranet must replace ICAITI100B Build an Internet infrastructure in the Certificate IV in Information Technology (Network Management)

ICAITB167A Create code for networking may be substituted for *ICAITB070B Create code for applications*, if required.

Diploma of Information Technology (Network Engineering) ICA50499 (continued)**Electives:**

ICAITSP036B	IT strategy meets business solution requirements
ICAITB074B	Monitor the system pilot
ICAITAD047B	Determine specifications for the project
ICAITS112B	Optimise system performance
BSX154L601	Manage project integration
BSX154L603	Manage time
ICAITT083B	Develop and conduct client acceptance tests
ICAITI093A	Prepare structured training for clients
ICAITI094A	Deliver structured training for clients
ICAITI095A	Review structured training for clients
ICAITI096B	Complete data transition
ICAITB062B	Perform data conversion
ICAITT077C	Develop detailed test plan
ICAITAD042B	Confirm client business needs
ICAITB059B	Develop detailed technical design
ICAITI091B	Conduct post implementation review
ICAITB072B	Develop integration blueprint
ICAITI085B	Review site for implementation
ICAITI086B	Scope implementation requirements
ICAITI087B	Acquire system components
ICAITI088B	Evaluate and negotiate vendor offerings
ICAITS104B	Determine maintenance coverage
ICAITAD053B	Design system security and controls
ICAITB063B	Monitor data conversion
ICAITTW214A	Maintain ethical conduct

Diploma of Information Technology (Multimedia Integration) ICA50599

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

A qualification will be issued based on successful assessment of:

- all the core units of competency; and
- any six elective units, two of which can be drawn from any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Changes to the electives:

ICAITW214A Maintain ethical conduct has been added to the list of electives.

Core:

BSX154L501	Guide application of project integrative processes
BSX154L602	Manage scope
BSX154L604	Manage cost
BSX154L605	Manage quality
BSX154L606	Manage human resources
BSX154L607	Manage communications
BSX154L608	Manage risk
BSX154L609	Manage procurement
ICAITT077C	Develop detailed test plan
ICAITAD043B	Develop and present a feasibility report
ICAITT083B	Develop and conduct client acceptance tests
ICAITAD052B	Design IT security framework
ICPPP11dA	Undertake a complex design brief
ICAITI100B	Build an Internet infrastructure
ICPMM61dA	Prepare multimedia for different platforms
ICPMM81eA	Manage multimedia production
ICPMM82eA	Manage multimedia projects
ICAITS123B	Manage network security
ICAITB059B	Develop detailed technical design
ICAITAD044B	Develop system infrastructure design plan
ICAITAD054B	Validate quality and completeness of design
ICAITAD056B	Prepare disaster recovery/ contingency plans
ICAITB070B	Create code for applications

Diploma of Information Technology (Multimedia Integration) ICA50599 (continued)**Electives:**

ICAITT084B	Perform stress and loading test of integrated platform
ICAITI099B	Build an intranet
ICAITB066B	Coordinate the build phase
ICAITB067B	Prepare for software development using RAD
ICAITSP036B	IT strategy meets business solution requirements
ICAITSP037B	Contribute to the development of a strategy plan
ICAITB060B	Identify physical database requirements
ICAITB061B	Monitor physical database implementation
ICPMM21cA	Capture a digital image
ICPMM44cA	Incorporate audio into multimedia presentations
ICPMM45cA	Incorporate animation into multimedia presentations
ICPMM46cA	Incorporate video into multimedia presentations
ICPMM47cA	Incorporate 3D modelling into multimedia presentations
ICAITI098B	Install and manage complex networks
ICAITAD045B	Produce network/ communication design
ICAITAD053B	Design system security and controls
ICAITSP038B	Set strategic plans
ICAITSP039B	Match the IT needs with the strategic direction of the enterprise
ICAITSP040B	Manage and review contracts
ICAITAD49A	Develop logical abstraction from requirements (OOA)
ICAITAD051B	Develop client user interface
ICAITI091B	Conduct post implementation review
ICPMM41cA	Incorporate text into multimedia presentations
ICPMM42cA	Incorporate 2D graphics into multimedia presentations
ICPMM43cA	Incorporate digital photography into multimedia presentations
ICAITTW214A	Maintain ethical conduct

Diploma of Information Technology (Website Development) ICA50601

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core (19) units of competency; and
- any two units of competence from the electives, one of which can be drawn from equivalent qualification levels in any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

ICAITAD141A	Design dynamic websites to meet technical requirements
ICAITAD146A	Develop web site information architecture
ICAITS195A	Ensure dynamic website security
ICAITS196A	Implement secure encryption technologies
ICAITS197A	Install and maintain valid authentication processes
ICAITAD151A	Gather data to identify business requirements
ICAITAD158A	Translate the business needs into technical requirements
ICAITAD152A	Implement risk management processes
ICAITB162A	Configure a Payment Gateway
ICAITB180A	Integrate a database with a website
ICAITU208A	Use site server tools for e-business
ICAITB168A	Compile and run an application
ICAITS202A	Ensure privacy for users
ICAITT186A	Conduct operational acceptance tests of web sites
ICAITB165A	Create dynamic pages
ICAITT084B	Perform stress and loading test of integrated platform
ICAITT083B	Develop and conduct client acceptance test
ICAITB212A	Implement quality assurance process for web sites
ICAITTW214A	Maintain ethical conduct

Electives:

ICAITB178A	Build a Graphical User Interface (GUI)
ICAITB166A	Create utility programs
ICAITB181A	Write and document program modules
ICAITB182A	Write and compile code based on requirements
ICAITAD149A	Implement quality assurance process for e-business solutions
ICAITB161A	Build a document using extensible markup language (XML)
ICAITB163A	Create a Common Gateway Interface (CGI) script
ICAITI187A	Implement change management processes
BSBEBUS508A	Build a virtual community
ICAITAD140A	Design a Server
ICAITB160A	Build and configure a server
ICAITB177A	Build Java applets
ICAITS198A	Develop guidelines for updating & loading information to web site
ICAITB179A	Build decks using wireless markup language (WML)
ICAITAD143A	Implement process re-engineering strategies for e-business
ICAITAD139A	Design a Database
ICAITB170A	Build a database
ICAITAD147A	Determine that database functionality and scalability suit business requirements
ICAITAD155A	Plan process re-engineering strategies for e-business
ICAITI188A	Install and maintain a server

Diploma of Information Technology (Internetworking) ICA50701

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core (16) units of competency; and
- any two units of competence from the electives, one of which can be drawn from equivalent qualification levels in any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

ICAITB176A	Install and configure router
ICAITAD144A	Determine best fit topology for a local network
ICAITAD145A	Identify best fit topology for WAN network
ICAITS192A	Configure an Internet Gateway
ICAITS196A	Implement secure encryption technologies
ICAITS197A	Install and maintain valid authentication processes
ICAITB159A	Build a security shield for a network
ICAITB173A	Install intelligent hub
ICAITB174A	Install network bridges/ switches
ICAITS121A	Administer network peripherals
ICAITI101B	Install and manage network protocols
ICAITI097B	Install and configure a network
ICAITAD045B	Produce network/communication design
ICAITS124B	Monitor and administer network security
ICAITI099B	Build an intranet
ICAITTW214A	Maintain ethical conduct

Electives:

ICAITB172A	Install Asynchronous Transfer Mode (ATM) Local Area Network (LAN)
ICAITAD141A	Design dynamic websites to meet technical requirements
ICAITAD146A	Develop web site information architecture
ICAITS195A	Ensure dynamic website security
ICAITB162A	Configure a Payment Gateway
ICAITU208A	Use site server tools for e-business
ICAITB166A	Create utility programs
ICAITS202A	Ensure privacy for users
ICAITT186A	Conduct operational acceptance tests of web sites
ICAITB161A	Build a document using extensible markup language XML)
ICAITB163A	Create a Common Gateway Interface (CGI) script
ICAITB165A	Create dynamic pages
ICAITAD156A	Review and plan for risk to e-business solution providers
ICAITB179A	Build decks using wireless markup language (WML)
ICAITT084B	Perform stress and loading test of integrated platform
ICAITT083B	Develop and conduct client acceptance test
ICAITI188A	Install and maintain a server

Diploma of Information Technology (E-Business Development) ICA50801

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core (16) units of competency; and
- any two units of competence from the electives, one of which can be drawn from equivalent qualification levels in any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

ICAITAD138A	Determine acceptable developers for e-business projects
ICAITAD148A	Identify new technology models for e-business
ICAITAD150A	Evaluate Vendor Products and Equipment
ICAITAD151A	Gather data to identify business requirements
ICAITAD155A	Plan process re-engineering strategies for e-business
ICAITAD158A	Translate the business needs into technical requirements
ICAITAD143A	Implement process re-engineering strategies for e-business
ICAITAD152A	Implement risk management processes
BSX154L501	Guide Application of Project Integrative Processes
ICAITTW214A	Maintain ethical conduct

Plus 6 units of competence from the Financial Services Training Package or the Business Services Training Package from the Diploma Level.

Electives:

BSBEBUS505A	Implement new technologies for business
BSBEBUS509A	Implement e-business outsourcing arrangements
BSBEBUS510A	Manage e-business outsourcing
BSBEBUS518A	Manage an e-business supply chain
BSBEBUS604A	Develop a business website strategy
ICAITAD142A	Design a website to meet technical requirements
ICAITT184A	Ensure site usability
ICAITU207A	Apply a web authoring tool to convert client data
ICAITT186A	Conduct operational acceptance tests of web sites
ICAITT183A	Confirm accessibility of web site design
ICAITS202A	Ensure privacy for users
ICAITAD139A	Design a Database
ICAITAD156A	Review and plan for risk to e-business solution providers
ICAITB170A	Build a database
ICAITAD147A	Determine that database functionality and scalability suits business requirements
ICAITAD144A	Determine best fit topology for a local network
ICAITI099B	Build an intranet

Diploma of Information Technology (Knowledge Management) ICA50901

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core (17) units of competency; and
- any two units of competence from the electives, one of which can be drawn from equivalent qualification levels in any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

ICAITAD151A	Gather data to identify business requirements
ICAITB210A	Analyse information and assign meta-tags
ICAITAD153A	Model data objects
ICAITAD154A	Model Data Processes
ICAITAD139A	Design a Database
ICAITB170A	Build a database
ICAITAD147A	Determine that database functionality and scalability suits business requirements
ICAITAD158A	Translate the business needs into technical requirements
ICAITS202A	Ensure privacy for users
ICAITB164A	Create a Data Warehouse
BSBEBUS511A	Implement a knowledge management strategy for an e-business
BSBEBUS609A	Develop a knowledge management strategy for an e-business
CULLB412A	Undertake cataloguing activities
ICAITI212A	Monitor and improve new or existing knowledge management system
ICAITB180A	Integrate a database with a website
ICAITI099B	Build an intranet
ICAITTW214A	Maintain ethical conduct

Electives:

ICAITB161A	Build a document using extensible markup language (XML)
ICAITAD143A	Implement process re-engineering strategies for e-business
ICAITAD148A	Identify new technology models for e-business
ICAITAD149A	Implement quality assurance process for e-business solutions
ICAITI187A	Implement change management processes
ICAITAD150A	Evaluate Vendor Products and Equipment
ICAITAD155A	Plan process re-engineering strategies for e-business
ICAITAD152A	Implement risk management processes
ICAITAD157A	Develop technical requirements for an e-business solution
ICAITAD140A	Design a Server
ICAITB160A	Build and configure a server
ICAITI188A	Install and maintain a server
BSBEBUS512A	Implement electronic communication policy
ICAITD138A	Determine acceptable e-business developers for e-business project
ICAITAD146A	Develop web site information architecture
ICAITB062B	Perform data conversion
ICAITB063B	Monitor data conversion
ICAITI096B	Complete data transition
ICAITS199A	Manage e-business websites

Diploma of Information Technology (Database Design and Development) ICA51001

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core (16) units of competency; and
- any two units of competence from the electives, one of which can be drawn from equivalent qualification levels in any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

ICAITAD139A	Design a Database
ICAITB170A	Build a database
ICAITAD147A	Determine that database functionality and scalability suits business requirements
ICAITAD153A	Model data objects
ICAITAD154A	Model Data Processes
ICAITB164A	Create a Data Warehouse
ICAITB180A	Integrate a database with a website
ICAITAD151A	Gather data to identify business requirements
ICAITAD148A	Identify new technology models for e-business
ICAITAD158A	Translate the business needs into technical requirements
ICAITB136A	Use SQL to create database structures and manipulate data
ICAITB166A	Create utility programs
ICAITAD041B	Determine client business expectations and needs
ICAITB060B	Identify physical database requirements
ICAITB061B	Monitor physical database implementation
ICAITTW214A	Maintain ethical conduct

Electives:

ICAITAD149A	Implement quality assurance process for e-business solutions
ICAITI187A	Implement change management processes
ICAITAD155A	Plan process re-engineering strategies for e-business
ICAITAD143A	Implement process re-engineering strategies for e-business
ICAITAD152A	Implement risk management processes
ICAITAD157A	Develop technical requirements for an e-business solution
ICAITS202A	Ensure privacy for users
ICAITAD140A	Design a Server
ICAITB160A	Build and configure a server
ICAITI188A	Install and maintain a server
ICAITAD141A	Design dynamic websites to meet technical requirements
ICAITS195A	Ensure dynamic website security
ICAITU208A	Use site server tools for e-business
ICAITB161A	Build a document using extensible markup language XML)
ICAITB163A	Create a Common Gateway Interface (CGI) script
ICAITB165A	Create dynamic pages
ICAITB062B	Perform data conversion
ICAITB063B	Monitor data conversion
ICAITI096B	Complete data transition
ICAITI099A	Build an intranet
ICAITT083B	Develop and conduct client acceptance test

Diploma of Information Technology (Project Management) ICA51101

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core (16) units of competency; and
- any two units of competence from the electives, one of which can be drawn from equivalent qualification levels in any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

BSX154L501	Guide Application of Project Integrative Processes
BSX154L502	Guide Application of Scope Management
BSX154L503	Guide Application of Time Management
BSX154L504	Guide Application of Cost Management
BSX154L505	Guide Application of Quality Management
BSX154L507	Guide Application of Communications Management
BSX154L508	Guide Application of Risk Management
ICAITAD138A	Determine acceptable developers for e-business projects
ICAITAD148A	Identify new technology models for e-business
ICAITAD150A	Evaluate Vendor Products and Equipment
ICAITAD151A	Gather data to identify business requirements
ICAITAD155A	Plan process re-engineering strategies for e-business
ICAITAD143A	Implement process re-engineering strategies for e-business
ICAITS035C	Assist with analysis of emerging technology
ICAITAD041B	Determine client business expectations and needs
ICAITTW214A	Maintain ethical conduct

Electives:

BSX154L506	Guide Application of Human Resources Management
BSX154L509	Guide Application of Procurement Management
ICAITAD139A	Design a Database
ICAITB170A	Build a database
ICAITAD147A	Determine that database functionality and scalability suits business requirements
ICAITAD153A	Model data objects
ICAITAD154A	Model Data Processes
ICAITS202A	Ensure privacy for users
ICAITAD140A	Design a Server
ICAITB160A	Build and configure a server
ICAITI188A	Install and maintain a server
ICAITAD141A	Design dynamic websites to meet technical requirements
ICAITD210A	Prepare technical documentation
ICAITAD146A	Develop web site information architecture
ICAITS195A	Ensure dynamic website security
ICAITU208A	Use site server tools for e-business
ICAITI090A	Conduct pre-installation audit for software installation
ICAITI089A	Implement system components and hand over
ICAITS104B	Determine maintenance strategy
ICAITS111B	Manage and review delivery of maintenance services
ICAITS103B	Establish and maintain client user liaison during support activity

Advanced Diploma of Information Technology (E- Business Development) ICA60101

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core (21) units of competency; including 6 units of competence from the Financial Services Training Package and the Business Services Training Package from the Diploma Level plus any prerequisites; and
- any two units of competence from the electives, one of which can be drawn from equivalent qualification levels in any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

ICAITAD146A	Develop web site information architecture
ICAITH187A	Implement change management processes
ICAITAD148A	Identify new technology models for e-business
ICAITAD149A	Implement quality assurance process for e-business solutions
ICAITAD152A	Implement risk management processes
ICAITAD150A	Evaluate Vendor Products and Equipment
BSBEBUS501A	Evaluate e-business opportunities
BSBEBUS503A	Design an e-business
BSBEBUS504A	Implement an e-business strategy
BSBEBUS505A	Implement new technologies for business
BSBEBUS601A	Develop an e-business strategy
BSBEBUS510A	Manage e-business outsourcing
ICAITI099B	Build an intranet
ICAITS203A	Choose a web hosting service
ICAITTW214A	Maintain ethical conduct

Plus 6 units of competence from the Financial Services Training Package or the Business Services Training Package from the Diploma Level plus any prerequisites. If units of competence are chosen from both the Financial Services Training Package or the Business Services Training Package then these units are not allowed to duplicate each other in the skills they document.

Electives:

ICAITH190A	Maintain information standards
ICAITB212A	Implement quality assurance process for web sites
BSBEBUS509A	Implement e-business outsourcing arrangements
BSBEBUS607A	Develop e-business outsourcing policy and guidelines
BSBEBUS518A	Manage an e-business supply chain
BSBEBUS604A	Develop a business website strategy
BSBEBUS609A	Develop a knowledge management strategy for an e-business
BSBEBUS613A	Develop online customer service strategies
BSBEBUS602A	Develop an action plan for an e-business strategy
ICAITT084A	Perform stress and loading test of integrated platform
ICAITS116B	Undertake capacity planning
BSX154L501	Guide application of project integrative processes
ICAITSP040B	Manage and review contracts
ICAITAD043B	Develop and present a feasibility report
ICAITB059B	Develop detailed technical design
ICAITAD147A	Determine that database functionality and scalability suits business requirements
ICAITAD145A	Identify best fit topology for WAN network

Advanced Diploma of Information Technology (E-Business Analysis) ICA60201

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core (20) units of competency; including 6 units of competence from the Financial Services Training Package and the Business Services Training Package from the Diploma Level plus any prerequisites; and
- any two units of competence from the electives, one of which can be drawn from equivalent qualification levels in any other nationally endorsed Training Package including competencies from equivalent qualification levels within this Training Package.

Core:

ICAITAD143A	Implement process re-engineering strategies for e-business
ICAITAD152A	Implement risk management processes
ICAITAD157A	Develop technical requirements for an e-business solution
ICAITAD148A	Identify new technology models for e-business
ICAITI187A	Implement change management processes
ICAITAD150A	Evaluate Vendor Products and Equipment
ICAITAD155A	Plan process re-engineering strategies for e-business
ICAITAD138A	Determine acceptable developers for e-business projects
ICAITAD151A	Gather data to identify business requirements
ICAITAD158A	Translate the business needs into technical requirements
BSBEBUS605A	Identify and implement e-business innovation
BSBEBUS609A	Develop a knowledge management strategy for an e-business
ICAITAD041B	Determine client business expectations and needs
ICAITTW214A	Maintain ethical conduct

Plus 6 units of competence from the Financial Services Training Package or the Business Services Training Package from the Diploma Level plus any prerequisites. If units of competence are chosen from both the Financial Services Training Package or the Business Services Training Package then these units are not allowed to duplicate each other in the skills they document.

Electives:

ICAITAD149A	Implement quality assurance process for e-business solutions
ICAITS202A	Ensure privacy for users
ICAITAD141A	Design dynamic websites to meet technical requirements
ICAITS195A	Ensure dynamic website security
ICAITAD146A	Develop web site information architecture
ICAITS198A	Develop guidelines for updating and loading information to a web site
ICAITB212A	Implement quality assurance process for web sites
ICAITT185A	Validate basic website performance
ICAITS203A	Choose a web hosting service
ICAITAD140A	Design a Server
ICAITAD153A	Model data objects
ICAITAD154A	Model Data Processes
ICAITAD139A	Design a Database
ICAITB164A	Create a Data Warehouse
BSBEBUS511A	Implement a knowledge management strategy for an e-business
BSBEBUS505A	Implement new technologies for business
BSBEBUS506A	Plan and develop a business website
BSBEBUS508A	Build a virtual community
BSBEBUS601A	Develop an e-business strategy
BSBEBUS602A	Develop an action plan for an e-business strategy
BSBEBUS603A	Evaluate new technologies for business

Advanced Diploma of Information Technology (E-Learning Development) ICA60301

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core (22) units of competency; plus any prerequisites; and
- any two units of competence from the electives, including competencies from equivalent qualification levels within this Training Package.

Core:

BSZ406A	Plan a series of training sessions
BSZ501A	Analyse competency requirements
BSZ502A	Design and establish the training system
BSZ503A	Design and establish the assessment system
BSZ505A	Evaluate the training and assessment system
BSZ506A	Develop assessment procedures
BSZ507A	Develop assessment tools
BSZ508A	Design training courses
ICAITAD141A	Design dynamic websites to meet technical requirements
ICAITB161A	Build a document using extensible markup language (XML)
ICAITB180A	Integrate a database with a website
ICAITB165A	Create dynamic pages
ICAITAD146A	Develop web site information architecture
ICAITU205A	Select and employ Software and Hardware Multimedia Tools
ICAITAD149A	Implement quality assurance process for e-business solutions
CUFMEM06A	Design a multimedia product
CUFMEM07A	Apply principles of visual design & communication to the development of a media product
CUFMEM08A	Apply the principles of instructional design to a media product
CUFMEM10A	Design and create a multimedia interface
ICAITAD046B	Model preferred system solutions
ICAITAD048C	Develop configuration management
ICAITTW214A	Maintain ethical conduct

Electives:

CUFMEM11A	Design the navigation for a multimedia product
CUFIMA01A	Produce and manipulate digital images
CUFIMA04A	Create 3D digital animation
CUFIMA05A	Create 3D digital models and images
ICAITB163A	Create a Common Gateway Interface (CGI) script
ICAITAD052B	Design IT Security Framework
ICAITAD053B	Design system security and controls
ICAITAD054B	Validate quality and completeness of design
ICAITAD058A	Apply skills in object oriented design
ICAITAD051B	Develop client user interface
ICAITB073B	Pilot the developed system
ICAITB074B	Monitor the system pilot
ICAITB076B	Implement configuration management
ICAITT081B	Perform Systems test
ICAITT084B	Perform stress and loading test of integrated platform
ICAITT083B	Develop and conduct client acceptance test
ICAITAD139A	Design a Database
ICAITB170A	Build a database
ICAITAD153A	Model data objects
ICAITAD154A	Model Data Processes
ICAITAD156A	Review and plan for risk to e-business solution providers

Advanced Diploma of Information Technology (E-Security) ICA60401

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core (21) units of competency; plus any prerequisites; and
- and any two units of competence from the electives, including competencies from equivalent qualification levels within this Training Package.

Core:

ICAITS195A	Ensure dynamic website security
ICAITS202A	Ensure privacy for users
ICAITAD052B	Design IT Security Framework
ICAITAD053B	Design system security and controls
ICAITS118B	Manage system security
ICAITS123B	Manage network security
ICAITAD056B	Prepare disaster recovery/contingency plans
PRAS01A	Undertake security assessment
PRAS02A	Assess security requirements in complex or high risk environments
PRSR11A	Monitor security risk management plan
PRSR12A	Review security risk management plan
ICAITAD152A	Implement risk management processes
ICAITS196A	Implement secure encryption technologies
ICAITB159A	Build a security shield for a network
ICAITAD150A	Evaluate Vendor Products and Equipment
ICAITAD151A	Gather data to identify business requirements
ICAITAD155A	Plan process re-engineering strategies for e-business
ICAITAD143A	Implement process re-engineering strategies for e-business
ICAITAD043B	Develop and present a feasibility report
ICAITT081B	Perform Systems test
ICAITTW214A	Maintain ethical conduct

Electives:

ICAITS108B	Complete database backup and recovery
PRAS03A	Specify and configure security system
ICAITAD139A	Design a Database
ICAITB170A	Build a database
ICAITAD147A	Determine that database functionality and scalability suits business requirements
ICAITB165A	Create dynamic pages
ICAITAD141A	Design dynamic websites to meet technical requirements
ICAITB162A	Configure a Payment Gateway
ICAITU208A	Use site server tools for e-business
ICAITB163A	Create a Common Gateway Interface (CGI) script
ICAITT084B	Perform stress and loading test of integrated platform
ICAITI099B	Build an intranet
ICAITI098A	Install and manage complex networks
ICAITS192A	Configure an Internet Gateway
ICAITAD144A	Determine best fit topology for a local network
ICAITAD145A	Identify best fit topology for WAN network
ICAITB172A	Install Asynchronous Transfer Mode (ATM) Local Area Network (LAN)
ICAITI100B	Build an Internet infrastructure
ICAITAD045B	Produce network/communication design
ICAITAD054B	Validate quality and completeness of design
ICAITAD140A	Design a Server
ICAITB160A	Build and configure a server
ICAITI188A	Install and maintain a server
ICAITS199A	Manage e-commerce websites
ICAITB212A	Implement quality assurance process for web sites

Advanced Diploma of Information Technology (Project Management) ICA60501

The intention of IT Training Package qualifications is to define a viable and valued workplace outcome, that is, students exiting any associated training course being able to effectively perform a substantive work role.

This qualification will be issued based on successful assessment of:

- all the core (22) units of competency; plus any prerequisites; and
- any two units of competence from the electives, including competencies from equivalent qualification levels within this Training Package.

Core:

BSX154L601	Manage Project Integration
BSX154L602	Manage Scope
BSX154L603	Manage Time
BSX154L604	Manage Cost
BSX154L605	Manage Quality
BSX154L606	Manage Human Resources
BSX154L607	Manage Communications
BSX154L608	Manage Risk
BSX154L609	Manage Procurement
ICAITI187A	Implement change management processes
ICAITAD148A	Identify new technology models for e-business
ICAITAD149A	Implement quality assurance process for e-business solutions
BSBEBUS501A	Evaluate e-business business opportunities
BSBEBUS503A	Design an e-business
BSBEBUS504A	Implement an e-business strategy
BSBEBUS505A	Implement new technologies for business
BSBEBUS601A	Develop an e-business strategy
BSBEBUS510A	Manage e-business outsourcing
ICAITAD043B	Develop and present a feasibility report
ICAITAD041B	Determine client business expectations and needs
ICAITS035C	Assist with analysis of emerging technology
ICAITTW214A	Maintain ethical conduct

Electives:

BSBEBUS509A	Implement e-business outsourcing arrangements
BSBEBUS607A	Develop e-business outsourcing policy and guidelines
BSBEBUS518A	Manage an e-business supply chain
BSBEBUS604A	Develop a business website strategy
BSBEBUS609A	Develop a knowledge management strategy for an e-business
BSBEBUS613A	Develop on-line customer service strategies
BSBEBUS616A	Plan an e-business supply chain
ICAITT084A	Perform stress and loading test of integrated platform
BSX154L501	Guide application of project integrative processes
ICAITSP040B	Manage and review contracts
ICAITB059B	Develop detailed technical design
ICAITS116B	Undertake capacity planning
ICAITAD056B	Prepare disaster recovery/ contingency plans
ICAITT082C	Manage the testing process
ICAITSP038B	Set strategic plans
ICAITSP039B	Match the IT needs with the strategic direction of the enterprise
ICAITI091B	Conduct post implementation review
ICAITB074B	Monitor the system pilot
ICAITT083B	Develop and conduct client acceptance test

Issuing Qualifications

Statements of Attainment

Statements of attainment can be issued to individuals who are assessed as competent in a number of units of competency, but do not have the number and mix required to be awarded a qualification. Statements of attainment are issued by the Registered Training Organisations.

Issuing a qualification

On attainment of the required mix of competencies, Certificates and Diplomas can be issued in accordance with the Australian Qualifications Framework Advisory Board guidelines. All qualifications aligned to the IT Training Packages will include the following elements when issued:

- name of the issuing Registered Training Organisation
- name of the person receiving the qualification
- qualification level e.g. (Certificate II, Diploma)
- date issued
- industry descriptor - Information Technology
- occupational stream
- ANTA logo
- the words, “the qualification certified herein is recognised within the Australian Qualifications Framework”
- units of competency attained within the award.

Vendor Certification

The IT Industry is still a relatively young industry and the recognition of IT credentials within the industry is mixed. There is general understanding and acceptance of tertiary IT qualifications, whilst the qualifications emanating from the VET sector are largely unrecognised and misunderstood.

IT products have been developed and distributed at a rapid rate and the training on the products has to a large extent been the responsibility of the IT vendors who developed the products. This type of training is termed “vendor training” and it is generally global in nature. Recognition of vendor training throughout the industry has been and remains to be high. Generally vendor certification is seen by the industry as being a true representation of an individual’s ability (competence). The issue of perception versus reality is not at issue here; however, to ignore the facts will inhibit the effectiveness of this Training Package and its potential acceptance by the industry stakeholders.

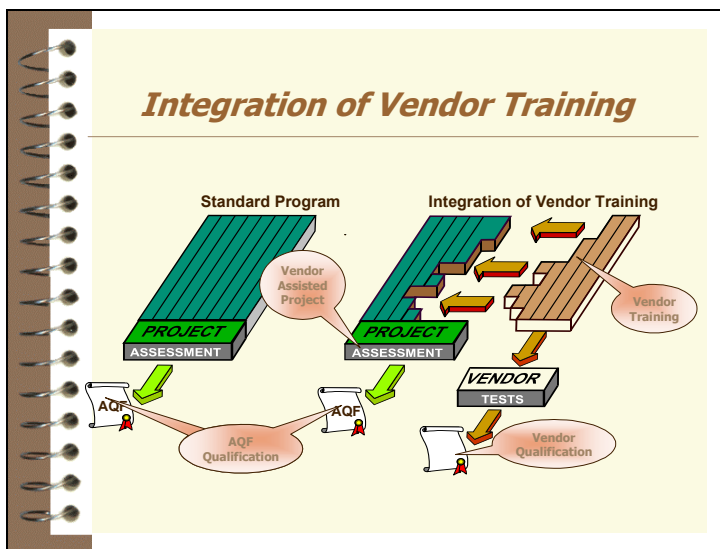
Vendor training has predominately been delivered by the private sector training organisations. The vendor training is generally offered at commercial rates, which positions this type of training as relatively expensive when compared with public institutions. An issue of equity exists with this scenario and this Training Package offers opportunity for both learners and providers to access both National AQF and Vendor Certification in an efficient and economical manner.

The project Steering Committee was well represented by IT vendors. Widespread support was demonstrated by the vendors for this Training Package and for a new environment of co-operation between vendors and public training providers. The outcomes of many of the vendor qualifications have been mapped against the competency standards, and agreements on alignment and accreditation have also been made.

During the consultations for this Training Package, it was made very clear by the IT employers that they had a strong desire for graduates to possess a balanced set of competencies that included technical, organisational and

interpersonal communication skills. This desired mix of competencies is reflected in the grouping of the competencies in the qualifications within this Training Package.

Vendor certifications, in most cases only addresses the technical skills associated with an IT product or process. For an individual to be awarded both a vendor and an AQF qualification they must demonstrate competence in the full range of competencies contained within the AQF qualification. A diagram, representing how this may be achieved can be viewed below. Additional information on alignment of vendor and AQF qualifications is contained within the non-endorsed component of the Training Package.



Each qualification that is identified in this IT Training Package contains a mix of competencies that service a mix of technical, organisational and interpersonal communication skills.

The various vendor certifications, which are held in high regard by the majority of employers in the IT Industry, tend to focus primarily on the IT technical skills.

This Training Package is designed to accommodate the integration of National IT Qualifications and Vendor Qualifications.

Possible Career Outcomes for Qualifications

**Career Opportunities
Certificates II and III**

Certificate I in Information Technology	These qualifications provide foundation skills in IT
Certificate II in Information Technology	
Certificate II in IT Applications	
Certificate III in IT General	A graduate could provide basic diagnostic support in organisations with a range of technologies
Certificate III in IT Software Applications	A graduate could provide basic software support to a unit or branch within an organisations
Certificate III in IT Network Administration	A graduate could work as a network administrator

Career Opportunities (Certificates IV)

Certificate IV in IT Client Support	A graduate could work in a range of support roles
Certificate IV in IT Network Management	A graduate could work as a network manager
Certificate IV in IT Systems Analysis & Design	A graduate could work as a junior team member in a range of IT projects
Certificate IV in IT Multimedia	A graduate could work as a web designer or with on-line service support
Certificate IV in IT Technical Support	A graduate could work in a range of technical support roles
Certificate IV in IT Programming	A graduate could work as a junior team member in an implementation project or in a technical support role
Certificate IV in IT Database Administration	A graduate could work in database administration within an organisation
Certificate IV in IT Helpdesk	A graduate could work as a first level helpdesk operator or member of a technical assistance team
Certificate IV in IT Telesales	A graduate could work as a sales associate or team member in technical product sales

Career Opportunities (Diplomas)

Diploma in IT Network Engineering	A graduate could work in the network engineering field
Diploma in IT Business Analysis	A graduate could work in the information systems, business analysis fields
Diploma in IT Systems Administration	A graduate could work in the systems management field
Diploma in IT Software Development	A graduate could work in the programming field
Diploma in IT Multimedia	A graduate could work in the areas of online services and multimedia development

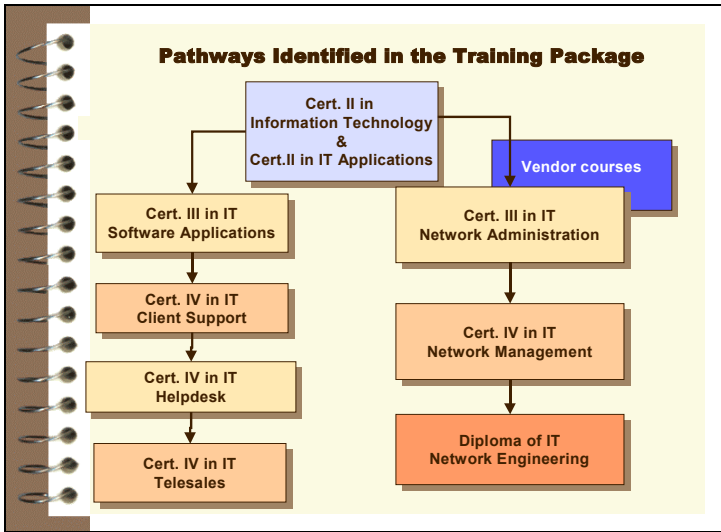
Possible Job Roles for E-Business Qualifications

During the process of developing the E-Business qualifications and competency standards in Information Technology, obvious relationships were established with a number of job roles in the contemporary workforce. The following table provides some indication as to the range of job roles which might be considered relevant to graduates from particular qualifications.

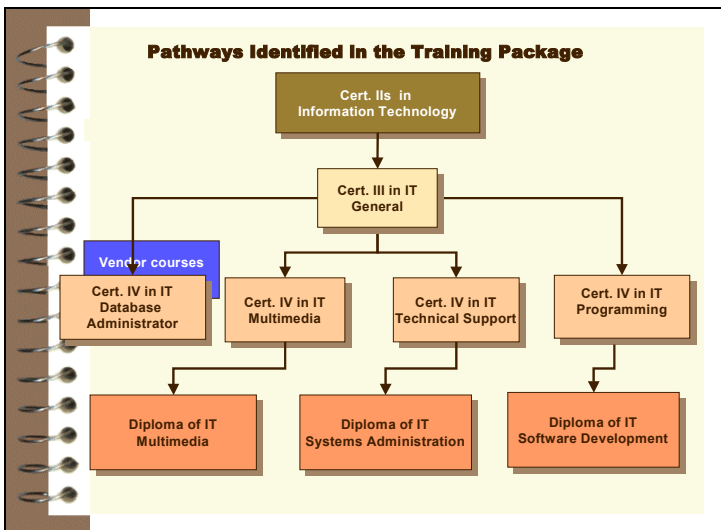
Certificate I in Information Technology (E-Consumer) ICA10201	<ul style="list-style-type: none"> ▪ This qualification provides foundation skills for all job roles requiring basic online access and application skills.
Certificate IV in Information Technology (Website Administration) ICA41001	<ul style="list-style-type: none"> ▪ Client Support ▪ Internet/Intranet Administrator ▪ Internet Webmaster ▪ Web Development Officer ▪ Website Coordinator/Administrator
Certificate IV Information Technology (Website Design) ICA41101	<ul style="list-style-type: none"> ▪ Multimedia Graphic Designer ▪ Online Producer ▪ Web Designer ▪ Web Applications Developer ▪ Web Developer/Technical Writer
Diploma of Information Technology (Website Development) ICA50601	<ul style="list-style-type: none"> ▪ E-Commerce/Web Architect ▪ Intranet Engineer ▪ Solutions/Applications Architect ▪ Web Programmer/Software Engineer ▪ WAP Designer/Developer
Diploma of Information Technology (Internetworking) ICA50701	<ul style="list-style-type: none"> ▪ Configuration Specialist ▪ Middleware Integration Specialist ▪ Network/systems Engineer ▪ Solutions Architect ▪ Test Analyst
Diploma of Information Technology (E-Business Development) ICA50801	<ul style="list-style-type: none"> ▪ E-Business Development Manager ▪ E-Commerce Consultant ▪ Manager Business Development ▪ Programme Delivery Manager ▪ Web Development Manager
Diploma of Information Technology (Knowledge Management) ICA50901	<ul style="list-style-type: none"> ▪ Business Intelligence Consultant ▪ IS Manager ▪ Information Architect ▪ Knowledge Manager ▪ Report Writer
Diploma of Information Technology (Database Design & Development) ICA51001	<ul style="list-style-type: none"> ▪ Data Warehousing Consultant ▪ Database Developer ▪ Database Specialist ▪ Designer/Developer ▪ Senior Project Manager – Data warehousing
Diploma of Information Technology (Project Management) ICA51101	<ul style="list-style-type: none"> ▪ E-Comm Production Support Manager (RF) ▪ IT/IS Procurement Manager ▪ Online Production Co-Ordinator ▪ Project Manager – Development ▪ Project Manager (Small Projects)

Advanced Diploma of Information Technology (E- Business Development) ICA60101	<ul style="list-style-type: none"> ▪ Business Development Manager BroadBand & On-line Services ▪ E-Business Development Manager ▪ Incubator/Early Stage Company Specialist eBusiness ▪ Major Account Manager ▪ Web Project Leader – Business Development
Advanced Diploma of Information Technology (E-Business Analysis) ICA60201	<ul style="list-style-type: none"> ▪ Business Process Re-engineering Consultant ▪ E-Business Analyst ▪ IT Change Manager ▪ Senior Business Solutions Manager ▪ Strategic Business Consultant
Advanced Diploma of Information Technology (E-Learning Development) ICA60301	<ul style="list-style-type: none"> ▪ Consultant – HR, Learning & Development ▪ eLearning Consultant ▪ Online Producer ▪ Practice Manager – eLearning ▪ Training Developer/Team Leader – CBT, Web
Advanced Diploma of Information Technology (E-Security) ICA60401	<ul style="list-style-type: none"> ▪ E-Risk manager ▪ Internal Computer Audit Specialist ▪ Information Risk Manager (IRM) ▪ IT Security Consultant ▪ Security Engineer
Advanced Diploma of Information Technology (Project Management) ICA60501	<ul style="list-style-type: none"> ▪ E-Business Project Manager ▪ Middleware Project Manager ▪ Project Director ▪ Project Manager (Large Projects) ▪ Senior Project Manager (SOE)

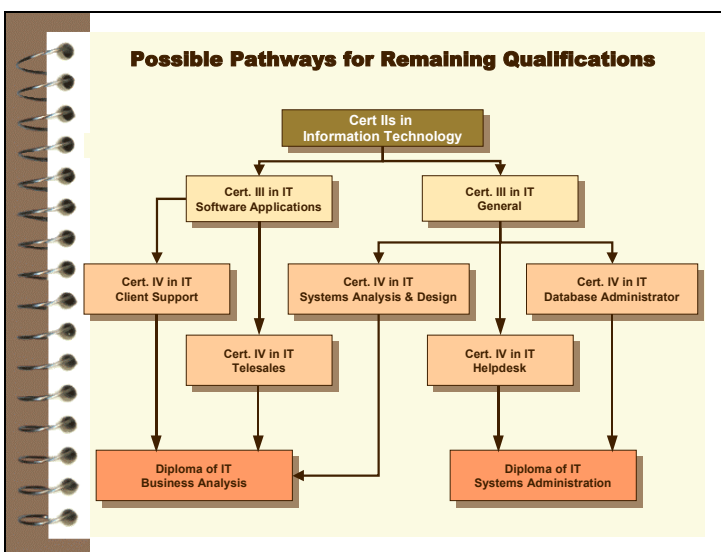
Possible Structured Learning Pathways



Registered Training Organisations may benefit from advice on structured learning pathways. The adjacent flowcharts provide an indication of the possible sequencing of qualifications. Two important features need to be understood before interpreting structured pathway alternatives.

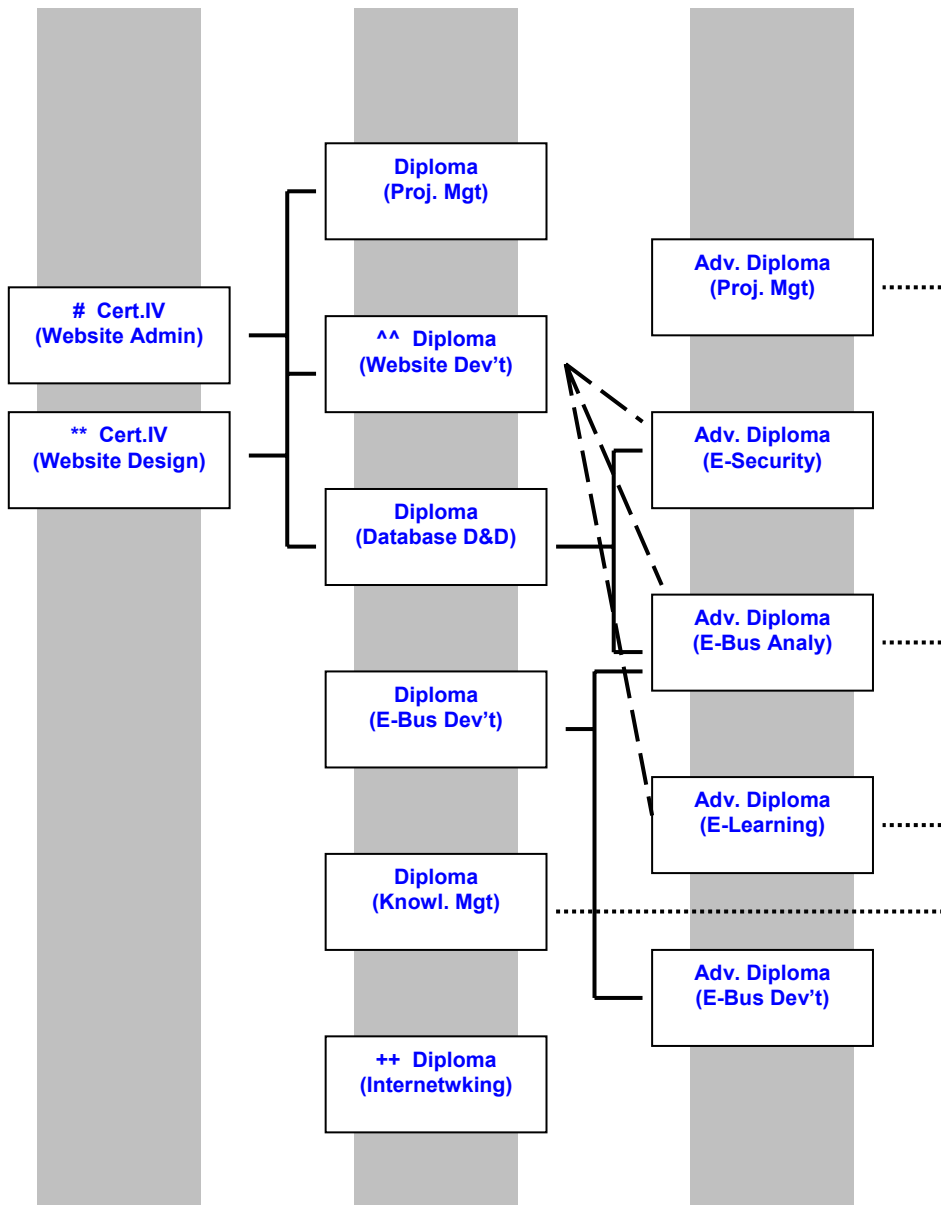


1. Whilst the qualifications contained within this Training Package contain recommendations for a person’s entry competencies, these are not intended to become compulsory prerequisites for a “course” of study. Additionally, one Certificate is not a prerequisite for another, eg A person is not required to hold a Certificate II before they are allowed to be assessed at Certificate III. Decisions on pedagogical rationale remain in the domain of the RTO.



2. It should not be assumed that all suggested entry competencies will be covered by adhering to a structured learning pathway such as the adjacent example. As assessment of a person’s competence is the sole determinant for the issuing of a qualification, the RTO will take responsibility for the assessment and not rely on the learning process as evidence of competence, i.e. this Training Package is built on the principles contained within the Australian Recognition Framework. The emphasis is on outcomes, measured in competencies, not the process of learning measured in time.

Sample Learning Sequences: IT E-Business Qualifications Certificates IV to Advanced Diploma



Possible entry from ICA99 Cert. III (General) or (Network Admin)
 ** Possible entry from ICA99 Cert. IIs or Cert. III (General) or (Software Apps)
 ^ ^ Possible entry from ICA99 Cert. IVs (Syst Analy & D) or (Programming)
 + + Possible entry from ICA99 Network Admin &/or Management stream

Information Technology Assessment Guidelines

The future of the Information Technology industry lies in its capacity to be innovative and competitive³. Inexorably linked to that future is an education and training system that capitalises on the application of emerging technology and business opportunities.

This system must be capable of developing a workforce that can clearly demonstrate the competencies required for highly efficient and productive process outcomes. It must also produce a qualifications system that recognises the skills of the workforce, facilitates the portability of competence and supports enterprise specific learning systems. A nationally agreed assessment framework will assist these outcomes to be delivered.

Assessment System Overview

The purpose of assessment is to confirm that a person can perform to the standards expected in the workplace as expressed in the relevant industry competency standards. The role of the assessment system is to provide the principles and guidance required to ensure that any assessment in relation to industry competency standards is fair, valid and consistent. The Information Technology Assessment Guidelines are designed to provide assistance to the assessor, and the candidate in the assessment, for assessment against the Information Technology competency standards.

The assessment must be conducted under the auspices of the Registered Training Organisation that is to issue the qualification. Close liaison is required between the assessor, the Registered Training Organisation and the workplace where a mix of on and off the job assessment is being conducted.

The assessment system detailed below is to be applied up to Level 6 (Advanced Diploma) in the Australian Qualifications Framework.

Benchmarks for Assessment

The benchmarks for assessment in the Information Technology industry are the endorsed national competency standards. These standards detail what constitutes vocational competence in a range of occupations at different levels of complexity. They also outline whether the units of competence can be assessed on or off the job.

The benchmarks for assessment in the Information Technology Systems Training Package are the endorsed competency standards contained within this Training Package. The Information Technology competency standards detail what is required in the role of IT professionals. They also outline whether the units of competence can be assessed on or off the job.

³ National Competencies in the IT Industry, Jackson Doyle & Associates, December 1996.

Assessor Qualifications

Assessments against competencies in the IT Training Package will be carried out in accordance with these endorsed guidelines. The guidelines include the necessary qualifications for those conducting assessments and provide for those situations where more than one person may contribute to the assessment and where the required technical and assessment competencies may not all be held by any one person.

Between the persons conducting assessments against the Information Technology Training Package they must hold the following competencies for assessors contained in the Training Package for Assessment and Workplace Training:

BSZ401A Plan Assessment
BSZ402A Conduct Assessment, and
BSZ403A Review Assessment

which are deemed equivalent to the units:

Conduct Assessment in Accordance with an Established Assessment Procedure
Extension Unit: Plan and Review Assessment

from the former Assessor and Workplace Trainer competency standards endorsed by the National Training Board, but now superseded by Training Package for Assessment and Workplace Training.”

A person may gain competence as an assessor by successfully completing a workplace assessor training program or an approved Recognition of Prior Learning process, which includes the above units of competence.

An assessor may be competent in the above units and work collaboratively with an individual or panel of people competent in the systems development, integration, installation, client support, maintenance and control competencies, at least to the level being assessed.

Using Qualified Assessors

Qualified assessors may be used differently in a range of different workplace and institutional contexts. The requirement to use qualified assessors may be met through the use of:

- a workplace assessor who is competent against the assessor competency standards and has the relevant technical competencies at least to the level being assessed; or
- an external assessor who is competent against the assessor competency standards and has the relevant technical competencies at least to the level being assessed; or
- a workplace assessor who is competent against the assessor competency standards and who has ready access to another person who is competent in, and can advise the assessor on, the relevant vocational competencies at least to the level being assessed; or
- an external assessor who is competent against the assessor standards but with the assessment evidence being collected, utilising industry endorsed assessment procedures, by a workplace supervisor who has the relevant vocational competencies at least to the level being assessed; or
- a workplace supervisor with the relevant vocational competencies at least to the level being assessed who utilises industry endorsed assessment procedures with the outcome being validated by an external assessor who is competent against the assessor standards.

Relevant technical competencies and relevant vocational competencies implies current competencies.

Records of assessments against competency standards and supporting records will be held by Registered Training Organisations that issue credentials based on these assessments. The wide range of variables contained in most units of competence will result in the context of the person’s competence being a particular IT language, application or version of an application. It is therefore important that the individual maintain a Competency Record Book, which will contain the details of competency standards achieved, whereas the Registered Training Organisation will retain only those records related to credentials issued. (Competency Record Books are available for use in the non-endorsed component of this Training Package) In cases where competency has been assessed or confirmed by a number of Registered Training Organisations, it is the responsibility of the Registered Training Organisation to issue an Australian Qualification Framework (AQF) credential where a package of competencies relating to a AQF have been attained.

Statements of Attainment will be issued which identify all achieved competency units. A qualification will be issued once workplace assessment requirements as demonstrated in the standards have also been successfully demonstrated.

External Audit of Assessment Process

External audit is a key to maintaining a quality assessment system. Registered Training Organisations, workplace assessors and employers will be involved in this and other quality assurance mechanisms. Audit processes will be developed and managed by State Registration Authorities in conjunction with industry organisations.

Guidelines for Designing Assessment Materials

The competency standards provide information to guide assessment of each of the units of competence. Additional supporting materials will be contained in the non-endorsed assessment strategies of the Training Package. Using these resources, assessors either in a workplace or an institutional context will be able to plan and conduct assessments.

The non-endorsed section of the Training Package will provide guidance to determine the range of available assessment tools appropriate to the assessment contexts. Assessors will be able to design or modify existing assessment tools so that the requirements of the individual and the assessment context are met.

Guidelines for Conducting Assessment

Under no circumstances should the assessment be conducted in a way that does not require the learner to demonstrate the skills covered by the competencies.

The following principles of assessment should be followed when conducting any assessment, and will be the benchmarks for the ongoing review of the assessment system.

Transparency of process - Prior to the assessment, both the assessor and the candidate should be aware of what will be assessed and the process of the assessment. The individual being assessed should also be aware of the Registered Training Organisation's appeals process in case they feel they have been unfairly assessed.

Validity - assessments are valid when they assess what they claim to assess. Assessors need to be fully aware of what is to be assessed. Assessors will have access to clearly defined competency standards which detail the evidence required to demonstrate that the performance criteria have been met.

Reliability - assessment is applied consistently from employee to employee and context to context. The methods and procedures employed in an assessment ensure that different individuals in different contexts can demonstrate the requirements of the competency standards. There should be consistency in the interpretation of evidence.

Flexibility - assessment needs to be flexible so that it incorporates the range of environments and organisations involved in assessment. Flexibility in assessment is also required for different forms of knowledge and skills that underpin performance.

Fairness - assessment is fair if it does not disadvantage anyone. Individuals undertaking assessment should clearly understand what is to be assessed and the process for that assessment. The assessment should place all individuals on equal terms and rely on evidence of performance not relative to individual ability.

Practicality - the assessment must not be onerous financially or in terms of time to those involved in the process. It must be practical for both individuals and organisations wishing to be involved in an assessment.

The use of workplace simulation for assessment of IT units of competence

The focus of this section is to define workplace simulation as an assessment strategy to meet IT Training Package requirements. Within this context, simulation refers to activities that aim to duplicate the complexity of the workplace, and are used to assess performance against units of competence.

The Registered Training Organisation must simulate the budgetary, timeframe and scope constraints and ensure quality processes and OHS procedures are followed when duplicating workplace conditions.

The Resource sections in the Evidence Guides of the relevant units of competence specify the physical resources that are required for the candidate to demonstrate competence. The resources include hardware and software, procedural guidelines, reports and people. These resources combined with the following information will provide you with a comprehensive yet flexible approach for assessing in the context of workplace simulation.

Workplace Simulation Criteria

The following items should be addressed when using workplace simulation for the IT Training Package:

- That workplace simulation provides the necessary complexity to replicate a workplace environment. There are certain conditions that exist in a workplace which need to be present to make the workplace simulation realistic and cost effective. These conditions include requirements such as:
 - the use of facilities and equipment that meet current industry standards
 - the presence of customers (including difficult customers and diverse types of customers)
 - the use of quality processes
 - realistic allocations of time to tasks and deadlines
 - consistent performance over time
 - working with others in teams (and where necessary as a team leader)
 - realistic considerations of budget constraints
 - operational procedures and guidelines
 - up-to-date information and authentic documentation (eg workplace roles, occupational health and safety regulations, procedural manuals, policies, project plans, documentations standards etc.).

- That workplace simulation reflects authentic work practices. Simulated activities used to assess against industry standards must provide opportunities for integrated assessment of competence, which includes:
 - performing the task (task skills)
 - managing a number of tasks (task management skills)
 - dealing with workplace irregularities such as unexpected problems, breakdowns and changes in routine (contingency management skills)
 - fulfilling the responsibilities and expectations of the job and workplace, including working with others (job/role environment skills)
 - integrated approaches to work performance (including the performance of multiple tasks, prioritisation of competing tasks, and the application of service standards and OH&S requirements)
 - transferring competencies to new contexts
 - assessment of performance over time.

For the assessment system to work efficiently, the process must be coordinated with each participant being aware of his or her role.

The Candidate

The candidate is at the centre of the process. The candidate will initially determine his or her own readiness for assessment. This involves undertaking an initial self-assessment to determine if they are ready for an assessment. An individual may wish to be assessed for a range of reasons such as, advanced standing in a course, for recognition of current competencies (RCC) to gain a qualification or a statement of attainment or for career purposes.

Self-Assessment

Self-assessment provides the candidate with an opportunity to assess his or her own performance. It also allows them to understand more clearly what is considered effective performance in their current and other similar work environments. The candidate is given the competency standards on which they will be assessed. They will decide which normal day to day work processes provide the best opportunity to demonstrate the performance criteria. This increases the candidate's likelihood of being able to transfer the effective use of the competencies to other work places and new contexts. Self-assessment promotes the candidate's ability to undertake continual improvement of their own work, by introducing them to a process of self-review

The candidate may wish to document the process and outcome of their self-assessment. If they consider that they are ready for a formal assessment, the candidate will discuss their self-assessment with the assessor. This discussion should consider why a particular process was chosen, and whether this affected competent performance. This process helps the candidate decide whether they are ready for an assessment. It also reduces the number of potential appeals and provides the assessor with some information on the candidate's underpinning knowledge and skills for the units being assessed. Additional tools to aid this process are contained in the non-endorsed part of this Training Package.

The self assessment process may:

- clarify the purpose and goal of the assessment;
- identify processes which lead to effective demonstration of the performance criteria;
- produce an outcome (product or role process) which successfully demonstrates competency;
- enable the candidate to evaluate the process and outcome; and
- enable the candidate to critically reflect on the process and outcome.

This means the candidate will become more practised in evaluating their own processes and standard of work.

The Employer

The assessment system provides employers with a valid and reliable process for appraising the skill levels of their current and future work force. An employer may request an individual to be assessed for a range of reasons such as, training and development purposes, internal recruitment and promotion, and external recruitment. The employer requesting an assessment must ensure that the candidate has access to all information relating to the assessment process. This should include as a minimum what is going to be assessed and what the appeals process involves. An employer may also be an assessor, but must be working under the auspices of a Registered Training Organisation if a credential is to be issued.

The Assessor

The integrity of the assessment system relies on the assessor providing a fair, valid and reliable assessment. The assessor will ensure that the candidate understands what the assessment process involves and what will be assessed. The assessor also informs the candidate and employer of the appeal process. The appeal process is the responsibility of the Registered Training Organisation and information on the appeal system will be provided to assessors working for or in affiliation with the RTO. The assessor should assess in the workplace wherever practical, and attends to assessment administration tasks. An important aspect of the assessor's role is to provide the candidate with feedback on competency gaps.

Feedback is an important role of the assessor, and should provide information on where and how performance can be improved. An assessor may also be able to provide information on resources, such as training programs, that can be undertaken to become competent. It is important that feedback is provided in a positive and informative manner rather than a negative or punitive way.

Assessment of the standards should be as holistic and integrated as possible. This means that the assessment should cover a range of interconnected competency units.

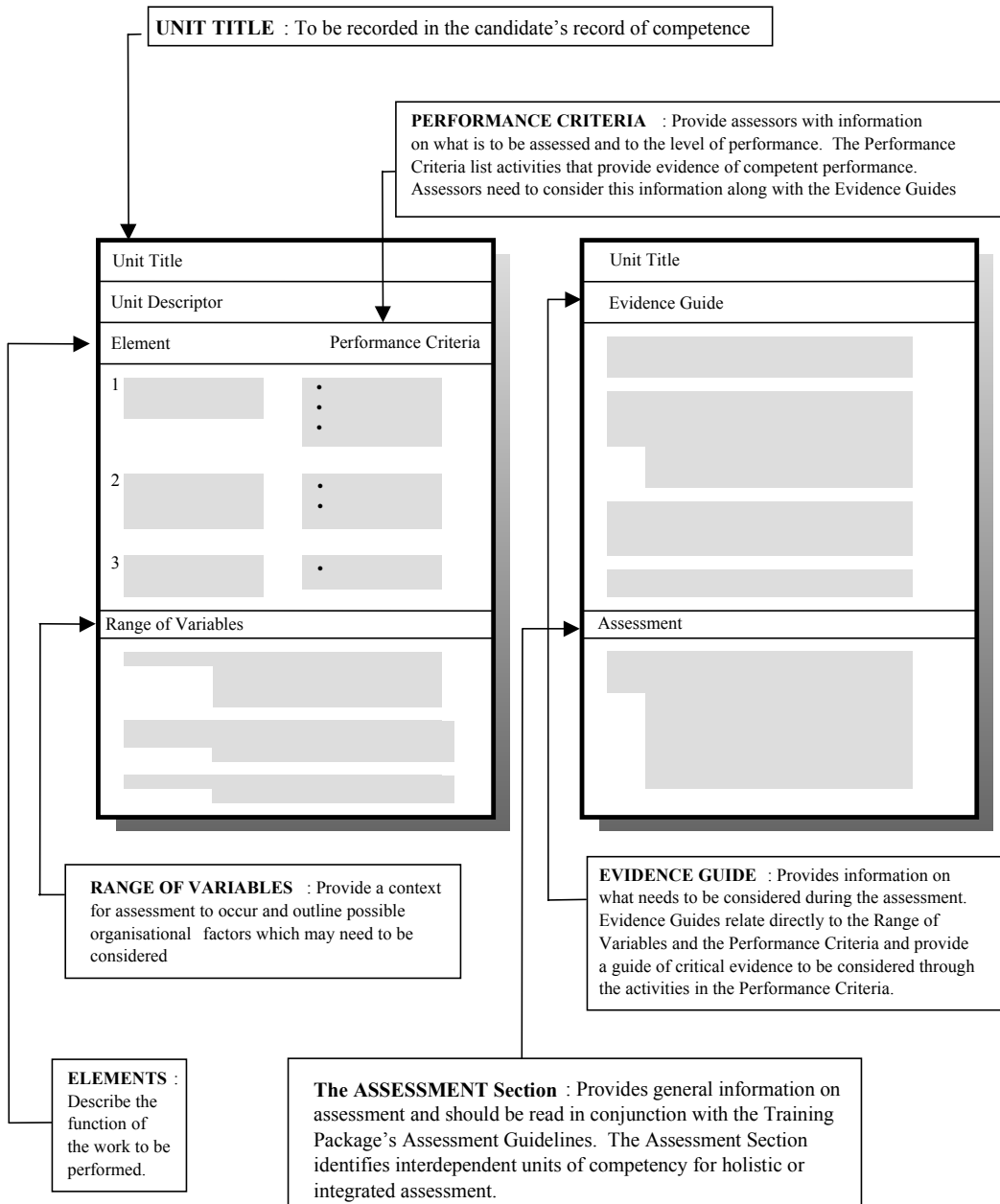
Assessments which occur outside a training program or which do not use integrated assessment should ensure that:

- assessment procedures are the most effective for the context and purpose of the assessment;
- assessment materials developed for the assessment, conform to the guidelines in the non-endorsed section of this training package;
- evidence is gathered in a integrated manner;
- assessment is conducted as a holistic practice;
- the time frame for assessment is kept to a minimum;
- feedback is provided in a positive and timely manner; and
- the assessment is not seen as punitive.

When assessments are conducted, they must comply with all other information contained within these assessment guidelines.

The following diagram outlines how the systems development, integration, installation, client support, maintenance and control competency standards guide assessment.

Assessment against Competencies



Role of Registered Training Organisations

Registered Training Organisations can be individual employers, training providers, industry bodies and providers of assessment services. Whilst some State Recognition Authorities (SRAs) may establish different degrees of autonomy for registered training providers, under national agreements once registered they will be able to:

- develop training programs based on endorsed competency standards. Where no endorsed standards exist, providers will be required to deliver programs accredited by the relevant SRA as being based on industry standards;
- deliver training off the job, on the job, or in a simulated environment to enable assessment directly against the performance criteria in the standards;
- assess competence in the workplace against the standards (the skill requirements for assessors are outlined in Section 2.1);
- assess off the job or in a simulated environment;
- issue credentials. AQF qualifications (AQF Certificates, Diplomas etc) can be issued if performance has been assessed in the workplace or simulated environment against the competency standards; and
- record and maintain records of all off and on the job assessed competency standards where a qualification or Statement of Attainment is issued.

Partnerships

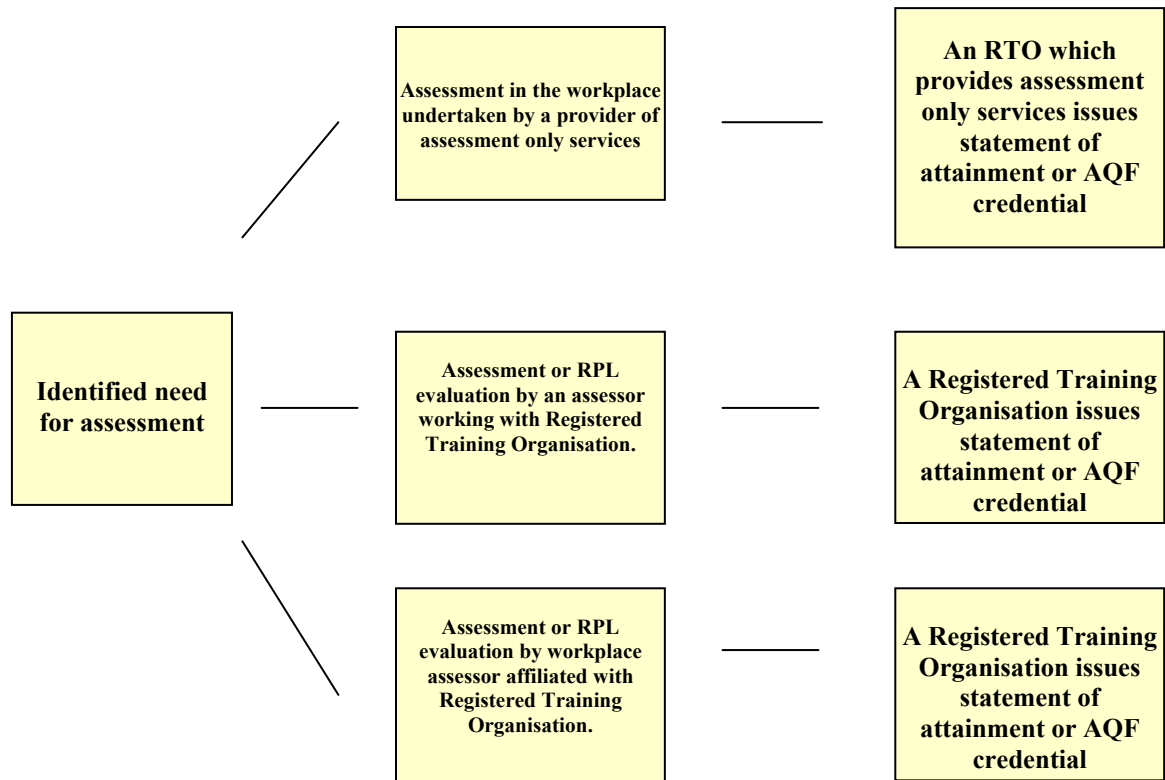
The IT industry assessment system relies on a network of relationships between Registered Training Organisations, employers and Industry Training Advisory Bodies (ITABs) and IT Vendors. The combination of rapid technological development and a highly mobile workforce result in an ever evolving training requirement in the IT industry in Australia and globally. In developing this Training Package it was acknowledged by most parties that there was an inherent interdependence of employers, individuals and RTOs. Close working relationships will assist greatly in better defining the needs of all parties and the mechanisms that may satisfy those needs.

Partnerships will also be required between Registered Training Organisation and employers. Those relationships need to facilitate workplace assessments which utilise the services of an assessor employed by the Registered Training Organisation. An enterprise or another organisation may also be a Registered Training Organisation.

Workers who gain competence on the job without completing a training program or being enrolled with a Registered Training Organisation will need to access an assessor affiliated with a Registered Training Organisation if a qualification is to be issued.

Assessment Pathways

The flow chart below details the range of assessment pathways available to an individual. They apply equally to a candidate requesting the Recognition of Prior Learning or the award of a credential.



Assessor Training

Assessor training needs to be suitable for employers and employees and must therefore provide flexible modes of delivery and at a low cost. Training must be against the assessor competency standards and customised for the IT industry.

The endorsed assessor training will cater for flexible delivery and result in the issuing of a national qualification. Costs for assessor training will be borne by the individual wishing to become an assessor, his or her employer or by publicly funded incentive schemes if available.

Professional Development of Assessors

Valid, reliable and consistent assessment of competency standards by registered assessors is the crucial outcome of a quality of the assessment system. The National and State ITAB network will promote the IT assessment system, and in partnership with industry and Registered Training Organisations, ensure that adequate professional development opportunities are made available.

2. Strategy Planning

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ICAITSP039B	Match the IT needs with the strategic direction of the enterprise	2-15
ICAITSP040B	Manage and review contracts-	2-20

UNIT	ICAITSP036B IT strategy meets business solution requirements
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FIELD	Strategy Planning
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DESCRIPTION	This unit describes the competence required during the initial planning phase to assist in determining the best IT solution, define the basic goals of the solution, and provide the basis for a high-level project work plan.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITSP037B, ICAITAD041A, BSX154L501 or 601A, BSX154L507 or 607A
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ELEMENT	PERFORMANCE CRITERIA
1. Assist in establishing the basis for best IT systems solution	<ol style="list-style-type: none"> 1. The enterprise's analysis of current needs and projected requirements is reviewed against initial project parameters 2. The basic goals of solutions are defined in line with the business objectives and future requirements and business continuity impact is considered 3. Anticipated organisational or industry changes and directions are verified with higher authorities 4. Required cycle-time for systems change is confirmed with higher authorities according to proposed project methodology 5. Information is prepared for higher authorities to negotiate parameters/ scope with top level management to secure buy-in according to requirements
2. Contribute to the development of the project goals and objectives	<ol style="list-style-type: none"> 1. Project scope, policies, philosophies, responsibilities, guidelines, major milestones, assumptions, and constraints are outlined, through individual or group contribution, according to agreed brief and /or contract 2. The project goals are aligned, through individual or group contribution, with the business and Information Technology goals of the organisation 3. The impact the system will have on the organisation is ascertained and documentation prepared according to higher authority requirements
3. Contribute to the determination of best IT systems solution	<ol style="list-style-type: none"> 1. A range of solutions (off-the-shelf versus custom systems) are evaluated according to project goals and client expectations 2. The high level hardware, software, and communications environment necessary for the proposed systems solution are defined against project goals and client expectations with consideration of disaster recovery requirements 3. A feasibility study and a cost benefit analysis are contributed to, in an efficient and timely manner
4. Contribute to the preparation of strategy report	<ol style="list-style-type: none"> 1. The contribution of information for development of a strategy report is communicable to team members, management and stakeholders 2. A number of viable options are developed with individual and/ or team contribution where client expectations are met and cost considered 3. Costings for each option are developed according to project cost constraints

UNIT	ICAITSP036B IT strategy meets business solution requirements
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables statement contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Analysis process	<p>The business needs analysis process is independent of the above unit, but provides the basis for planning in this unit. The analysis process will vary according to the size, type and scope of the IT project or systems development project</p> <p>The candidate will need access to the outcomes of the business analysis process to demonstrate competence in this unit</p>
Business Solutions	<p>Business solutions may include:</p> <ul style="list-style-type: none"> • green field sites, • the integration of new solutions with existing IT infrastructures, • e-commerce solutions that include different business models <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to possible business solutions were considered and appropriate choices made given the business objectives and client requirements.</p>
Business Objectives	<p>The business objectives may be contained in a business strategy or business planning document, or in a client expectations brief. The business objectives may be linked to wider organisational objectives</p>
Workplace environment	<p>Benchmarks and benefits will vary from environment to environment.</p> <p>The business objectives will vary the extent of the change process – systems only, Business Process Re-engineering (BPR), organisational.</p> <ul style="list-style-type: none"> • May or may not include the evaluation of systems development methodologies.
Current Systems	<p>Systems will vary and may include: people systems, legacy systems, LAN, WAN, intranets</p>
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.</p>
Team	<p>Level of autonomy of individual team members will vary. Teams may include:</p> <ul style="list-style-type: none"> • solution developers and business clients working together • individual business analysts, • a number of third party solution developers working together, or • a number of different businesses working in partnership
Target Agency Knowledge	<p>The target agency’s area of e-commerce will vary from selected areas of operation to highly integrated whole of organisation approach</p> <p>The target agency’s knowledge of IT and IT systems development will vary</p>
Planning Procedures	<p>Procedures are those based on client organisational requirements and will vary from business to business.</p>

| Solution developers will have their own methodologies.

UNIT	ICAITSP036B IT strategy meets business solution requirements
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Small Business	In a small business there may not be a higher authority and so the requirements will be based on client requirements, approval and sign off. Procedures for top management approval and sign off will vary
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EVIDENCE GUIDE	
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Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of the target agency’s business objectives and the target agency’s goals for the system</p> <p>Assessment must confirm the ability to meet client requirements by ensuring the planning links business objectives and desired efficiencies with an appropriate system.</p> <p>Assessment must confirm the ability to communicate information in a professional and business-like manner.</p>	
Interdependent assessment of units	This unit may be assessed with ICAITSP037B, ICAITAD041B, BSX154L501C or 601A, BSX154L507 or 607A. The interdependence of units of competency for assessment will vary with the particular project or scenario.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • A broad knowledge base incorporating some theoretical concepts of three or more current industry systems development methodologies • Current business practices in relation to preparing reports and group interview processes • Components of the business planning process relevant to the development of IT business solutions • Current industry accepted hardware and software products with broad knowledge of general features and capabilities of technology related to the competency • The role of stakeholders and the degree of stakeholder involvement in the development of the IT strategy • Specific client business domain requirements in relation to proposed IT solutions • Current business practices in relation to quality assurance practices for identifying and recommending IT solutions • Cost benefit analysis and identifying information sources for a cost benefit analysis 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of predictable problems, such as identifying the best IT systems solution and defining the basic goals of the system • Negotiation skills in relation to self and other team members and applied to a defined range of predictable problems, such as negotiating the best IT systems solution and defining the basic goals of the system • Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in system development and identifying business objectives and future requirements and business continuity impact • Project planning skills in relation to set benchmarks and identified scope in relation to contributing to a high-level project work plan • Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature • Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas, such as the contribution of information for development of a strategy report

UNIT	ICAITSP036B IT strategy meets business solution requirements
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Resources	<p>To demonstrate this unit of competence the candidate will require access to</p> <ul style="list-style-type: none"> detailed information relating to the business’s current needs and project requirements, a client expectations brief, the business’s objectives, information on a range of IT business solutions. <p>The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the ongoing implementation and monitoring aspects of this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>The candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.</p>

Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITSP037B Contribute to the development of a strategy plan
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FIELD	Strategy Planning
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DESCRIPTION	This unit describes the competency required to contribute to the development of a strategic plan that identifies the final expected results and details how these results will be achieved.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITSP036B, ICAITAD041A or ICAITS109A.
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ELEMENT	PERFORMANCE CRITERIA
1. Contribute to global project directions and statements	1. Business strategy, vision, goals and objectives are confirmed and linked to expected project results 2. The development of problem and solution statements which are clearly linked to the delivery of the business opportunity are clearly, coherently and concisely contributed to 3. Prepare for the analysis process with project team members based on expected project results and problem and solution statements
2. Participate in the evaluation of various systems development methodologies	1. System development methods related to development needs are compared 2. Existing IT system and components are evaluated if an IT system already exists 3. The impact of alternative systems methodologies and design on the business are evaluated, including the change management strategy 4. Best fit between system design and expected project results are determined in conjunction with higher level project management personnel
3. Participate in feedback session with clients	1. Feedback session to confirm direction of strategy with clients is planned and prepared 2. Feedback session in plain English is planned so that client will comprehend the information and feedback 3. Confirmation is made with client that the proposed project will come in on time and within budget 4. Any accepted alterations and outstanding issues are recorded for incorporation in strategy plan

UNIT	ICAITSP037B Contribute to the development of a strategy plan
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables statement contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Analysis process	<p>The business needs analysis process is independent of the above unit, but provides the basis for planning in this unit. The analysis process will vary according to the size, type and scope of the IT project or systems development project</p> <p>The candidate will need access to the outcomes of the business analysis to demonstrate competence in this unit</p>
Business Solutions	<p>Business solutions may include green field sites, the integration of new solutions with existing IT infrastructures, e-commerce solutions</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to possible business solutions were considered and appropriate choices made given the business objectives and client requirements.</p>
Business Objectives	<p>The business objectives may be contained in:</p> <ul style="list-style-type: none"> • a business strategy • business planning document, or • a client expectations brief
Workplace environment	<p>Benchmarks and benefits will vary from environment to environment.</p> <p>The business objectives will vary the extent of the change process – systems only, Business Process Re-engineering (BPR), organisational.</p> <p>May or may not include the evaluation of systems development methodologies.</p>
Current Systems	<p>Systems will vary and may include: people systems, legacy systems, LAN, WAN, intranets</p>
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.</p>
Team	<p>Level of autonomy of individual team members will vary. Teams may include:</p> <ul style="list-style-type: none"> • solution developers and business clients working together • individual business analysts • a number of third party solution developers working together • a number of different businesses working in partnership
Project methodology	<p>Will vary according to the solutions developer’s preferred approach. The project methodology may include a number of templates. Analysis and system development processes may be highly documented and formalised</p>
Target Agency Knowledge	<p>The target agency’s area of e-commerce will vary from selected areas of operation to highly integrated whole of organisation approach</p> <p>The target agency’s knowledge of IT and IT systems development will vary</p>

UNIT	ICAITSP037B Contribute to the development of a strategy plan
Planning Procedures	Procedures are those based on client organisational requirements and will vary from business to business
Small business	In a small business there may not be a higher authority and so the requirements will be based on client requirements, approval and sign off. Procedures for top management approval and sign off will vary
Feedback session	May follow a formal methodology and involve business clients, team members and third party solution providers and may be based on formal methodologies

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of system development methodologies</p> <p>Assessment must confirm the ability to identify issues, goals and outcomes that are the requirements of the stakeholders. This should be confirmed with the stakeholders. The candidate must also include ongoing review mechanisms for the strategy plan</p>	
Interdependent assessment of units	<p>This unit may be assessed with ICAITSP036B, ICAITAD041B, ICAITS109B Evaluate system status. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • A broad knowledge base incorporating some theoretical concepts of three or more current industry systems development methodologies, particularly for assessing the impact of alternative systems methodologies and design on the business • Current business practices in relation to preparing reports, particularly for contributing to the development of a strategic plan that identifies the final expected results and details how these results will be achieved • Identify components of the business planning process relevant to the development of IT business solutions • Current industry accepted hardware and software products with broad knowledge of general features and capabilities, particularly for contributing to the evaluation of a best fit between system design and expected project results • Broad knowledge of vendor product directions in relation to identifying long term best fit solutions • Specific client business domain requirements in relation to proposed IT solutions • Broad knowledge of quality assurance practices for identifying and recommending IT solutions • A basic knowledge of information gathering techniques, particularly for the development of problem and solution statements • Broad knowledge of change management systems, particularly for evaluating the impact of alternative systems methodologies and design on the business 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of predictable problems required to contribute to the development of a strategic plan and for the development of problem and solution statements • Negotiation skills in relation to other team members and applied to a defined range of predictable problems, such as during the analysis process • Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in system development, such as researching the impact of alternative systems methodologies and design on the business • Project planning skills in relation to set benchmarks and identified scope, such as contributing to the identification of business strategy, vision, goals and objectives and confirming that proposed project will come in on time and within budget • Teamwork skills involve contribution to solutions and goals of a non-routine or contingency nature, such as identifying best fit between system design and expected project results • Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas, such as preparing feedback session in plain English

UNIT	ICAITSP037B Contribute to the development of a strategy plan
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EVIDENCE GUIDE

Resources	<p>To demonstrate this unit of competence the candidate will require access to:</p> <ul style="list-style-type: none"> detailed information relating to the business’s current needs and project requirements, a client expectations brief, the business’s objectives, information on a range of IT business solutions. <p>The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the client feedback aspects of this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>The candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.</p>

KEY COMPETENCIES

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	3	3

UNIT	ICAITSP038B Set strategic plans
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FIELD	Strategy Planning
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DESCRIPTION	This unit defines the competency required to determine strategic alignment of IT directions with organisational goals
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITSP37B, ICAITW026B, ICAITS035B, BSX154L501 or 601A, BSX154L507 or 607A
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ELEMENT	PERFORMANCE CRITERIA
1. Communicate mission statement	<ol style="list-style-type: none"> 1. An IT mission statement is developed which relates to overall organisational mission statement 2. Mission statement is interpreted in active consultation with team members and management 3. Mission statement is communicated according to the organisation's stated purpose and values
2. Set objectives and targets	<ol style="list-style-type: none"> 1. Objectives and targets are developed after active consultation with team members and management according to organisational policies and procedures 2. Strategies and objectives are designed to accurately reflect the overall organisational mission and values 3. Strategies and objectives are attainable, cost efficient and realistic, within a designated time frame and allow for continuous improvement planning 4. Strategies and objectives are designed to contain sufficient detail to allow development of specific projects 5. Constraints upon objectives are clearly acknowledged
3. Develop action plans	<ol style="list-style-type: none"> 1. Action plans are developed, evaluated and implemented according to organisational policies and procedures 2. Action plans are checked for clear, comprehensive and concise details 3. Action plans are checked to take account of appropriate operational, financial, legal, human relations, internal and external operating environments and other relevant considerations 4. Performance criteria, targets, standards and implementation method are determined in proposal
4. Monitor strategic directions of enterprise with Information Technology needs	<ol style="list-style-type: none"> 1. External and internal operating environment are reviewed 2. Trends and developments are forecast according to strategic direction of organisation 3. Improvements are recommended and implemented 4. Review and evaluate recommendations and adjust to enterprise requirements

UNIT	ICAITSP038B Set strategic plans
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables statement contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Organisation

Variables may include but are not limited to:

- contracting arrangements relating to Information Technology purchasing;
- budgeting and strategic plans;
- time lines and budgetary constraints;
- size, type and location of organisation;
- core business and service range;
- internal and external operating environments;
- client support policies and procedures;
- formal and informal support resources to assist in development of strategic plan.

RANGE OF VARIABLES	
VARIABLE	SCOPE

Values and policies

May include: ethical work practices; client relationships; supplier relationships; legal requirements

Mission statements are formal and communicated in writing

Workplace environment

Benchmarks and benefits will vary from environment to environment.

The business objectives will vary the extent of the change process – systems only, Business Process Re-engineering (BPR), organisational.

May or may not include the evaluation of systems development methodologies.

Documentation and Reporting

Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.

Team

Level of autonomy of individual team members will vary. Teams may include:

- solution developers and business clients working together
- a number of third party solution developers working together, or
- a number of different businesses working in partnership

Project methodology

Will vary according to the solutions developer’s preferred approach. The project methodology may include a number of templates. Analysis and system development processes may be highly documented and formalised

Planning Procedures

Procedures are those based on client organisational requirements and will vary from business to business

UNIT	ICAITSP038B Set strategic plans
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Strategic Plan	The overall organisational strategic plan may take different forms. The IT strategic plan may form part of the overall strategic plan or may be in depth enough to be a stand alone document.
Small Business	In a small business there may not be a higher authority and so the requirements will be based on client requirements, approval and sign off. Procedures for top management approval and sign off will vary. In a small business an action plan may not be required as it will form part of the business plan.

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to develop strategic directions determined by the strategic alignment of IT directions with organisational goals	
Interdependent assessment of units	This unit may be assessed with ICAITSP37B, ICAITTW026B, ICAITS035C, BSX154L501 or 601A, BSX154L507 or 607A. The interdependence of units of competency for assessment will vary with the particular project or scenario.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Analysis and planning approaches to technical problems or management requirements taking into account organisational values and purpose, such as setting objectives and targets, developing action plans and monitoring strategic directions • Evaluating current system functionality to forecast for planning, particularly with regard to IT trends and developments • Evaluating internal and external operating environments to forecast for planning • Analysis and planning approaches to technical problems or management requirements taking into account the hardware platform used by organisation • Analysis and planning approaches to technical problems or management requirements taking into account network and security guidelines of the organisation in relation to IT & T • Evaluating the operating systems supported by the organisation to forecast for planning • A broad knowledge base of technology and product directions for evaluating and forecasting vendor and technology trends 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, such as developing mission statements, developing strategies, objectives and targets • Skills relating to analysis, planning and implementation of plans, such as developing and implementing action plans • Evaluation skills to forecast for planning purposes, particularly for evaluating internal and external operating environments in relation to current and future IT requirements

UNIT	ICAITSP038B Set strategic plans
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Resources	<p>To demonstrate this unit of competence the candidate will require access to:</p> <ul style="list-style-type: none"> detailed information relating to the business strategic plan, budget constraints, a timeframe for the strategic plan, the business’s objectives, information on a range of IT business solutions. <p>The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the ongoing implementation and monitoring aspects of this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated workplace environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Work involves the self-directed application of knowledge and the work of others may be supervised or teams guided.</p> <p>An individual demonstrating these competencies would be able to: demonstrate an understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas; analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations; evaluate information using it to forecast for planning or research purposes; take responsibility for own output in relation to broad quantity and quality parameters; and take limited responsibility for the achievement of group outcomes.</p>

KEY COMPETENCIES						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	2	3

UNIT	ICAITSP039B Match the IT needs with the strategic direction of the enterprise
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FIELD	Strategy Planning
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DESCRIPTION	This unit defines the competency required to ensure client support services meet current and future internal operational enterprise requirements as part of an integrated Information Technology plan
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITSP37B, ICAITW026B, ICAITS035B, BSX154L501 or 601A, BSX154L507 or 607A
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ELEMENT	PERFORMANCE CRITERIA
1. Evaluate current Information Technology against organisation's strategic direction	<ol style="list-style-type: none"> 1. Relevant, reliable information is regularly obtained from a variety of sources and is analysed with regard to organisational Information Technology requirements 2. Information regarding the impact of Information Technology developments on client support is accurately reported to appropriate personnel 3. Information related to current operational practices is used to determine possible Information Technology client support gaps 4. Operations are continually monitored and evaluated and action is taken to improve client support service where required 5. Evaluation of previous Information Technology relevant to the organisation is used to determine improvement opportunities in client support
2. Evaluate changes	<ol style="list-style-type: none"> 1. Information on relevant Information Technology systems supported by the organisation is accurate and accessible 2. Advantages and disadvantages of current and proposed Information Technology systems are accurately compared 3. Implications of introducing changes using appropriate analysis measures are accurately assessed 4. Proposed changes are designed to take account of previous evaluations
3. Develop action plans for future client support services	<ol style="list-style-type: none"> 1. Action plans are developed, evaluated and implemented according to organisational policies and procedures 2. Client requirements are taken into account when planning for client support service delivery within quality, time and cost parameters 3. Action plans contain, clear, comprehensive and concise details 4. Action plans take account of appropriate operational, financial, legal, human relations, internal and external operating environments and other relevant considerations 5. Targets, standards and implementation methods are determined in proposals

UNIT	ICAITSP039B Match the IT needs with the strategic direction of the enterprise
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4. Match the Information Technology needs with the strategic directions of the enterprise	<ol style="list-style-type: none"> 1. External and internal operating environment are reviewed 2. Trends and developments are forecast 3. A profit/productivity focus is maintained in planning for managing service provision 4. Improvements are recommended and implemented 5. Recommendations are reviewed and evaluated and adjusted to enterprise requirements
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables statement contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Organisation	<p>Variables may include but are not limited to:</p> <ul style="list-style-type: none"> • contracting arrangements relating to Information Technology purchasing; • budgeting and strategic plans; • time lines and budgetary constraints; • size, type and location of organisation; • core business and service range; • internal and external operating environments; • client support policies and procedures; • formal and informal support resources to assist in development of strategic plan
Values and policies	may include: ethical work practices; client relationships; supplier relationships; legal requirements
Workplace environment	<p>Benchmarks and benefits will vary from environment to environment.</p> <p>The business objectives will vary the extent of the change process – systems only, Business Process Re-engineering (BPR), organisational.</p> <p>May or may not include the evaluation of systems development methodologies.</p>
Documentation and Reporting	Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach
Team	<p>Level of autonomy of individual team members will vary. Teams may include:</p> <ul style="list-style-type: none"> • solution developers and business clients working together • a number of third party solution developers working together, or • a number of different businesses working in partnership

UNIT	ICAITSP039B Match the IT needs with the strategic direction of the enterprise
Project methodology	Will vary according to the solutions developer's preferred approach. The project methodology may include a number of templates. Analysis and system development processes may be highly documented and formalised
Planning Procedures	Procedures are those based on client organisational requirements and will vary from business to business
Strategic Plan	The overall organisational strategic plan may take different forms. The IT strategic plan may form part of the overall strategic plan or may be in depth enough to be a stand alone document.
Small business	In a small business there may not be a higher authority and so the requirements will be based on client requirements, approval and sign off. Procedures for top management approval and sign off will vary. In a small business this unit of competence might occur as part of the overall business planning process rather than as a separate process
Values and policies	<p>May include:</p> <ul style="list-style-type: none"> • organisational values and ethical work practices; • client relationships; • supplier relationships, • legal requirements, • escalation procedures, • change management strategies

EVIDENCE GUIDE	
Critical aspects of evidence	Competency is demonstrated by: accessing and analysing relevant information on changes to technology and resources; analysing strategic plans to determine future technology needs; monitoring resource utilisation and cost efficiency and effectiveness of technology.
Interdependent assessment of units	This unit may be assessed with ICAITSP37B, ICAITTW026B, ICAITS035C, BSX154L501 or 601A, BSX154L507 or 607A. The interdependence of units of competency for assessment will vary with the particular project or scenario.

UNIT	ICAITSP039B Match the IT needs with the strategic direction of the enterprise
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Underpinning skills and knowledge

Underpinning knowledge:

- A broad knowledge base of technology and product directions for evaluating and forecasting vendor and technology trends
- Analysis and planning approaches to technical problems or management requirements taking into account organisational values and purpose in relation to ensuring client support services meet current and future internal operational enterprise requirements
- A broad knowledge base for evaluating current system functionality to forecast for planning
- A broad knowledge base for evaluating internal and external operating environments in relation to IT practices and industry standards to forecast for planning
- Analysis and planning approaches to technical problems or management requirements taking into account the hardware platform used by organisation
- Analysis and planning approaches to technical problems or management requirements taking into account network and security guidelines of the organisation in relation to IT & T
- A broad knowledge base for evaluating the operating systems supported by the organisation to forecast for planning

Underpinning skills:

- Negotiation skills in relation to planning and selecting appropriate equipment and services for self and others, such as when planning for client support service delivery within quality, time and cost parameters
- Evaluation and report writing skills involving analysis for evaluating IT changes, documenting recommendations and developing action plans
- Evaluation skills to determine possible Information Technology client support gaps
- Broad strategic planning skills in relation to current operational practices and future requirements and the implications of introducing IT changes
- Planning and analysis skills for reviewing objectives and performance measures
- Time management skills in relation to planning the management of client support services
- Organising and presenting information in relation to business report writing requirements

Resources

To demonstrate this unit of competence the candidate will require access to:

- detailed information relating to the business strategic plan,
- budget constraints,
- a timeframe for the strategic plan,
- the business’s objectives,
- information on a range of IT business solutions.

The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts.

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the ongoing implementation and monitoring aspects of this unit.

UNIT	ICAITSP039B Match the IT needs with the strategic direction of the enterprise
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Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Work involves the self directed application of knowledge and the work of others may be supervised or teams guided. An individual demonstrating these competencies would be able to: demonstrate an understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas; analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations; evaluate information using it to forecast for planning or research purposes; take responsibility for own output in relation to broad quantity and quality parameters; and take limited responsibility for the achievement of group outcomes.

KEY COMPETENCIES

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	2	3

UNIT	ICAITSP040B Manage and review contracts
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FIELD	Strategy Planning
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DESCRIPTION	This unit defines the competency required to negotiate and formulate extensive client support contracts
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITSP37B, ICAITW026B, ICAITS035B
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ELEMENT	PERFORMANCE CRITERIA
1. Establish, develop and improve relationships	<ol style="list-style-type: none"> 1. People are treated with integrity, respect and empathy 2. The organisation's social, ethical and business standards are used to develop and maintain positive relationships 3. The trust and confidence of colleagues, clients and suppliers are developed and maintained through competent performance 4. Interpersonal styles and methods are adjusted to the social and cultural environment
2. Manage relationships to achieve contracts	<ol style="list-style-type: none"> 1. Negotiations regarding client support services are clearly and accurately communicated 2. Problems and misunderstandings are identified and clarified 3. Boundaries of service provision are clearly and accurately communicated to client 4. Seek client agreement in relation to service expectations
3. Plan resource use to achieve contract obligations	<ol style="list-style-type: none"> 1. Resource requirements are determined, taking into account client requirements and organisational needs 2. Boundaries of service provision are detailed according to organisation policy, budget requirements and time restraints
4. Monitor operational performance against contractual outcomes	<ol style="list-style-type: none"> 1. Progress is monitored to ensure quality standards are being achieved and maintained 2. Performance against contractual outcomes is monitored to assess progress in achieving contractual targets 3. Clients level of satisfaction with contracted performance are determined 4. Budget and financial information are analysed to monitor profit/productivity performance 5. Unsatisfactory performance is identified and prompt action to rectify the situation is taken 6. If necessary, recommendations for a contract variation are negotiated and referred for approval by appropriate personnel

UNIT	ICAITSP040B Manage and review contracts
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables statement contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Organisation	Variables may include but are not limited to: <ul style="list-style-type: none"> • contracting arrangements relating to Information Technology purchasing; • budgeting and strategic plans; • time lines and budgetary constraints; • size, type and location of organisation; • core business and service range; • internal and external operating environments; • client support policies and procedures; • formal and informal support resources to assist in development of strategic plan
Values and policies	May include: ethical work practices; client relationships; supplier relationships; legal requirements
Workplace environment	Benchmarks and benefits will vary from environment to environment. The business objectives will vary the extent of the change process – systems only, Business Process Re-engineering (BPR), organisational. May or may not include the evaluation of systems development methodologies.
Contractual outcomes	Contracts may be formal legal documents, Memorandums of Understandings, or less formal letters of agreement or emails which outline the scope of service provision
Documentation and Reporting	Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach
Team	Level of autonomy of individual team members will vary. Teams may include: <ul style="list-style-type: none"> • solution developers and business clients working together • a number of third party solution developers working together, or • a number of different businesses working in partnership
Project methodology	Will vary according to the solutions developer’s preferred approach. The project methodology may include a number of templates. Analysis and system development processes may be highly documented and formalised
Planning Procedures	Procedures are those based on client organisational requirements and will vary from business to business
Strategic Plan	The overall organisational strategic plan may take different forms. The IT strategic plan may form part of the overall strategic plan or may be in depth enough to be a stand alone document.
Small business	In a small business there may not be a higher authority and so the requirements will be based on client requirements, approval and sign off. Procedures for top management approval and sign off will vary. In a small

business appropriate personnel may be the same person who is managing the contract.

UNIT	ICAITSP040B Manage and review contracts
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Competency is demonstrated by negotiating and formulating extensive client support contracts by:</p> <ul style="list-style-type: none"> • accessing and analysing relevant information on resources and budgets • analysing current and future client support requirements • monitoring resource utilisation and cost efficiency and effectiveness against contractual obligations • reviewing objectives and performance measures <p>Movement in client satisfaction is in line with organisational policy and values</p> <p>Organisational policy and procedures relating to contracting arrangements for Information Technology are employed, monitored and evaluated</p> <p>Satisfying client requirements when negotiating for client support service delivery within quality, time and cost parameters</p>		
Interdependent assessment of units	<p>This unit may be assessed with ICAITSP37B, ICAITTW026B, ICAITS035C. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>		
Underpinning skills and knowledge	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • A broad knowledge base of methods for evaluating and forecasting vendor and technology trends • Analysis and planning approaches to technical problems or management requirements taking into account organisational values and purpose, such as formulating extensive client support contracts • Contracting requirements in relation to Information Technology purchasing of equipment and services, such as negotiating extensive client support contracts • Industry standards in relation to service and product agreements </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning skills:</p> <ul style="list-style-type: none"> • Negotiation skills in relation to contracting equipment and services, such as negotiating extensive client support contracts • Evaluation and report writing skills involving analysis, such as identifying service expectations and boundaries of service provision • Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts and gaining the trust and confidence of colleagues, clients and suppliers • Broad strategic planning skills for planning resource use to achieve contract obligations • Planning and analysis skills for reviewing objectives and performance measures against contract outcomes • Time management skills in relation to planning the management of services and monitoring satisfactory service • Organising and presenting information in relation to business report writing requirements, such as preparing information on client support performance outcomes and agreed quality standards </td> </tr> </table>	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • A broad knowledge base of methods for evaluating and forecasting vendor and technology trends • Analysis and planning approaches to technical problems or management requirements taking into account organisational values and purpose, such as formulating extensive client support contracts • Contracting requirements in relation to Information Technology purchasing of equipment and services, such as negotiating extensive client support contracts • Industry standards in relation to service and product agreements 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Negotiation skills in relation to contracting equipment and services, such as negotiating extensive client support contracts • Evaluation and report writing skills involving analysis, such as identifying service expectations and boundaries of service provision • Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts and gaining the trust and confidence of colleagues, clients and suppliers • Broad strategic planning skills for planning resource use to achieve contract obligations • Planning and analysis skills for reviewing objectives and performance measures against contract outcomes • Time management skills in relation to planning the management of services and monitoring satisfactory service • Organising and presenting information in relation to business report writing requirements, such as preparing information on client support performance outcomes and agreed quality standards
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UNIT	ICAITSP040B Manage and review contracts
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Resources	<p>To demonstrate this unit of competence the candidate will require access to:</p> <ul style="list-style-type: none"> detailed information relating to the business strategic plan, budget constraints, a timeframe for the strategic plan, the business’s objectives, information on a range of IT business solutions. <p>The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the ongoing implementation and monitoring aspects of this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Work involves the self directed application of knowledge and the work of others may be supervised or teams guided. An individual demonstrating these competencies would be able to: demonstrate an understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas; analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations; evaluate information using it to forecast for planning or research purposes; take responsibility for own output in relation to broad quantity and quality parameters; and take limited responsibility for the achievement of group outcomes.</p>

KEY COMPETENCIES

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Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	2	3

3. Analyse and Design IT Solutions

ICAITAD041B Determine client business expectations and needs	3-3
ICAITAD042B Confirm client business needs	3-7
ICAITAD043B Develop and present a feasibility report	3-11
ICAITAD044B Develop system infrastructure design plan	3-15
ICAITAD045B Produce network/communication design	3-19
ICAITAD046B Model preferred system solutions	3-23
ICAITAD047B Determine specifications for the project	3-28
ICAITAD048C Develop configuration management	3-33
ICAITAD049A Develop logical abstraction from requirements (OOA)	3-38
ICAITAD050A Develop detailed component specifications from project specifications	3-40
ICAITAD051B Develop client user interface	3-42
ICAITAD052B Design IT security framework	3-46
ICAITAD053B Design system security and controls	3-51
ICAITAD054B Validate quality and completeness of design	3-56
ICAITAD055B Determine transition strategy	3-60
ICAITAD056B Prepare disaster recovery/contingency plans	3-64
ICAITAD057A Manage a reuse library	3-70
ICAITAD058A Apply skills in object oriented design	3-73
ICAITAD138A Determine acceptable solution providers for e-business projects	3-75
ICAITAD139A Design a Database	3-80
ICAITAD140A Design a Server	3-85
ICAITAD141A Design dynamic websites to meet technical requirements	3-91
ICAITAD142A Design a website to meet technical requirements	3-98
ICAITAD143A Implement process re-engineering strategies for e-business	3-102
ICAITAD144A Determine best fit topology for a local network	3-106
ICAITAD145A Identify best fit topology for WAN network	3-112
ICAITAD146A Develop web site information architecture	3-118
ICAITAD147A Determine that database functionality and scalability suits business requirements	3-123
ICAITAD148A Identify new technology models for e-business	3-127
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UNIT	ICAITAD041B Determine client business expectations and needs
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FIELD	Analyse and Design
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DESCRIPTION	This unit describes the competency required to ensure the client business requirements are developed as a pre-requisite to designing the new/ additional system.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. One is ICAITSP037B.
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ELEMENT	PERFORMANCE CRITERIA
1. Specify context of business need or problem	<ol style="list-style-type: none"> 1. The business need is fully understood by project team and client 2. Methods for gathering and collecting information are ensured to be cost effective and relevant, both to the project and client environment 3. System boundaries, scope and methodologies to be used are determined
2. Specify interested parties	<ol style="list-style-type: none"> 1. People (especially the owner, sponsor and those that will contribute to defining the requirements and using the system), and roles of client users are identified 2. The physical requirements of the system are identified taking into account current system functionality, geography, environment, client user and cost constraints
3. Plan the requirements phase	<ol style="list-style-type: none"> 1. Most appropriate way to obtain requirements information is decided on 2. Any questionnaires or material needed for workshops and interviews are developed and trialled 3. A workable and extensible administration system to cope with incoming data is prepared 4. An extensible Data Dictionary to be used throughout the project is prepared. 5. Commitment and timing is agreed on by users and managers impacted by the plan.
4. Gather requirements	<ol style="list-style-type: none"> 1. Questionnaires are issued and participation in workshops and interviews has occurred as per the requirements plan. 2. Collected data is evaluated and collation of the requirements is started 3. Any gaps in knowledge or other requirements issues relevant to obtaining a satisfactory resolution are followed up 4. Views and requirements of key client users are identified and documented
5. Carry out preliminary analysis of information	<ol style="list-style-type: none"> 1. All functional areas included by the project brief are covered in the analysis and meet the client's stated business expectations 2. All views and requirements are compared for commonalties in line with project brief
6. Resolve conflicts and develop consensus	<ol style="list-style-type: none"> 1. Conflicting information is investigated and a single position is developed 2. The identified position is circulated for discussion with key client users according to agreed project scope 3. Consensus is gained with key client users subject to project brief and cost constraints

UNIT	ICAITAD041B Determine client business expectations and needs
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Client	<p>May be:</p> <ul style="list-style-type: none"> • a department within an organisation, • a business requiring an e-commerce solution • or a third party and so the relationship and ease of access will vary.
Workplace environment	<p>May involve:</p> <ul style="list-style-type: none"> • a business involved in a total organisational change, • a systems only change, a business improvement process, • an e-commerce solution involving the total organisation or part of the organisation
Business Solutions	<p>Business solutions may include:</p> <ul style="list-style-type: none"> • green field sites, • the integration of new solutions with existing IT infrastructures, • e-commerce solutions, that include different business models depending on the final requirement <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to possible business solutions were considered and appropriate choices made given the business objectives and client requirements.</p>
Roles	User roles within the project may vary from the user's role within the organisation
Documentation and Reporting	Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Constraints	Depending on the size of the organisation, project and /or development team the constraints will vary. Time and budget constraints will vary according to project size and length
Project Size	The project size will vary and may be large, small, discrete or integrated
Administration System	Depending on the size of the project, a system is required to maintain order and manage the amount of information being processed by the project member/s
Sources of information	May involve change management plans, project management plans, current systems design plans, business strategic plans
Consulting techniques	May include: interviews, surveys, chat rooms, focus groups, questionnaire, surveys
Analysis Techniques	May include: gap analysis, urgency and impact, statistical and a range of current requirements gathering methodologies
System	Can include legacy systems, green field sites, organisational wide or discrete
Extensible	Programming term for system that can have additional features included at a later date
Problem solution techniques	Soft system methodologies, JAD

UNIT	ICAITAD041B Determine client business expectations and needs
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of investigation, interview and documentation techniques. The candidate must also be able to maintain a currency between ‘big picture’ generalisations and micro level specifics.</p> <p>Assessment must confirm the ability to produce a clear statement of business expectations and need which includes all critical business requirements. Assessment must confirm the ability to maintain coherence of all techniques across the elicitation, modelling, analysis and validation stages.</p>
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITSP037B. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>

EVIDENCE GUIDE

Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> Broad knowledge of the client business domain, so that the business need is fully understood by project team and client Broad knowledge base incorporating theoretical concepts of three or more current industry systems development methodologies, for example when planning the requirements phase and setting system boundaries, scope and methodologies to be used Broad knowledge base incorporating theoretical concepts of three or more current industry information gathering methodologies, for example when gathering the requirements data Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas, for example when specifying a position for designing the new/additional system and specifying physical requirements of the system, taking into account current system functionality, geography, environment, client user and cost constraints Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement, for example when specifying people (especially the owner, sponsor and those that will contribute to defining the requirements and using the system), and roles of client users are identified Detailed knowledge of the system’s current functionality, for example when specifying physical requirements of the system, taking into account current system functionality, geography, environment, client user and cost constraints Broad knowledge base of quality assurance practices, for example when planning the requirements phase 	<p>Underpinning skills</p> <ul style="list-style-type: none"> Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when conflicting information is investigated and a single position is developed Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when any questionnaires or material needed for workshops and interviews are developed and trialed Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when questionnaires are issued and participation in workshops and interviews has occurred as per the requirements plan. Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when consensus is gained with key client users subject to project brief and cost constraints Function point analysis skills in relation to analysis, evaluation and presentation of information, for example when the physical requirements of the system are identified taking into account current system functionality, geography, environment, client user and cost constraints and all functional areas included by the project brief are covered in the analysis and meet the client’s stated business expectations Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when system boundaries, scope and methodologies to be used are determined and all functional areas included by the project brief are covered in the analysis and meet the client’s stated business expectations. Research skills for specifying, analysing and evaluating broad features of a particular business domain and best practice in system development, for example when specifying the context of the business need/problem
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UNIT	ICAITAD041B Determine client business expectations and needs
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EVIDENCE GUIDE	
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Resources	<p>To demonstrate this unit of competence the candidate will require access to detailed information relating to:</p> <ul style="list-style-type: none"> • the business’s current needs, • project requirements, • a client expectations brief, • the business’s objectives, • information on a range of IT business solutions. <p>The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to demonstrate the information gathering techniques and communications skills required in this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>The candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.</p>

Key Competencies						
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Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	3	2

UNIT	ICAITAD042B Confirm client business needs
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FIELD	Analyse and Design
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DESCRIPTION	This unit describes the competency required to validate information and propose solutions during the requirements engineering phase. This competency occurs after the business review process
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include: ICAITSP037B, ICAITAD041B, ICAITB059B, ICAITT077B, ICAITAD003, ICAITAD056B
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ELEMENT	PERFORMANCE CRITERIA
1. Confirm client expectations and needs	<ol style="list-style-type: none"> 1. Information is cross-checked and verified as relevant to project brief using appropriate techniques to confirm needs 2. Cost effective, relevant and reliable methods are used to present requirements to client users in order that they may confirm requirements 3. The identified needs are submitted to higher authority for confirmation from key decision makers in the company
2. Confirm that information is consistent and complete	<ol style="list-style-type: none"> 1. Information is checked to ensure that it covers functional, quality and added-value requirements, fits within any constraints and fully covers the project proposal/brief 2. Latent assumptions are explored and detailed according to project requirements 3. Consistency and coherence of the elicitation process are confirmed through the internal reviews/walk throughs
3. Verify that overall process is integrated, ensures remote users and any distributed requirements are covered	<ol style="list-style-type: none"> 1. All techniques used to elicit and to validate information are verified and found to be consistent and compatible 2. Relevant details only are contained in requirements model and the elicitation process is confirmed through requirements model 3. Details of function usage by business unit including entity, volumes and function frequency are obtained 4. Matrix/relationship of business units to geographic locations is confirmed
4. Specify organisation specific issues	<ol style="list-style-type: none"> 1. Functions where complexity, function dependency or usage require special attention are identified 2. Transition issues relating to user competence levels, organisation structure and existing systems are identified and recorded 3. Organisation specific issues are documented and reported to higher authorities and/ or technical specialists 4. The scope of the requirements is reported to higher authorities for sign off

UNIT	ICAITAD042B Confirm client business needs
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Client	<p>May be a department within an organisation, a business requiring an e-commerce solution or a third party, and so the relationship and ease of access will vary.</p> <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client business requirements were considered and appropriate choices made given the business objectives and client requirements.</p>
Workplace environment	<p>May include:</p> <ul style="list-style-type: none"> • a business involved in a total organisational change, • a systems only change, • a business improvement process, • an e-commerce solution involving the total organisation or part of the organisation
Business Solutions	<p>Business solutions may include:</p> <ul style="list-style-type: none"> • green field sites, • the integration of new solutions with existing IT infrastructures, • e-commerce solutions <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to possible business solutions were considered and appropriate choices made given the business objectives and client requirements.</p>
Roles	<p>User roles within the project may vary from the user’s role within the organisation</p>
Documentation and Reporting	<p>Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates</p>
OH and S Standards	<p>As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency</p>
Constraints	<p>Depending on the size of the organisation, project and /or development team the constraints will vary. Time and budget constraints will vary according to project size and length</p>
Project Size	<p>The project size will vary and may be large, small, discrete or integrated</p>
Administration System	<p>Depending on the size of the project, a system is required to maintain order and manage the amount of information being processed by the project member/s</p>
Sources of information	<p>May involve change management plans, project management plans, current systems design plans, business strategic plans</p>
Consulting techniques	<p>May include: interviews, surveys, chat rooms, focus groups, questionnaire, surveys</p>
Analysis Techniques	<p>May include:</p> <ul style="list-style-type: none"> • gap analysis, • urgency and impact, • statistical and a range of current requirements gathering methodologies
Extensible	<p>Programming term for system that can have additional features included at a later date</p>
Problem solution techniques	<p>Soft system methodologies, JAD</p>
Consulting techniques	<p>May include: interviews, surveys, chat rooms, focus groups</p>

UNIT

ICAITAD042B Confirm client business needs

EVIDENCE GUIDE

Critical aspects of evidence

Assessment must confirm sufficient knowledge of the organisational need.

Assessment must confirm the ability to meet client requirements by successfully documenting the client's needs and producing a coherent and expressive list of solutions. Assessment must confirm the ability to maintain coherence in of all techniques across the elicitation, modelling, analysis and validation stages.

Interdependent assessment of units

This unit may be assessed with any of the following: ICAITSP037B, ICAITAD041B, ICAITB059B, ICAITT077B, ICAITAD003, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario.

Underpinning skills and knowledge**Underpinning knowledge**

- Broad knowledge of the client business domain, for example when identifying organisation specific issues
- Broad knowledge base incorporating theoretical concepts of current industry systems development methodologies, for example when ensuring overall process is integrated, and for ensuring remote users and any distributed requirements are covered
- Broad knowledge base incorporating theoretical concepts of current industry information gathering methodologies, for example when confirming client expectations and needs, and for ensuring information is consistent and complete
- Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas
- Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement, for example when confirming client expectations and needs
- Detailed knowledge of the system's current functionality, for identifying organisation specific issues
- Broad knowledge base of quality assurance practices, to ensure overall process is integrated, and for ensuring information is consistent and complete

Underpinning skills

- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when identifying and recording transition issues relating to user competence levels, organisation structure and existing systems.
- Information gathering and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when identifying and recording transition issues relating to user competence levels, organisation structure and existing systems, and for verifying that all techniques used to elicit and to validate information are consistent and compatible
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when cross-checking and verifying information as relevant to project brief
- Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when presenting cost effective, relevant and reliable methods to client users in order that they may confirm requirements, and for confirming consistency and coherence of the elicitation process through the internal reviews/walk throughs
- Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when confirming consistency and coherence of the elicitation process through the internal reviews/walk throughs, and for verifying that all techniques used to elicit and to validate information are consistent and compatible
- Function point analysis skills in relation to analysis, evaluation and presentation of information, for example when confirming the identified needs with key decision makers in the company, and for identifying functions where complexity, function dependency or usage require special attention, and for identifying and recording transition issues relating to user competence levels, organisation structure and existing systems
- Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when cross-checking and verifying information as relevant to project brief, and for checking information to cover functional, quality and added-value requirements, and that these fit within any constraints and fully cover the project proposal/brief, and for identifying and recording transition issues relating to user competence levels, organisation structure and existing systems, and for reporting the scope of the requirements to higher authorities for sign off
- Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in system development, for example when obtaining details of function usage by business unit including entity, volumes and function frequency

UNIT	ICAITAD042B Confirm client business needs
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EVIDENCE GUIDE

Resources	<p>To demonstrate this unit of competence the candidate will require access to documents detailing:</p> <ul style="list-style-type: none"> the client’s needs and a list of solutions, project requirements, a client expectations brief, the business’s objectives, information on a range of IT business solutions. <p>The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit</p> <p>Assessment of this unit of competence could include review of documents developed by the candidate, which relate to verifying client requirements and information gathering processes, results, and scope of requirements.</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to demonstrate communications skills and clear documentation skills required in this unit of competence.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>The candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.</p>

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	2	2

UNIT	ICAITAD043B Develop and present a feasibility report
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FIELD	Analyse and Design
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DESCRIPTION	This unit describes the competency required to deliver a document outlining feasible scenarios available to the organisation
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITAD041B, ICAITAD042B, ICPMM82eA, ICAITW027B, ICPMM16cA, ICAITAD045B, ICAITAD056B, ICAITAD010, ICAITB059B
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ELEMENT	PERFORMANCE CRITERIA
1. Confirm that proposed solution is the best reasonable fit	<ol style="list-style-type: none"> 1. Analysis of client requirements has occurred and is confirmed 2. Solutions most useful to client needs are considered by each key client user 3. Proposed solutions are accepted by key decision makers 4. Analysis and recommendations are reviewed with management according to company requirements
2. Develop high level alternative scenarios	<ol style="list-style-type: none"> 1. Future business process requirements are compared and analysed with current requirements 2. Alternative work scenarios are performed for each work to analyse the principal inputs/outputs; expected improvements/impacts; revenue/cost benefits; risks, negatives, downsides; physical requirements of each system 3. Alternatives are fully examined against budget constraints and are dismissed after careful consideration 4. Model of preferred scenario is prepared
3. Prepare and publish feasibility report	<ol style="list-style-type: none"> 1. Reasons for change are established and scope and function of proposed system are detailed 2. Alternative scenarios are described, assumptions are articulated and 1 (or 2) preferences are presented 3. Project constraints and impact statement eg. personnel/budget are described 4. Cost benefit analysis is prepared in accordance with organisation standards and project requirements 5. Plan is produced that describes project schedule, timeframe and cost constraints 6. Summary is presented to higher authorities and/or client for project approval

UNIT

ICAITAD043B Develop and present a feasibility report

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Client	<ul style="list-style-type: none"> • May be a department within an organisation, a business requiring an e-commerce solution or a third party, and so the relationship and ease of access will vary. <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client business requirements were considered and appropriate choices made given the client's budget constraints.</p>
Workplace environment	<p>May involve:</p> <ul style="list-style-type: none"> • a business involved in a total organisational change, • a systems only change, • a business improvement process, • an e-commerce solution involving the total organisation or part of the organisation
Business Solutions	<p>Business solutions may include:</p> <ul style="list-style-type: none"> • green field sites, • the integration of new solutions with existing IT infrastructures, • e-commerce solutions <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to possible business solutions were considered and appropriate choices made given the business cost constraints.</p>
Roles	User roles within the project may vary from the user's role within the organisation
Documentation and Reporting	Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Constraints	Depending on the size of the organisation, project and /or development team the constraints will vary. Time and budget constraints will vary according to project size and length
Project Size	The project size will vary and may be large, small, discrete or integrated
Administration System	Depending on the size of the project, a system is required to maintain order and manage the amount of information being processed by the project member/s
Sources of information	May involve change management plans, project management plans, current systems design plans, business strategic plans
Consulting techniques	May include: interviews, surveys, chat rooms, focus groups, questionnaire, surveys
Analysis Techniques	May include: gap analysis, urgency and impact, statistical and a range of current requirements gathering methodologies
Problem solution techniques	Soft system methodologies, JAD

UNIT	ICAITAD043B Develop and present a feasibility report
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of the client problem and an ability to present solutions</p> <p>Assessment must confirm the ability to clearly develop coherent and concise information which provides realistic solutions. Competence must include the coherence of all techniques across the elicitation, modelling, analysis and validation stages.</p>		
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITAD041B, ICAITAD042B, ICPMM82eA, ICAITW027B, ICPMM16cA, ICAITAD045B, ICAITAD056B, ICAITB059B. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>		
Underpinning skills and knowledge	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning knowledge</p> <ul style="list-style-type: none"> Broad knowledge of the client business domain, for example when ensuring the proposed solution is the best reasonable fit Broad knowledge base incorporating theoretical concepts of three or more current industry systems development methodologies, for example when developing alternative high level scenarios Broad knowledge base incorporating theoretical concepts of three or more current industry information gathering methodologies, for example when ensuring the proposed solution is the best reasonable fit Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas, for example when developing alternative high level scenarios Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement, for example when considering solutions most useful to client needs by each key client user Detailed knowledge of the system’s current functionality, for example when comparing and analysing future business process requirements with current requirements Broad knowledge base of quality assurance practices, for example when presenting to higher authorities and/or client for project approval </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning skills</p> <ul style="list-style-type: none"> Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when preparing and/or publishing feasibility report Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in system development, for example when comparing and analysing future business process requirements with current requirements, and for performing alternative work scenarios for each work to analyse the principal inputs/outputs; expected improvements/impacts; revenue/cost benefits; risks, negatives, downsides; physical requirements of each system, and for examining alternatives fully against budget constraints and dismissing after careful consideration Financial modelling skills for identifying, analysing and evaluating a range of different solutions, for example when examining alternatives fully against budget constraints and dismissing after careful consideration Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when describing alternative scenarios, articulating assumptions and presenting 1 (or 2) preferences, and for presenting summary to higher authorities and/or client for project approval Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when considering solutions most useful to client needs by each key client user Report writing skills for business requiring depth in analysis and evaluation of information in a defined range of areas, for example when preparing and/or publishing feasibility report Questioning and active listening skills, for example when establishing reasons for change and detailing scope and function of proposed system </td> </tr> </table>	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> Broad knowledge of the client business domain, for example when ensuring the proposed solution is the best reasonable fit Broad knowledge base incorporating theoretical concepts of three or more current industry systems development methodologies, for example when developing alternative high level scenarios Broad knowledge base incorporating theoretical concepts of three or more current industry information gathering methodologies, for example when ensuring the proposed solution is the best reasonable fit Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas, for example when developing alternative high level scenarios Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement, for example when considering solutions most useful to client needs by each key client user Detailed knowledge of the system’s current functionality, for example when comparing and analysing future business process requirements with current requirements Broad knowledge base of quality assurance practices, for example when presenting to higher authorities and/or client for project approval 	<p>Underpinning skills</p> <ul style="list-style-type: none"> Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when preparing and/or publishing feasibility report Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in system development, for example when comparing and analysing future business process requirements with current requirements, and for performing alternative work scenarios for each work to analyse the principal inputs/outputs; expected improvements/impacts; revenue/cost benefits; risks, negatives, downsides; physical requirements of each system, and for examining alternatives fully against budget constraints and dismissing after careful consideration Financial modelling skills for identifying, analysing and evaluating a range of different solutions, for example when examining alternatives fully against budget constraints and dismissing after careful consideration Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when describing alternative scenarios, articulating assumptions and presenting 1 (or 2) preferences, and for presenting summary to higher authorities and/or client for project approval Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when considering solutions most useful to client needs by each key client user Report writing skills for business requiring depth in analysis and evaluation of information in a defined range of areas, for example when preparing and/or publishing feasibility report Questioning and active listening skills, for example when establishing reasons for change and detailing scope and function of proposed system
<p>Underpinning knowledge</p> <ul style="list-style-type: none"> Broad knowledge of the client business domain, for example when ensuring the proposed solution is the best reasonable fit Broad knowledge base incorporating theoretical concepts of three or more current industry systems development methodologies, for example when developing alternative high level scenarios Broad knowledge base incorporating theoretical concepts of three or more current industry information gathering methodologies, for example when ensuring the proposed solution is the best reasonable fit Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas, for example when developing alternative high level scenarios Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement, for example when considering solutions most useful to client needs by each key client user Detailed knowledge of the system’s current functionality, for example when comparing and analysing future business process requirements with current requirements Broad knowledge base of quality assurance practices, for example when presenting to higher authorities and/or client for project approval 	<p>Underpinning skills</p> <ul style="list-style-type: none"> Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when preparing and/or publishing feasibility report Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in system development, for example when comparing and analysing future business process requirements with current requirements, and for performing alternative work scenarios for each work to analyse the principal inputs/outputs; expected improvements/impacts; revenue/cost benefits; risks, negatives, downsides; physical requirements of each system, and for examining alternatives fully against budget constraints and dismissing after careful consideration Financial modelling skills for identifying, analysing and evaluating a range of different solutions, for example when examining alternatives fully against budget constraints and dismissing after careful consideration Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when describing alternative scenarios, articulating assumptions and presenting 1 (or 2) preferences, and for presenting summary to higher authorities and/or client for project approval Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when considering solutions most useful to client needs by each key client user Report writing skills for business requiring depth in analysis and evaluation of information in a defined range of areas, for example when preparing and/or publishing feasibility report Questioning and active listening skills, for example when establishing reasons for change and detailing scope and function of proposed system 		

UNIT	ICAITAD043B Develop and present a feasibility report
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EVIDENCE GUIDE

Resources	<p>To demonstrate this unit of competence the candidate will require access to documents detailing:</p> <ul style="list-style-type: none"> • the client’s requirements, • a report writing template, • a client expectations brief, • information on a range of IT business solutions, • future organisational business processes, • a budget for the scenarios. <p>The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit</p> <p>Assessment of this unit of competence could include review of documents developed by the candidate, which relate to the clear identification of the proposed solution, information gathering processes and results, modelling the solution and analysis of the scope of requirements.</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the information gathering processes and the analysis of the scope of requirements.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>The candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.</p>

Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD044B Develop system infrastructure design plan
FIELD	Analyse and Design
DESCRIPTION	This unit describes the competency required to specify the hardware, software and infrastructure required to support the system.
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITAD043B, ICAITS123B, ICAITAD054B, ICAITAD056B, ICAITT001A, ICAITT083B, ICAITAD052B, ICAITI100A, ICPMM16cA, ICPMM81eA, ICPMM82eA, ICAITB059B, ICAITAD054B, ICAITAD045B, ICAITI099A, ICAITS122A, ICAITB070A

ELEMENT	PERFORMANCE CRITERIA
1. Specify architecture requirements	<ol style="list-style-type: none"> 1. The critical principles, functions and framework for the system to operate across the enterprise or business units are identified taking into consideration the project deliverables, acceptance criteria and current IT blueprint 2. The functions are organised into layers, or wrappings and components to meet business systems requirements 3. The processing environment, the hardware, network and system software required to support the operational environments are identified 4. Systems topology model, templates and standards are refined to guide development 5. The project guidelines, standards, models, acceptance criteria and general framework are utilised to develop the architecture requirements
2. Specify hardware and software	<ol style="list-style-type: none"> 1. Various products and vendors are evaluated against architecture requirements to determine the best IT solution 2. Current and future capacity requirements are estimated and evaluated against client's future requirements 3. Requirements for upgrade or change are identified through analysis of software versions and interoperability status of existing systems and applications
3. Conduct walk through and compare/contrast expected performance criteria against vendor proposed offerings	<ol style="list-style-type: none"> 1. Requirements model is compared against technical specifications and acceptance criteria 2. Requirements model is benchmarked against current industry standards and/ or IT blueprint for performance, interoperability and expected future organisational needs 3. Recommendations for improvement are documented and referred to appropriate technical specialists

UNIT	ICAITAD044B Develop system infrastructure design plan
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Client	<ul style="list-style-type: none"> • May be a department within an organisation, a business requiring an e-commerce solution or a third party, and so the relationship and ease of access will vary. <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the system functions were considered and appropriate choices made given the acceptance criteria.</p>
Workplace environment	<p>May involve:</p> <ul style="list-style-type: none"> • a business involved in a total organisational change, • a systems only change, • a business improvement process, • an e-commerce solution involving the total organisation or part of the organisation
Business Solutions	<p>Business solutions may include:</p> <ul style="list-style-type: none"> • green field sites, • the integration of new solutions with existing IT infrastructures, • e-commerce solutions <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to possible business solutions were considered and appropriate choices made given the acceptance criteria and technical specifications.</p>
Roles	<p>User roles within the project may vary from the user's role within the organisation</p>
Documentation and Reporting	<p>Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates</p>
Constraints	<p>Depending on the size of the organisation, project and /or development team the constraints will vary. Time and budget constraints will vary according to project size and length</p>
Standards and procedures	<p>May include formal procedures that must be adhered to with check points and sign offs with documented procedures and templates, implementation of financial control mechanisms, communication with stakeholders, dispute resolution and modification procedures, processes for determining size and cost</p>
Existing Architecture	<p>Will vary from systems based around mainframes to networks of mid-range machines and/or desktop PCs. Networks can be local, wide or based on the Internet.</p>
Change Control	<p>Designated elements of scenarios liable to change, e.g. hardware and software components, designated solution, business processes, e-commerce model</p>
Statutory requirements and Legislation	<p>May include but not limited to privacy legislation, commercial requirements.</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to relevant general business legislation and specific privacy legislation were considered. Candidates will be expected to understand how legislation impacts on their role together with any business regulations and be able to interpret this in design and development decisions.</p>
Topology model	<p>The infrastructure will vary according to the size of the perceived problem</p>

EVIDENCE GUIDE	
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Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of communications technology, hardware, software and data modelling. Assessment must confirm the ability to translate business processes into technical processes.</p> <p>Assessment must confirm the ability to plan and develop a model for a physical system from the requirements</p>
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITAD043B, ICAITS123B, ICAITAD054B, ICAITAD056B, ICAITT001A, ICAITT083B, ICAITAD052B, ICAITI100A, ICPMM16cA, ICPMM81eA, ICPMM82eA, ICAITB059B, ICAITAD054B, ICAITAD045B, ICAITI099A, ICAITS122A, ICAITB070A.</p> <p>The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>

UNIT

ICAITAD044B Develop system infrastructure design plan

EVIDENCE GUIDE

Underpinning skills and knowledge

Underpinning knowledge

- Current industry accepted hardware and software products with broad knowledge of general features and capabilities, for example when specifying hardware and software
- Broad general knowledge of the client business domain particularly the business function and organisation, for example when specifying architecture requirements
- A basic knowledge of cabling and telecommunications technologies, for example when specifying architecture requirements
- Broad knowledge base of vendor product directions and technology directions, for example when specifying hardware and software
- Networking technologies with broad knowledge of general features and capabilities incorporating substantial depth in some areas, for example when specifying architecture requirements
- Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations, for example when specifying architecture requirements
- Broad knowledge of systems architectural design principles and methodologies, for example when specifying architecture requirements
- Broad knowledge of modelling techniques and methodologies, for example when specifying architecture requirements, and for comparing and contrasting after walk through of expected performance criteria against vendor proposed offerings

Underpinning skills

- Problem solving skills for a broad range of unpredictable problems involving analysis, diagnosis and evaluation, for example when specifying the critical principles, functions and framework for the system to operate across the enterprise or business units taking into consideration the project deliverables, acceptance criteria and current IT blueprint
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when the initial statement of hardware needs is written
- Group facilitation and presentation skills in relation to transferring and collecting information, for example when estimating current and future capacity requirements and evaluating against client's future requirements, and for documenting recommendations for improvement and referring them to appropriate technical specialists
- Questioning and active listening skills, for example when specifying the critical principles, functions and framework for the system to operate across the enterprise or business units taking into consideration the project deliverables, acceptance criteria and current IT blueprint
- Technological capability assessment skills involving analysis, diagnosis and evaluation, for example when evaluating various products against architecture requirements to determine the best IT solution, and for estimating current and future capacity requirements and evaluating against client's future requirements
- Research skills for specifying, analysing and evaluating broad features of a particular business domain and best practice in system development, for example when evaluating various products against architecture requirements to determine the best IT solution, and for benchmarking requirements model against current industry standards and/ or IT blueprint for performance, interoperability and expected future organisational needs
- Project planning skills in relation to set benchmarks and identified scope, for example when specifying the critical principles, functions and framework for the system to operate across the enterprise or business units taking into consideration the project deliverables, acceptance criteria and current IT blueprint
- Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas, for example when documenting recommendations for improvement and referring them to appropriate technical specialists

UNIT	ICAITAD044B Develop system infrastructure design plan
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EVIDENCE GUIDE	
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Resources	<p>To demonstrate this unit of competence the candidate will require access to documents detailing:</p> <ul style="list-style-type: none"> • the client’s requirements, • the project deliverables, • the acceptance criteria, • current IT blueprint, • information on a range of IT business solutions and vendor offerings, • future organisational business process requirements, • technical specifications. <p>The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit</p> <p>Assessment of this unit of competence could include review of documents developed by the candidate which incorporate the system infrastructure design plan.</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the evaluation of vendor products and development of the requirements model.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>The candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.</p>

Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	2	2	3	3

UNIT	ICAITAD045B Produce network/communication design
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FIELD	Analyse and Design
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DESCRIPTION	This unit describes the competency required to specify the design of the required network architecture.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITAD043B, ICAITAD044B, ICAITI098A, ICAITI099A, ICAITS123B, ICAITS122A, ICAITB070A, ICAITAD056B
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ELEMENT	PERFORMANCE CRITERIA
1. Design network	<ol style="list-style-type: none"> 1. Client user requirements are reviewed and network requirements are identified 2. Physical network diagram is developed as a preface to, or adjunct to architecture blueprint 3. The siting and types of terminals, processors, required protocols and network architecture are established, based on technical specifications and user requirements
2. Evaluate network traffic	<ol style="list-style-type: none"> 1. Line traffic and the impact on input/output devices and processors are predicted from current and future demand requirements 2. Design is benchmarked using expected volumes of traffic as a basis 3. The likely performance profile (best/worst) is identified and the effect on other systems is reviewed
3. Finalise network design	<ol style="list-style-type: none"> 1. Benchmarks and requirements are reviewed and final design proposed 2. Support and training requirements are determined and added to requirements 3. Latest technical specifications and pricing are obtained by contacting possible vendors 4. Network design is documented and presented to senior managers, client users and sponsor for approval

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Architecture blueprint	A diagram of varying size and complexity indicating the current system infrastructure, software versions, hardware model numbers etc.
Proposed Solution	Will vary from building everything to acquiring packages with possible modification. May require additional hardware and network equipment as well as software. May include e-commerce solutions and new business models
Existing Architecture	Will vary from systems based around mainframes to networks of mid-range machines and/or desktop PCs. Networks can be local, intranets, VPN, wide or based on the Internet. Vendor products and network protocols
Client	May be a department within an organisation, a business requiring an e-commerce solution or a third party, and so the relationship and ease of access will vary.
<p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client business requirements were considered and appropriate choices were made when designing the required network architecture.</p>	

UNIT	ICAITAD045B Produce network/communication design
Workplace environment	<p>May involve:</p> <ul style="list-style-type: none"> • a business involved in a total organisational change, • a systems only change, • a business improvement process, • an e-commerce solution involving the total organisation or part of the organisation
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • Bridges, 3Com, Compaq, CISCO, IBM • modems, analog, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • File & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems, <p>It should be noted that work carried out in this area is part of the analysis/design phase. Communications hardware may already be in place supporting an existing system, or the communications requirements may be being developed from models.</p>
Operating systems	<p>May include: pSOS+ (modular real-time operating system), UNIX, real-time UNIX, VRTX, LYNX-OS, SOLARIS, LINUX, DOS, Windows, Windows NT, Windows CE</p>
Business Solutions	<p>Business solutions may include:</p> <ul style="list-style-type: none"> • green field sites, • the integration of new solutions with existing IT infrastructures, • e-commerce solutions <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to possible business solutions were considered and appropriate choices made during the design of the network solution.</p>
Documentation and Reporting	<p>Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates</p>
OH and S Standards	<p>As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency</p>
Constraints	<p>Depending on the size of the organisation, project and /or development team the constraints will vary. Time and budget constraints will vary according to project size and length</p>
Project Size	<p>The project size will vary and may be large, small, discrete or integrated</p>
Administration System	<p>Depending on the size of the project, a system is required to maintain order and manage the amount of information being processed by the project member/s</p>
Sources of information	<p>May involve change management plans, project management plans, current systems design plans, business strategic plans</p>
Consulting techniques	<p>May include: interviews, surveys, chat rooms, focus groups, questionnaire, surveys</p>
Analysis Techniques	<p>May include: gap analysis, urgency and impact, statistical and a range of current requirements gathering methodologies</p>

UNIT	ICAITAD045B Produce network/communication design
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Problem solution techniques	Soft system methodologies, JAD
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EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm sufficient knowledge of communication hardware, protocols and legacy systems	
	Assessment must confirm the ability to design viable network solutions and to assess network performance	
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITAD043B, ICAITAD044B, ICAITI098A, ICAITI099A, ICAITS123B, ICAITS122A, ICAITB070A, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario.	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Detailed knowledge of current industry accepted network protocols, for example when designing network • A broad knowledge base incorporating current industry accepted network hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas, for example when evaluating network traffic • A broad knowledge base incorporating current industry security products, devices and procedures with broad knowledge of general features and capabilities and detailed knowledge in some areas, for example when finalising network design • A broad knowledge base incorporating some theoretical concepts of three or more current industry network development and design methodologies, for example when designing network • Detailed knowledge of the operating systems, for example when evaluating network traffic • Broad knowledge of the client business domain, for example when designing network • Detailed knowledge of the remote user issues, for example when establishing the siting and types of terminals, processors, required protocols and network architecture, based on technical specifications and user requirements, and for predicting line traffic and the impact on input/output devices and processors from current and future demand requirements 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when reviewing client user requirements and network requirements , and for documenting network design and presenting it to senior managers, client users and sponsor for approval • Research skills for specifying, analysing and evaluating broad features of current security issues and best practice in security devices, products and procedures, for example when obtaining latest technical specifications and pricing by contacting possible vendors, and for specifying the likely performance profile (best/worst) and for reviewing its effect on other systems • Financial modelling skills for specifying, analysing and evaluating a range of different solutions, for example when documenting network design and presenting it to senior managers, client users and sponsor for approval • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when documenting network design and presenting it to senior managers, client users and sponsor for approval • Problem solving skills for a defined range of unpredictable problems, for example when predicting line traffic and the impact on input/output devices and processors from current and future demand requirements • Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when documenting network design and presenting it to senior managers, client users and sponsor for approval

UNIT	ICAITAD045B Produce network/communication design
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EVIDENCE GUIDE

Resources	<p>To demonstrate this unit of competence the candidate will require access to documents detailing:</p> <ul style="list-style-type: none"> • the client requirements, • technical specifications, • expected traffic volume, • vendors and vendor offerings/ pricing • information on a range of IT business solutions, • future organisational business processes, • a budget for the scenarios. <p>The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the likely performance profile and design iterations required in this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>The candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.</p>

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise. Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	3	3	3

UNIT	ICAITAD046B Model preferred system solutions
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FIELD	Analyse and Design
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DESCRIPTION	This unit describes the competency required to fit a physical model into the design phase of the methodology
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITB059B, ICAITAD049A, ICAITAD050A, ICAITAD058A
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ELEMENT	PERFORMANCE CRITERIA
1. Review and confirm requirements information and any existing models	<ol style="list-style-type: none"> 1. Requirements information gathered to date is reviewed and any areas that are not fully understood are clarified 2. The organisation's standards for developing models are identified, and the model development method is checked for consistency with the organisational goal and problem context 3. Latent assumptions are identified and incorporated into modelling process 4. Each identified goal is resolved into tasks that users require to be performed to obtain the goal 5. System internal tasks are broadly defined to perform identified goals
2. Resolve conflicts and inconsistencies	<ol style="list-style-type: none"> 1. Any missed opportunities are considered in the model development and against the problem's context 2. Bottlenecks, overlooked functionalities and other issues are highlighted and resolved with client user input as required
3. Build and test model	<ol style="list-style-type: none"> 1. System model is developed based on architecture 2. Details of system model are clearly and coherently documented according to agreed project or company standards 3. Model is developed according to project deliverables and acceptance criteria, and within a determined timeframe and project cost constraints 4. Model is tested against test plan 5. The test data are documented in order to indicate whether test procedures accurately and thoroughly validate the model performance
4. Ensure that the model represents a workable solution	<ol style="list-style-type: none"> 1. A consensus view of all key IT stakeholders is represented in the model. 2. The model is checked by key IT stakeholders to confirm common understanding of model/proposed solution 3. Model is prepared for key IT stakeholder signoff

UNIT	ICAITAD046B Model preferred system solutions
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Architecture blueprint	A diagram of varying size and complexity indicating the current system infrastructure, software versions, hardware model numbers etc.
Proposed Solution	Will vary from building everything to acquiring packages with possible modification. May require additional hardware and network equipment as well as software. May include e-commerce solutions and new business models
Existing Architecture	Will vary from systems based around mainframes to networks of mid-range machines and/or desktop PCs. Networks can be local, intranet, VPN, wide or based on the Internet. Vendor products and network protocols
Client	May be a department within an organisation, a business requiring an e-commerce solution or a third party, and so the relationship and ease of access will vary. Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client business requirements were considered and appropriate choices made given the business objectives and the consensus view.
Workplace environment	May involve: <ul style="list-style-type: none"> • a business involved in a total organisational change, • a systems only change, • a business improvement process, • an e-commerce solution involving the total organisation or part of the organisation
Operating systems	May include: pSOS+ (modular real-time operating system), UNIX, real-time UNIX, VRTX, LYNX-OS, SOLARIS, LINUX, DOS, Windows, Windows NT, Windows CE
Hardware	Can include IT equipment of all types: <ul style="list-style-type: none"> • Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • Bridges, 3Com, Compaq, CISCO, IBM • modems, analog, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • File & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems, <p>It should be noted that work carried out in this area is part of the analysis/design phase. Communications hardware may already be in place supporting an existing system, or the communications requirements may be being developed from models.</p>

UNIT	ICAITAD046B Model preferred system solutions
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Business Solutions	Business solutions may include: <ul style="list-style-type: none"> green field sites, the integration of new solutions with existing IT infrastructures, e-commerce solutions <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to possible business solutions were considered and appropriate choices made given the business objectives and acceptance criteria.</p>
Roles	User roles within the project may vary from the user’s role within the organisation
Documentation and Reporting	Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Constraints	Depending on the size of the organisation, project and /or development team the constraints will vary. Time and budget constraints will vary according to project size and length
Project Size	The project size will vary and may be large, small, discrete or integrated
Administration System	Depending on the size of the project, a system is required to maintain order and manage the amount of information being processed by the project member/s
Sources of information	May involve change management plans, project management plans, current systems design plans, business strategic plans
Consulting techniques	May include: interviews, surveys, chat rooms, focus groups, questionnaire, surveys
System	Can include legacy systems, green field sites, organisational wide or discrete
Extensible	Programming term for system that can have additional features included at a later date
Analysis Techniques	May include: <ul style="list-style-type: none"> gap analysis, urgency and impact, statistical and a range of current methodologies, soft system methodologies, JAD

EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm sufficient knowledge and use of two or more development tools Assessment must confirm the ability to meet client requirements by developing specific areas of the system for further information or to confirm a software/hardware direction
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITB059B, ICAITAD049A, ICAITAD050A, ICAITAD058A. The interdependence of units of competency for assessment will vary with the particular project or scenario.

UNIT

ICAITAD046B Model preferred system solutions

Underpinning skills and knowledge**Underpinning knowledge**

- Broad knowledge of modelling techniques and methodologies, for evolving requirements information and any existing models
- Broad knowledge of systems development methodologies, for example when evolving requirements information and any existing models, and for resolving conflicts and inconsistencies
- Broad general knowledge of the client business domain particularly the business function and organisation, for example when ensuring model represents a workable solution
- Current industry accepted hardware and software products with broad knowledge of general features and capabilities, for example when building and testing model
- Detailed knowledge of a range of development tools, for example when building and testing model
- Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations, for example when building and testing model

Underpinning skills

- Problem solving skills for a defined range of unpredictable problems, for example when resolving conflicts and inconsistencies
- Plain English literacy and communication skills in relation to dealing with clients and team members, for example when documenting details of system model clearly and coherently according to agreed project or company standards
- Negotiation skills in relation to other team members and applied to a defined range of predictable problems, for example when representing a consensus view of all key IT stakeholders in the model.
- Questioning and active listening skills, for example when reviewing requirements information gathered to date and clarifying any areas that are not fully understood
- Research skills for specifying, analysing and evaluating broad features of a particular business domain and best practice in system development, for example when specifying latent assumptions and incorporating them into modelling process, and for considering any missed opportunities in the model development and against the problem's context
- Project planning skills in relation to set benchmarks and identified scope, for example when developing model according to project deliverables and acceptance criteria, and within a determined timeframe and project cost constraints

UNIT	ICAITAD046B Model preferred system solutions
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Resources

To demonstrate this unit of competence the candidate will require access to documents detailing:

- the client’s requirements,
- technical specifications,
- organisational and process goals,
- standards for model development,
- acceptance criteria
- project deliverables,
- future organisational business processes,
- test plan,
- a project budget.

The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the model testing aspects of this unit.

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.

The candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	2	3	3	3

UNIT	ICAITAD047B Determine specifications for the project
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FIELD	Analyse and Design
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DESCRIPTION	This unit describes the competency required to develop agreed acceptance criteria for a particular project
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITAD041B, ICAITB059B, ICAITAD049A, ICAITAD050A, ICAITAD058A
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ELEMENT	PERFORMANCE CRITERIA
1. Determine milestones and quality attributes with client	<ol style="list-style-type: none"> 1. Client user's assistance is gained in specifying milestones and associated deliverables in specific measurable terms 2. Criteria for evaluating each deliverable against predefined acceptance criteria is determined 3. Direction is confirmed against overall project deliverables by higher authorities 4. Quality standards are negotiated with higher authorities and client users
2. Formulate software metrics and milestones	<ol style="list-style-type: none"> 1. The units of measurement are defined in relation to the project milestones, timeframe and cost considerations 2. The metrics process is determined in line with client requirements, project milestones, timeframe and cost considerations 3. Milestones and associated deliverables are scheduled to be measured against overall project deliverables and timeframe 4. Quality reviews are scheduled 5. In-process measurement points that relate to critical business requirements are identified by quality considerations 6. Current level of achievement is benchmarked and scaled against stated client requirements and cost considerations 7. Metrics and milestones are conveyed to client and developers in a clear and coherent manner
3. Obtain client agreement to acceptance criteria	<ol style="list-style-type: none"> 1. Delivery and implications for the delivery are agreed to with client 2. Acceptance criteria are clearly and coherently conveyed to the client 3. Timeframe, cost implications, technical and logistical considerations are clearly communicated to the client 4. Acceptance criteria are mutually agreed to within anticipated timeframe

UNIT

ICAITAD047B Determine specifications for the project

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Existing Architecture	<p>Will vary from:</p> <ul style="list-style-type: none"> • systems based around mainframes • to networks of mid-range machines and/or desktop PCs. • Networks can be local, wide or based on the Internet. Vendor products and network protocols
Client	<p>May be a department within an organisation, a business requiring an e-commerce solution or a third party, and so the relationship and ease of access will vary.</p> <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client business requirements were considered and appropriate choices made given the business objectives and client requirements.</p>
Test and acceptance processes	Will vary according size, type and scope of the project
Metrics and planning method	Will vary depending upon whether the organisation uses a formal method for development. In some sites there will be no guidelines to follow.
Software metrics	Size of each development work package, milestones is a variable determined by the sponsor, project manager, development team
Workplace environment	<p>May involve:</p> <ul style="list-style-type: none"> • a business involved in a total organisational change, • a systems only change, • a business improvement process, • an e-commerce solution involving the total organisation or part of the organisation
Business Solutions	<p>Business solutions may include:</p> <ul style="list-style-type: none"> • green field sites, • the integration of new solutions with existing IT infrastructures, • e-commerce solutions <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating business solutions were considered and appropriate choices made given the business objectives and client requirements.</p>
Documentation and Reporting	Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Constraints	Depending on the size of the organisation, project and/or development team the constraints will vary. Time and budget constraints will vary according to project size and length
Administration System	Depending on the size of the project, a system is required to maintain order and manage the amount of information being processed by the project member/s

UNIT	
ICAITAD047B Determine specifications for the project	
Sources of information	<p>May involve:</p> <ul style="list-style-type: none"> • change management plans, • project management plans, • current systems design plans, • business strategic plans
Quality benchmarks	<p>Relevant quality standards include:</p> <ul style="list-style-type: none"> • AS 4043-1992 Software configuration management, • AS 4042-1992 Software configuration management plans, • AS 3925.1-1994 Software quality assurance – Plans, • AS/NZS 4258:1994 Software user documentation process, • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, • AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. <p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p> <p>Will vary according to the type of organisation and the benchmarks will cover technical, cost savings, performance and quality. Some organisations may be quality certified and have well documented standards for addressing quality while others will not. In a simulated environment best practice workplace examples will be used.</p>
Consulting techniques	<p>May include: interviews, surveys, chat rooms, focus groups, questionnaire, surveys, soft system methodologies, JAD</p>
Analysis Techniques	<p>May include: gap analysis, urgency and impact, statistical and a range of current requirements gathering methodologies</p>
System	<p>Can include legacy systems, green field sites, organisational wide or discrete</p>

EVIDENCE GUIDE	
Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of software development and quality related methods</p> <p>Assessment must confirm the ability to design a software solution. Assessment must confirm the ability to formulate and deliver agreed quality specifications for the project</p>
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITAD041B, ICAITB059B, ICAITAD049A, ICAITAD050A, ICAITAD058A. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>

UNIT

ICAITAD047B Determine specifications for the project

EVIDENCE GUIDE

Underpinning skills and knowledge

Underpinning knowledge

- Broad knowledge of project planning methodologies and tools, for example when determining milestones and quality attributes with client
- Detailed knowledge of tools and their use relating to task list, for example when formulating metrics and milestones
- Detailed knowledge of benchmarking methodologies, for example when formulating metrics and milestones
- Detailed knowledge of quality processes, for example when formulating metrics and milestones
- Detailed knowledge of how to formulate system development plans, for example when determining milestones and quality attributes with client, and for ensuring acceptance criteria are agreed to by client
- Detailed knowledge of theory and purpose of metrics, for example when formulating metrics and milestones

Underpinning skills

- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when gaining client user's assistance in specifying milestones and associated deliverables in specific measurable terms, and for determining criteria for evaluating each deliverable against predefined acceptance criteria
- Plain English literacy and communication skills in relation to dealing with clients and team members, for example when conveying acceptance criteria clearly and coherently to the client, and for conveying metrics and milestones to client and developers in a clear and coherent manner
- Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when gaining client user's assistance in specifying milestones and associated deliverables in specific measurable terms
- Questioning and active listening skills, for example when gaining client user's assistance in specifying milestones and associated deliverables in specific measurable terms
- Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when gaining client user's assistance in specifying milestones and associated deliverables in specific measurable terms, and for confirming direction against overall project deliverables by higher authorities, and for communicating timeframe, cost implications, technical and logistical considerations clearly to the client
- Research skills for specifying, analysing and evaluating broad features of a particular business domain and best practice in system development methodologies, for example when determining criteria for evaluating each deliverable against predefined acceptance, and for specifying in-process measurement points that relate to critical business requirements by quality considerations
- Estimating skills for use across a range of predictable project contexts in relation to either varied or highly specific functions, and for example when communicating timeframe, cost implications, technical and logistical considerations clearly to the client, and for ensuring delivery and implications for the delivery are agreed to with client
- Function point analysis skills for use across a range of predictable project contexts in relation to either varied or highly specific functions, for example when defining the units of measurement in relation to the project milestones, timeframe and cost considerations, and for determining the metrics process in line with client requirements, project milestones, timeframe and cost considerations, and for specifying in-process measurement points that relate to critical business requirements by quality considerations

UNIT	ICAITAD047B Determine specifications for the project
EVIDENCE GUIDE	
Resources	<p>To demonstrate this unit of competence the candidate will require access to documents detailing:</p> <ul style="list-style-type: none"> • the client's requirements, • technical specifications, • organisational and process goals, • critical business requirements, • predefined high level acceptance criteria, • project deliverables, • future organisational business processes, • test plan, • a project budget, timeframe. <p>The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit</p> <p>Assessment of this unit of competence could include review of documents developed by the candidate, which relate to the clear identification of the project specification.</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the client liaison aspects of this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>The candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.</p>

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	3	2

UNIT	ICAITAD048C Develop configuration management
FIELD	Analyse and Design
DESCRIPTION	This unit describes the competency required to develop administrative and technical procedures throughout the life cycle of a system, network, software and documentation project
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include ICAITB069A, ICAITAD041B, ICAITT082B, ICAITT083B, ICAITAD050A, ICAITB059B, ICAITT077B, ICAITT079B, ICAITAD042B, ICAITAD056B

ELEMENT	PERFORMANCE CRITERIA
1. Establish configuration management requirements	<ol style="list-style-type: none"> 1. Identification standards are established for naming and version control of system, network, software and documentation to accord with organisational needs 2. Tools and procedures for the required level of integration into the programming or system, or network environment are determined 3. Responsibilities are determined for configuration management within the project, and for ongoing support including approval of changes 4. Point at which items are subjected to configuration control is determined
2. Establish control mechanisms	<ol style="list-style-type: none"> 1. Methods are established for identification and recording of change requests in line with organisational requirements 2. Evaluation criteria and process for approval of change requests are established and take into account organisational authorisation requirements 3. Other management control criteria such as security, access and non duplication of names are established 4. Necessary audit trails are determined, and alerts for variations or non conformance are developed
3. Establish monitoring mechanisms	<ol style="list-style-type: none"> 1. Mechanisms are established to identify the status of: software throughout the software life cycle, or the status of the system or network during upgrading or reconfiguration 2. Management of records and status reports are determined, showing the history of baselines and their links to back ups 3. The level of detail required in the status reports is determined and target audiences are defined 4. Configuration management is integrated into general project management processes for monitoring and control purposes
4. Manage the release of the product to clients	<ol style="list-style-type: none"> 1. Physical and functional completeness of items are determined for the purpose of release 2. If necessary, requirements for formal control of software products and documentation is determined 3. Policies are determined for retention of baseline/ master copies, taking into account safety and security, legislative requirements and organisational policies

UNIT	ICAITAD048C Develop configuration management
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Existing Architecture	Will vary from: <ul style="list-style-type: none"> • systems based around LANs, WTAN, VPN • to networks of mid-range machines and/or desktop PCs. • Networks can be local, wide or based on the Internet. Vendor products and network protocols
Test and acceptance processes	Will vary according to: <ul style="list-style-type: none"> • size, • type and scope of the project, AS 4006-1992 Software test documentation may be relevant to this unit. International and Australian Standards are updated and changed on a regular basis, it is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/
Software metrics	Size of each development work package, milestones is a variable determined by the sponsor, project manager, development team
Workplace environment	May involve a business involved in a total organisational change, a systems only change, a business improvement process, an e-business solution involving the total organisation or part of the organisation
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach, information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Constraints	Depending on the size of the organisation, project and /or development team the constraints will vary. Time and budget constraints will vary according to project size and length
Administration System	Depending on the size of the project, a system is required to maintain order and manage the amount of information being processed by the project member/s
Sources of information	May involve change management plans, project management plans, current systems design plans, business strategic plans
Consulting techniques	May include: interviews, surveys, chat rooms, focus groups, questionnaire, surveys, soft system methodologies, JAD
Analysis Techniques	May include: gap analysis, urgency and impact, statistical and a range of current requirements gathering methodologies
System	Can include legacy systems, green field sites, organisational wide or discrete

UNIT	ICAITAD048C Develop configuration management
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Quality benchmarks	<p>Relevant quality standards include:</p> <ul style="list-style-type: none"> AS 4043-1992 Software configuration management, AS 4042-1992 Software configuration management plans, AS 3925.1-1994 Software quality assurance – Plans, AS/NZS 4258:1994 Software user documentation process, AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. <p>International and Australian Standards are updated and changed on a regular basis, it is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p> <p>Will vary according to the type of organisation and the benchmarks will cover technical, cost savings, performance and quality. Some organisations may be quality certified and have well document standards for addressing quality while others will not, in a simulated environment best practice workplace examples will be used.</p>
Scope	Manual, automated or fully integrated into the programming environment
Software life cycle	Will vary according to the software life cycle model being employed.
Development methods/tools	Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.
Quality process	Some organisations may be quality certified and have well document standards for addressing quality while others will not.
Metrics and planning method	Will vary depending upon whether the organisation uses a formal method for development. In some sites there will be no guidelines to follow.

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment will confirm knowledge of quality processes, audit trials and version control.</p> <p>Assessment will confirm the ability to develop reliable and valid configuration management procedures for technical and administrative procedures for use during the software life cycle or the system or network reconfiguration, up grade process</p>
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITB069A, ICAITAD041B, ICAITT082B, ICAITT083B, ICAITAD050A, ICAITB059B, ICAITT077B, ICAITT079B, ICAITAD042B, ICAITAD056B.</p> <p>The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>

UNIT

ICAITAD048C Develop configuration management

Underpinning skills and knowledge

Underpinning knowledge

- Detailed knowledge of software development methodologies, for example when developing configuration management requirements
- Detailed knowledge of quality assurance and quality processes, for example when developing configuration management requirements
- Broad knowledge of project planning methodologies and tools, for example when establishing control and monitoring mechanisms
- Detailed knowledge of bench marking methodologies, for example when developing administrative and technical procedures throughout the software and documentation life cycle

Underpinning skills

- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when determining tools and procedures for the required level of integration into the programming environment
- Plain English literacy and communication skills in relation to developing technical and business reports, for example when determining the level of detail required in the status reports and when defining target audiences
- Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when determining responsibilities for configuration management within the project, and for ongoing support including approval of changes
- Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when integrating configuration management into general project management processes for monitoring and control purposes
- Research skills for specifying, analysing and evaluating broad features of a particular business domain and best practice in software development methodologies, for example when determining tools and procedures for the required level of integration into the programming environment
- Estimating skills for use across a range of predictable project contexts in relation to either varied or highly specific functions, for example when communicating timeframe, cost implications, technical and logistical considerations clearly to the client, and for ensuring delivery and implications for the delivery are agreed to with client
- Function point analysis skills for use across a range of predictable project contexts in relation to either varied or highly specific functions, for example when determining the point at which items are subjected to configuration control

UNIT	ICAITAD048C Develop configuration management
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EVIDENCE GUIDE	
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Resources	<p>To demonstrate this unit of competence the candidate will require access to documents detailing:</p> <ul style="list-style-type: none"> • technical specifications, • organisational standards for documentation and version control, • project management process and hierarchy, • CASE tools, • future organisational business processes, • test plan, • a project budget, timeframe. <p>Assessment of this unit of competence could include review of documents developed by the candidate, which relate to the clear identification of the configuration management system.</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the documentation and monitoring aspects of this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p>

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	2	2	2	2

UNIT	ICAITAD049A Develop logical abstraction from requirements (OOA)
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FIELD	Analyse and Design
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DESCRIPTION	This unit describes the competencies required to analyse the requirements and produce a set of high level Object Oriented Class specifications
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include Project Management, Teamwork, Documentation and Build.
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ELEMENT	PERFORMANCE CRITERIA
1. Analyse behaviour of objects	<ol style="list-style-type: none"> 1. Behaviour scenarios are documented according to documentation standards 2. Classes, objects and system abstract data types are identified and/or developed according to requirements 3. Diagrams (Class, Object, Module, Process) are prepared according to specifications
2. Prepare state model	<ol style="list-style-type: none"> 1. Data requirements are analysed and data flows iterated 2. State transition diagrams are prepared according to project standards 3. ADTs and related specifications are enhanced
3. Describe roles and responsibilities of classes	<ol style="list-style-type: none"> 1. Functional requirements are reviewed and class structure is updated 2. Interface and class communication requirements are specified 3. Interaction diagrams are prepared according to project standards
4. Iterate and review the object model	<ol style="list-style-type: none"> 1. Current Object Model is walked through and Class functionality and data transforms are reviewed 2. Class relationships and priorities are identified and inheritance hierarchy is developed 3. Class service requirements are reviewed and initial test criteria are prepared 4. Object processes are developed and re-use classes are identified

RANGE OF VARIABLES	
VARIABLE	SCOPE
Abstract Data Types	The degree of objects will be a factor of the requirement size
Iterations	The scope and number of iterations is also a factor of the project size and complexity, and the analyst's persistence and perseverance
Object methods	May vary depending upon the development method or language used.
Standards and procedures	Will vary from formal procedures that must be adhered to with check points and sign offs throughout development to less formal or non-existent standards.
Client User	May be a department within the organisation or a third party, and so the relation and ease of access will vary.
Development methods/tools	Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.
Documentation and Reporting	Audit trails, naming standards, version control

UNIT	ICAITAD049A Develop logical abstraction from requirements (OOA)
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RANGE OF VARIABLES	
VARIABLE	SCOPE
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used

EVIDENCE GUIDE					
Critical aspects of evidence	Assessment must confirm sufficient knowledge of Object Oriented techniques Assessment must confirm the ability to specify and model abstract data types. Specifications need to be deliverable. Assessment must confirm the interface between classes and objects				
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITB059B, ICAITAD050A, ICAITAD057A, ICAITAD058A. The interdependence of units of competency for assessment will vary with the particular project or scenario.				
Underpinning skills and knowledge	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Underpinning knowledge</th> <th>Underpinning skills</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • Detailed knowledge of OOA tools and their use, for example when analysing object behaviour • Detailed knowledge of current industry accepted OO methodologies with broad knowledge of general features and capabilities, for example when preparing state model • A broad knowledge base incorporating theoretical concepts of current program development methodologies, for example when iterating and reviewing • Detailed knowledge of configuration management, for example when iterating and reviewing • Detailed knowledge of data modelling techniques, for example when preparing state model • Broad knowledge base of quality assurance practices, for example when iterating and reviewing </td> <td> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems, for example when specifying and developing classes, objects and system abstract data types according to requirements • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when documenting behaviour scenarios according to documentation standards • Research skills for specifying, analysing and evaluating broad features of a particular business domain and best practice in program development, for example when classes, objects and system abstract data types are identified and/or developed according to requirements </td> </tr> </tbody> </table>	Underpinning knowledge	Underpinning skills	<ul style="list-style-type: none"> • Detailed knowledge of OOA tools and their use, for example when analysing object behaviour • Detailed knowledge of current industry accepted OO methodologies with broad knowledge of general features and capabilities, for example when preparing state model • A broad knowledge base incorporating theoretical concepts of current program development methodologies, for example when iterating and reviewing • Detailed knowledge of configuration management, for example when iterating and reviewing • Detailed knowledge of data modelling techniques, for example when preparing state model • Broad knowledge base of quality assurance practices, for example when iterating and reviewing 	<ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems, for example when specifying and developing classes, objects and system abstract data types according to requirements • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when documenting behaviour scenarios according to documentation standards • Research skills for specifying, analysing and evaluating broad features of a particular business domain and best practice in program development, for example when classes, objects and system abstract data types are identified and/or developed according to requirements
Underpinning knowledge	Underpinning skills				
<ul style="list-style-type: none"> • Detailed knowledge of OOA tools and their use, for example when analysing object behaviour • Detailed knowledge of current industry accepted OO methodologies with broad knowledge of general features and capabilities, for example when preparing state model • A broad knowledge base incorporating theoretical concepts of current program development methodologies, for example when iterating and reviewing • Detailed knowledge of configuration management, for example when iterating and reviewing • Detailed knowledge of data modelling techniques, for example when preparing state model • Broad knowledge base of quality assurance practices, for example when iterating and reviewing 	<ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems, for example when specifying and developing classes, objects and system abstract data types according to requirements • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when documenting behaviour scenarios according to documentation standards • Research skills for specifying, analysing and evaluating broad features of a particular business domain and best practice in program development, for example when classes, objects and system abstract data types are identified and/or developed according to requirements 				
Resources	This competency can be assessed in the workplace or in a simulated environment. Peers and supervisors for obtaining information on the extent and quality of the contribution made.				
Consistency	Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts				
Context	Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. If this competency is assessed as part of a training course and the candidate is not employed in the industry they will need to demonstrate familiarity with 3 OOA approaches by identifying the general features, strengths and the weaknesses of each in relation to the client’s business requirements. This is in addition to the above critical aspects of evidence				

Key Competencies						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	2	2	2

UNIT	ICAITAD050A Develop detailed component specifications from project specifications
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FIELD	Analyse and Design
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DESCRIPTION	This unit describes the competency required to analyse the requirements and produce a set of high level component specifications from the project specifications
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include Project Management, Teamwork, Documentation and Build.
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ELEMENT	PERFORMANCE CRITERIA
1. Analyse components	<ol style="list-style-type: none"> 1. Behaviour scenarios are documented according to documentation standards 2. Components are identified and/or developed within project specification 3. Diagrams are prepared according to project standards
2. Prepare schema	<ol style="list-style-type: none"> 1. Component connectivity is analysed and data flows iterated 2. Component action diagrams are prepared according to project standards
3. Prepare component model	<ol style="list-style-type: none"> 1. Roles and responsibilities are described 2. Functional requirements are reviewed and updated 3. Interface components and component relationships are specified 4. Interaction diagrams are prepared according to project standards
4. Iterate and review model	<ol style="list-style-type: none"> 1. Current model is walked through and functionality reviewed 2. Relationships are identified to ensure integration of model 3. Class service requirements are reviewed and initial test criteria are prepared 4. A process for incremental testing is implemented

RANGE OF VARIABLES	
VARIABLE	SCOPE
Abstract Data Types	The degree of objects will be a factor of the requirement size
Iterations	The scope and number of iterations is also a factor of the project size and complexity, and the analysts persistence and perseverance
Standards and procedures	Will vary from formal procedures that must be adhered to with check points and sign offs throughout development to less formal or non-existent standards.
Client User	May be a department within the organisation or a third party, and so the relation and ease of access will vary.
Development methods/tools	Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.
Documentation and Reporting	Audit trails, naming standards, version control
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used

UNIT	ICAITAD050A Develop detailed component specifications from project specifications
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EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to identify and model components relevant to the project requirements. Specifications need to be deliverable. Assessment must confirm the interoperability between components	
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITB059B, ICAITT077B, ICAITAD042B, ICAITAD043B, ICAITB074B, ICAITAD056B, ICAITAD048B, ICAITB069A, ICAITB059B, ICAITT079B. The interdependence of units of competency for assessment will vary with the particular project or scenario.	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Detailed knowledge of tools and their use, for example when analysing component • Detailed knowledge of current industry accepted design methodologies, for example when analysing component and preparing schema • Current industry accepted hardware and software products with broad knowledge of general features and capabilities, for example when preparing schema • Broad knowledge base of quality assurance practices, for preparing component model • A basic knowledge of cost benefit analysis and identify information sources for a cost benefit analysis, for example when analysing component • Detailed knowledge of the system’s current functionality, for analysing of component • Detailed knowledge of program development methodologies, for example when analysing the requirements to produce a set of high level component specifications from the project specifications • Detailed knowledge of configuration management, for example when preparing component model • Detailed knowledge of data modelling techniques, for example when preparing component model and iterating and reviewing 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems, for example when components are identified and/or developed within project specification • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when components are identified and/or developed within project specification, and when interaction diagrams are prepared according to project standards. • Research skills for specifying, analysing and evaluating broad features of a particular business domain and best practice in program development, for example when component connectivity is analysed and data flows iterated
Resources	This competency can be assessed in the workplace or in a simulated environment. Peers and supervisors for obtaining information on the extent and quality of the contribution made.	
Consistency	Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts	
Context	Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. Assessment could be across software and hardware	

Key Competencies						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	2	2	2

UNIT	ICAITAD051B Develop client user interface
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FIELD	Analyse and Design
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DESCRIPTION	This unit describes the competency required to design a user interface which integrates with front-end applications
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITAD042B, ICAITAD043B, ICAITB059B, ICAITT077B, ICAITB074B, ICAITAD048B, ICAITAD050A, ICAITB059B, ICAITB069A, ICAITT079B
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ELEMENT	PERFORMANCE CRITERIA
1. Prepare design for interface	<ol style="list-style-type: none"> 1. Requirements and other documentation are reviewed to specify processes involving the interaction of the user with the application 2. Environment to be used for system is considered and the impact that may place on user interface design is considered, eg. Windows based, Web based, specialised equipment like ATMs, etc, 3. Organisational standards are reviewed and the need for similar look and feel to systems already in use is considered 4. Data presentation formats are modelled and possibly prototyped in readiness for user review 5. Data Query and report formats are modelled 6. Approval for the proposed interfaces to be used are obtained form the client
2. Design and document the system user interface	<ol style="list-style-type: none"> 1. Menu structures are designed according to client specifications and acceptance criteria 2. Screen dialogues are designed according to client specifications and acceptance criteria 3. Batch procedures are designed according to technical specifications and acceptance criteria 4. On-line Help formats are designed along with any tutorials specified 5. User interface and style for screens, reports and forms are designed according to client specifications and acceptance criteria 6. User design philosophy is clearly and coherently documented

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Existing Architecture	Will vary from: systems based around mainframes to networks of mid-range machines and/or desktop PCs. Networks can be local, wide or based on the Internet.
Client	<ul style="list-style-type: none"> • May be a department within an organisation, a business requiring an e-commerce solution or a third party, and so the relationship and ease of access will vary. <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to possible to the client business requirements were considered and appropriate choices made given the business objectives and acceptance criteria.</p>
Usability tools	WebSAT - WebMetrics, Max, NetRaker, WebVIP,

UNIT	ICAITAD051B Develop client user interface
Design Principles	<p>Will vary in relation to organisational requirements.</p> <p>Ideally the interface will:</p> <ul style="list-style-type: none"> • create an intuitive (few directions/ instructions needed) system, • interpret user demands (clicks etc) consistently, • anticipate user error, • focus on content, • provide feedback to users, • distinguish between actions, • allow speed control and be designed for target audience <p>Supplementary questioning of the candidate may be used during the assessment phase, where necessary, to ensure that all issues relating to the logical progression of information/content were considered and the nature of functions are apparent and appropriate choices made given the business objectives and client requirements and target audience.</p>
Documentation and Reporting	<p>Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates</p>
OH and S Standards	<p>As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency</p>
Administration System	<p>Depending on the size of the project, a system is required to maintain order and manage the amount of information being processed by the project member/s</p>
Consulting techniques	<p>May include: interviews, surveys, chat rooms, focus groups, questionnaire, surveys, soft system methodologies, JAD</p>
Analysis Techniques	<p>May include: gap analysis, urgency and impact, statistical and a range of current requirements gathering methodologies</p>
Quality benchmarks	<ul style="list-style-type: none"> • AS 2645-1987 Information processing - Documentation symbols and conventions for data, program and system flowcharts, program network charts and systems resources charts, • AS 3876-1991 Information processing - Guidelines for the documentation of computer-based application systems, • AS 3898-1991 Information processing - User documentation and cover information for consumer software packages, • AS/NZS 4598.2:1999 Guide to the development of application software - On-screen documentation. <p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p>
Design methods/tools	<p>Will vary from the traditional design development processes with little or no formalisation to a very well structured approach and client requirements ie. style guides etc.</p>

UNIT	ICAITAD051B Develop client user interface
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EVIDENCE GUIDE	
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Critical aspects of evidence

Assessment must confirm sufficient knowledge of the basic elements of a system and how to produce specifications

Assessment must confirm the ability to design user interface which integrates with front-end applications

Ideally the interface will:

- create an intuitive (few directions/ instructions needed) system,
- interpret user demands (clicks etc) consistently,
- anticipate user error,
- focus on content,
- provide feedback to users,
- distinguish between actions,
- allow speed control and be designed for target audience

Interdependent assessment of units

This unit may be assessed with any of the following: ICAITAD042B, ICAITAD043B, ICAITB059B, ICAITT077B, ICAITB074B, ICAITAD048B, ICAITAD050A, ICAITB059B, ICAITB069A, ICAITT079B. The interdependence of units of competency for assessment will vary with the particular project or scenario.

Underpinning skills and knowledge

Underpinning knowledge

- Broad knowledge base of current industry accepted hardware and software products with broad knowledge of general features and capabilities, for example when preparing design
- Broad knowledge base of current industry accepted user interfaces with broad knowledge of general features and capabilities, for example when preparing design
- Detailed knowledge base of GUI, for example when preparing design
- Detailed knowledge base of module functionality, for example when preparing design and designing and documenting the system user interface
- A broad knowledge base incorporating some theoretical concepts of current industry design principles, for example when preparing design and designing and documenting the system user interface
- Detailed knowledge base of front-end systems, for example when designing and documenting the system user interface
- A broad knowledge base of ergonomics, for example when preparing design and designing and documenting the system user interface

Underpinning skills

- Problem solving skills for a defined range of predictable problems, for example when environment to be used for system is considered and the impact that may place on user interface design is considered, eg. Windows based, Web based, specialised equipment like ATMs, etc
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when approval for the proposed interfaces to be used is obtained from the client
- Report writing skills for business requiring depth in analysis and evaluation of information in a defined range of areas, for example when approval for the proposed interfaces to be used is obtained from the client
- Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when requirements and other documentation are reviewed to identify processes involving the interaction of the user with the application

UNIT	ICAITAD051B Develop client user interface
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Resources

To demonstrate this unit of competence the candidate will require access to usability tools and documents detailing:

- Design specifications,
- Organisational standards for documentation and version control,
- Project management process and hierarchy,
- Usability test plan,
- Agreed usability metrics.

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the design requirements and prototyping aspects of this unit.

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	3	2	2	1	2	2

UNIT	ICAITAD052B Design IT security framework
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FIELD	Analyse and Design
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DESCRIPTION	This unit describes the competency required to evaluate security requirements of the new system and to plan for controls.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include : ICAITT077B, ICAITI100A, ICPMM61cA, ICPMM81eA, ICPMM82eA, ICAITS123B, ICAITB059B, ICAITAD044B, ICAITAD054B, ICAITAD056B
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ELEMENT	PERFORMANCE CRITERIA
1. Determine legal requirements for IT security	<ol style="list-style-type: none"> 1. Statutory requirements related to information to be stored is investigated and incorporated within system requirements 2. Implications for IT security framework are evaluated against statutory and project requirements and system documents modified to reflect security requirements
2. Determine commercial requirements for IT security	<ol style="list-style-type: none"> 1. Commercial and business requirements relating to security are identified and compared with existing system requirements 2. Implications for IT security framework are evaluated against external commercial requirements and system documents modified to reflect security requirements
3. Determine application requirements for IT security	<ol style="list-style-type: none"> 1. Documented application requirements relating to security are identified and any additional security needs are discussed with client users, senior management and audit staff 2. Specific user/data security hierarchy is prepared and data views and access paths are developed 3. Communications providers are contacted and liaised with, and vendor offerings (encryption, authentication protocols etc.) are evaluated if appropriate 4. Security requirements are finalised and presented to senior management for approval
4. Conduct risk analysis	<ol style="list-style-type: none"> 1. Security threats are identified taking into consideration the internal and external business environment 2. Precautions are formulated taking into consideration internal and external business requirements 3. Costs of loss are compared with costs of prevention or recovery and alternative processes to safeguard system are examined 4. Recommended approach and requirements for risk containment are made to senior management for approval
5. Formulate IT security objectives	<ol style="list-style-type: none"> 1. Security operational requirements are defined and documented taking into consideration the business or project standards and acceptance criteria 2. Security policy is developed and documented based on risk analysis and agreed precautions 3. Security strategy is developed according to business requirements and acceptance criteria 4. Specific fit of physical and technical security is defined according to technical and environmental specifications 5. Operating procedures related to security are identified and documented according to project business standards

UNIT	ICAITAD052B Design IT security framework
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ELEMENT	PERFORMANCE CRITERIA
6. Assess technology fit	<ol style="list-style-type: none"> 1. Best fit of technology to requirements is identified based on project outcomes, cost constraints and environmental influences 2. Proposed best fit of technology is evaluated according to project outcomes, cost constraints and environmental influences 3. Recommendations are prepared according to project requirements and submitted to higher authorities

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Security environment	Includes all the laws, organisational security policies, customs, expertise, and knowledge that are, or may be, relevant. The security environment also includes the threats to security which are, or are held to be, present in the environment.
Security specifications	Define the actual or proposed technical specifications for implementation of the framework, IT assurance requirements <ul style="list-style-type: none"> • AS/NZS 4444, Information security management; • AS/NZS 13594:1998, Information technology - Lower layers security
Integrity	Data integrity, storage, during processing, or while in transit. System integrity
Confidentiality	Against unauthorised reads, including data in storage, during processing, and while in transit
Client	May be a department within an organisation, a business requiring an e-commerce solution or a third party, and so the relationship and ease of access will vary. Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the communication and business requirements were considered and appropriate choices made given the risk analysis and system configuration.
Security Assurance	Covers: IT functionality that performs correctly, protection against unintentional errors (by users or software), and sufficient resistance to intentional penetration or by-pass. Supplementary questioning of the candidate may be used during the assessment phase, where necessary, to ensure that all issues relating to security assurance were considered and appropriate choices made during the development of the IT security framework.
Statutory requirements	Can include legislation (such as Privacy Act), industry imposed controls and standards. In certain organisations such as health and banking there may be strict laws regarding confidentiality and reporting of data
Commercial and business requirements	<ul style="list-style-type: none"> • Back-up, • storage and recovery of data, • access to internal network, • passwords/logons, • firewalls, • hacking • confidentiality, • integrity, • availability
Physical nature of security	The system and its location should be considered, wide area networks, access by people other than employees, and if the system, itself, is in an intrinsically secure building.

UNIT	ICAITAD052B Design IT security framework
Security policy	Can cover theft, viruses, standards (including archival, back-up, network), privacy, audits, alerts and usually relates directly to the security objectives of the organisation
Technical security	Hardware, ducting of cabling, external cabling requirements
Security threats	Can include: eavesdropping, manipulation, and impersonation, penetration and by-pass
Operating procedures	Handling of security internal breaches and customer requirements for security, frequency and nature of archives, back-ups; alerts, audits, review and test
Security strategy	Includes: privacy, authentication, authorisation, and integrity and usually relates directly to the security objectives of the organisation
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Existing Architecture	Will vary from systems based around mainframes to networks of mid-range machines and/or desktop PCs. Networks can be local, wide or based on the Internet.
Quality benchmarks	<ul style="list-style-type: none"> • AS 2645-1987 Information processing – Documentation symbols and conventions for data, program and system flowcharts, program network charts and systems resources charts, • AS 3876-1991 Information processing - Guidelines for the documentation of computer-based application systems, • AS 3898-1991 Information processing - User documentation and cover information for consumer software packages, • AS/NZS 4598.2:1999 Guide to the development of application software - On-screen documentation.
Legal and security requirements	<p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p> <p>In certain organisations such as health and banking there may be strict laws regarding confidentiality and reporting of data.</p>

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm sufficient knowledge of the basic elements of legal obligations with respect to privacy and the specific application security issues
	Assessment must confirm the ability to incorporate common security products and procedures into a security design
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITT077B, ICAITI100A, ICPMM61cA, ICPMM81eA, ICPMM82eA, ICAITS123B, ICAITB059B, ICAITAD044B, ICAITAD054B, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario.

UNIT

ICAITAD052B Design IT security framework

EVIDENCE GUIDE

Underpinning skills and knowledge

Underpinning knowledge

- Current industry accepted hardware and software products with broad knowledge of general features and capabilities, for example when integrating commercial requirements with IT security
- Broad general knowledge of the client business domain, business function and organisation, for example when integrating commercial requirements with IT security
- Broad general knowledge of privacy issues and legislation, for example when integrating legal requirements with IT security
- Broad general knowledge of ethics in IT, for example when integrating application requirements with IT security and formulating IT security objectives
- Risk analysis with broad knowledge of general features incorporating substantial depth in some areas, for example when conducting risk analysis
- Broad knowledge of security technology and general features incorporating substantial depth in some areas, for example when assessing technology fit
- Current industry accepted hardware and software products with broad knowledge of general features and capabilities, for example when formulating IT security objectives
- Detailed knowledge of operating systems, for example when integrating application requirements with IT security
- Awareness of legislation restricting encryption techniques, for example when integrating application requirements with IT security
- Common criteria for Information Technology security evaluation

Underpinning skills

- Problem solving skills for a defined range of predictable problems, for example when precautions are formulated taking into consideration internal and external business requirements
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when recommended approach and requirements for risk containment are made to senior management for approval, and when security policy is developed and documented based on risk analysis and agreed precautions, and when recommendations are prepared according to project requirements and submitted to higher authorities
- Group facilitation and presentation skills in relation to transferring and collecting information, for example when commercial and business requirements relating to security are identified and compared with existing system requirements
- Problem solving skills for mathematical solutions, for example when specific fit of physical and technical security is defined according to technical and environmental specifications
- Problem solving skills for computer related algorithms, for example when specific fit of physical and technical security is defined according to technical and environmental specifications, and when best fit of technology to requirements is identified based on project outcomes, cost constraints and environmental influences

UNIT	ICAITAD052B Design IT security framework
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Resources	<p>To demonstrate this unit of competence the candidate will require access to documents detailing:</p> <ul style="list-style-type: none"> IT specifications, The security environment relating to relevant laws/legislation, existing organisational security policies, organisational expertise and knowledge that may be relevant. The security environment also includes the threats to security which are, or are held to be, present in the environment. Risk analysis tools /methodologies IT security assurance specifications. <p>Assessment of this unit of competence could include review of documents developed by the candidate, which relate to the decisions leading to the proposed design of the IT security framework.</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the risk analysis and the analysis of security requirements aspects of this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p>

Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	2	2	2

UNIT	ICAITAD053B Design system security and controls
FIELD	Analyse and Design
DESCRIPTION	This unit describes the controls that should be designed in the system to ensure the system is secure from both a legal and business perspective
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITT077B, ICAITI100A, ICPMM61cA, ICPMM81eA, ICPMM82eA, ICAITS123B, ICAITB059B, ICAITAD044B, ICAITAD054B, ICAITAD056B

ELEMENT	PERFORMANCE CRITERIA
1. Review audit needs	<ol style="list-style-type: none"> 1. Security requirements that have been evaluated to date are reviewed and their appropriateness is discussed with auditors 2. Designs and security requirements are discussed with auditors 3. Audit trails are agreed with auditors and any user needs are incorporated; for example, managers may want to track staff activities
2. Identify appropriate controls	<ol style="list-style-type: none"> 1. Control philosophies and methods that are available to be used in the system are reviewed, such as controls over input, output, files, processing, etc 2. Module and system-wide controls are reviewed (eg. date/version checks, reconciliation procedures) against client requirements and security requirements 3. Significant error handling is catered for (eg. acceptance/rejection of financial transactions) according to security requirements, critical business functions acceptance criteria 4. Time and event criteria are established 5. Controls that will solve security and risk issues are documented and are presented to senior management and auditors for approval
3. Design controls to be incorporated in system	<ol style="list-style-type: none"> 1. Methods by which the controls will be implemented into the system design document are incorporated 2. Controls which are to be built into the system under development are identified and those which are environmental or operating system based such as user access are identified 3. User access security provisions are documented by user classification to be applied at program, record or field level and procedures for controlling the security provisions (eg. password allocation) are checked according to client requirements 4. Senior management and auditor approval is obtained for the design of the controls

UNIT	ICAITAD053B Design system security and controls
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Security environment	Includes: all the laws, organisational security policies, customs, expertise, and knowledge that are, or may be, relevant. The security environment also includes the threats to security which are, or are held to be, present in the environment.
Security specifications	Define the actual or proposed technical specifications for implementation of the framework, IT assurance requirements Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to system security and controls were considered and appropriate choices made given the need to prevent, detect, limit, respond and recover from security breaches. <ul style="list-style-type: none"> • AS/NZS 4444, Information security management, • AS/NZS 13594:1998, Information technology - Lower layers security The security controls once implemented should enhance the mission/business, not detract from it.
Integrity	Data integrity, storage, during processing, or while in transit. System integrity
Confidentiality	Against unauthorised reads, including data in storage, during processing, and while in transit
Client	May be a department within an organisation, a business requiring an e-commerce solution or a third party, and so the relationship and ease of access will vary. Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client business requirements were considered and appropriate choices made given the current system and client requirements.
Security Assurance	Covers: IT functionality that performs correctly, protection against unintentional errors (by users or software), and sufficient resistance to intentional penetration or by-pass. Supplementary questioning of the candidate may be used during the assessment phase, where necessary, to ensure that all issues relating to security assurance were considered and appropriate choices made during the development of the IT security controls.
Statutory requirements	Can include legislation (such as Privacy Act), industry imposed controls and standards
Commercial and business requirements	<ul style="list-style-type: none"> • Back-up, • storage and recovery of data, • access to internal network, • passwords/logons, • firewalls, • hacking • confidentiality, • integrity, • availability
Physical nature of security	The system and its location should be considered, wide area networks, access by people other than employees, and if the system, itself, is in an intrinsically secure building.
Security policy	Can cover theft, viruses, standards (including archival, back-up, network), privacy, audits, alerts and usually relates directly to the security objectives of the organisation

UNIT	
UNIT	ICAITAD053B Design system security and controls
Technical security	Hardware, ducting of cabling, external cabling requirements
Security threats	Can include: eavesdropping, manipulation, and impersonation, penetration and by-pass
Operating procedures	Handling of security internal breaches and customer requirements for security, frequency and nature of archives, back-ups; alerts, audits, review and test
Security strategy	Includes: privacy, authentication, authorisation, and integrity and usually relates directly to the objectives of the organisation
Quality benchmarks	<ul style="list-style-type: none"> • AS 2645-1987 Information processing - Documentation symbols and conventions for data, program and system flowcharts, program network charts and systems resources charts, • AS 3876-1991 Information processing - Guidelines for the documentation of computer-based application systems, • AS 3898-1991 Information processing - User documentation and cover information for consumer software packages, • AS/NZS 4598.2:1999 Guide to the development of application software - On-screen documentation. <p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p>
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Legal and security requirements	In certain organisations such as health and banking there may be strict laws regarding confidentiality and reporting of data
EVIDENCE GUIDE	
Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of security products and organisational security policy</p> <p>Assessment must confirm the ability to establish realistic ground rules for security product procedures</p> <p>The candidate will need to ensure the design covers</p> <ul style="list-style-type: none"> • resilience of the system to security breaches, • layered security, • risk management in relation to overall system and • levels of security across system, • upgrade/scalability of system and security controls, • ease of implementation of security controls.
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITT077B, ICAITI100A, ICPMM61cA, ICPMM81eA, ICPMM82eA, ICAITS123B, ICAITB059B, ICAITAD044B, ICAITAD054B, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario.

UNIT

ICAITAD053B Design system security and controls

Underpinning skills and knowledge**Underpinning knowledge**

- Current industry accepted hardware and software products with broad knowledge of general features and capabilities, for example when specifying appropriate controls
- Broad general knowledge of the client business domain, business function and organisation, for example when reviewing audit needs
- Broad general knowledge of privacy issues and legislation, for example when specifying appropriate controls
- Broad general knowledge of ethics in IT, for example when reviewing audit needs
- Risk analysis with broad knowledge of general features incorporating substantial depth in some areas, for example when designing controls to be incorporated in system
- Broad knowledge of general features of specific security technology incorporating substantial depth in some areas, for example when specifying appropriate controls and for designing controls to be incorporated in system
- Privacy, for example when designing controls to be incorporated in system

Underpinning skills

- Problem solving skills for a defined range of predictable problems, for example when time and event criteria are established
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when senior management and auditor approval is obtained for the design of the controls
- Group facilitation and presentation skills in relation to transferring and collecting information, for example when senior management and auditor approval is obtained for the design of the controls

Resources

To demonstrate this unit of competence the candidate will require access to:

- risks to the mission/business resulting from IT-related risks,
- the probability, frequency, and severity of direct and indirect harm, loss, or misuse of the IT system
- the security environment relating to relevant laws/legislation, existing organisational security policies, organisational expertise and knowledge that may be relevant. The security environment also includes the threats to security which are, or are held to be, present in the environment.
- risk analysis tools /methodologies
- IT security assurance specifications.

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

UNIT	ICAITAD053B Design system security and controls
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Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the review and design aspects of this unit.

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	1	2	2	3	3	3

UNIT	ICAITAD054B Validate quality and completeness of design
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FIELD	Analyse and Design
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DESCRIPTION	This unit describes the competency required to ensure that the module specifications, database , file and interface design, etc are complete and adhere to quality standards
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITT077B, ICAITT083B, ICAITAD052B, ICAITH100A, ICPMM61cA, ICPMM81eA, ICPMM82eA, ICAITS123B, ICAITB059B, ICAITAD044B, ICAITAD056B
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ELEMENT	PERFORMANCE CRITERIA
1. Check completeness of high level design	<ol style="list-style-type: none"> 1. Layouts are drafted according to technical specifications and acceptance criteria 2. Processing details are identified according to technical specifications and acceptance criteria 3. Entity and attribute usage are decided according to technical specifications and acceptance criteria 4. Update procedures are determined according to technical specifications and acceptance criteria 5. System architectural requirements and service requirements covering availability, maintainability, fault tolerance and performance are determined according to technical specifications and acceptance criteria 6. Back-up/recovery procedures are identified according to technical specifications and acceptance criteria 7. Validation, control and reconciliation procedures are developed according to technical specifications and acceptance criteria 8. Error correction cycles, batch control procedures and dependency flows are detailed according to technical specifications and acceptance criteria 9. Terminal sign-on/sign-off procedures are designed according to technical specifications and acceptance criteria 10. Special/exceptional procedures are identified, documented and confirmed against client and technical specifications 11. Adequate use is made of existing components and reuse library has been augmented against known library
2. Review all aspects of the system design	<ol style="list-style-type: none"> 1. Software system design and specification are reviewed against project specifications 2. Database and file design are analysed against technical specifications 3. User interface design is evaluated against client specifications 4. Platform design is examined against project specifications and cost constraints 5. The system is audited against security specifications 6. Design quality is evaluated using appropriate metric (eg. compiling metrics)
3. Rework design and confirm with client	<ol style="list-style-type: none"> 1. Efficiency of the modules is confirmed against technical requirements 2. Predicted system performance is analysed and validated against acceptance criteria 3. The deliverability of the functionality is proved against acceptance criteria 4. Service levels, archive policy and distributed/central requirements are analysed and confirmed against acceptance criteria 5. Documentation procedures have been followed

UNIT	ICAITAD054B Validate quality and completeness of design
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Quality benchmarks	<p>Relevant quality standards include:</p> <ul style="list-style-type: none"> • AS 3925.1-1994 Software quality assurance – Plans, • AS/NZS 4258:1994 Software user documentation process, • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, • AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. <p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p> <p>Will vary according to the type of organisation and the benchmarks will cover technical, cost savings, performance and quality. Some organisations may be quality certified and have well documented standards for addressing quality while others will not. In a simulated environment best practice workplace examples will be used..</p>
Test and acceptance processes	<p>Will vary according to size, type and scope of the project, AS 4006-1992 Software test documentation may be relevant to this unit. International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p>
Software metrics	<p>Size of each development work package, milestones is a variable determined by the sponsor, project manager, development team</p>
Workplace environment	<p>May involve:</p> <ul style="list-style-type: none"> • a business involved in a total organisational change, • a systems only change, • a business improvement process, • an e-commerce solution involving the total organisation or part of the organisation
Documentation and Reporting	<p>Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates</p>
Constraints	<p>Depending on the size of the organisation, project and /or development team the constraints will vary. Time and budget constraints will vary according to project size and length</p>
Administration System	<p>Depending on the size of the project, a system is required to maintain order and manage the amount of information being processed by the project member/s</p>
System	<p>Can include legacy systems, green field sites, organisational wide or discrete</p>
Scope	<p>Manual, automated or fully integrated into the programming environment</p>
Software life cycle	<p>Will vary according to the software life cycle model being employed.</p>
Development methods/tools	<p>Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.</p>
Software environment	<p>DBMS, operating system, application environment</p>
Hardware	<p>Variables may include but are not limited to: networks, stand alone and mainframes</p>

UNIT	ICAITAD054B Validate quality and completeness of design
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EVIDENCE GUIDE	
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<p>Critical aspects of evidence</p>	<p>Assessment must confirm sufficient knowledge of interpreting software specifications</p>	
<p>Interdependent assessment of units</p>	<p>Assessment must confirm pre-set goals/ objectives, metrics have been achieved.</p>	
<p>Underpinning skills and knowledge</p>	<p>This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD052B, ICAITI100A, ICPMM61cA, ICPMM81eA, ICPMM82eA, ICAITS123B, ICAITB059B, ICAITAD044B, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • A broad knowledge base incorporating some detailed theoretical concepts of design principles, for example when checking completeness of high level design • A broad knowledge base incorporating some detailed theoretical concepts of specification standards, for example when checking completeness of high level design • A broad knowledge base incorporating some theoretical concepts of design principles and their applications, for example when checking completeness of high level design and reviewing all aspects of the system design • Current industry accepted hardware and software products with broad knowledge of general features and capabilities, for example when checking completeness of high level design • A broad knowledge base incorporating some theoretical concepts of fault tolerance technologies, for example when checking completeness of high level design • Detailed knowledge of acceptance criteria for example when reworking and confirming completeness of high level design
		<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a range of unpredictable problems, for example when layouts are drafted according to technical specifications and acceptance criteria • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when documentation procedures have been followed • Ability to translate high-level design to detail, for example when layouts are drafted according to technical specifications and acceptance criteria

EVIDENCE GUIDE	
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<p>Resources</p>	<p>To demonstrate this unit of competence the candidate will require access to documents detailing:</p> <ul style="list-style-type: none"> • Technical specifications, • Acceptance criteria, • A live system with database, system files, designed interface • Service level agreement, • Archive policy • Documentation guidelines • IT security specifications. <p>Assessment of this unit of competence could include review of documents developed by the candidate, which relate to the clear identification of the system database, files and interface design meeting the accepted quality standards for the particular system.</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
<p>Consistency</p>	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the design iteration aspects of this unit.</p>

UNIT	ICAITAD054B Validate quality and completeness of design
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Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	2	2	3	3	3

UNIT	ICAITAD055B Determine transition strategy
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FIELD	Analyse and Design
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DESCRIPTION	This unit describes the competency required to further confirm the transition strategy produced in the light of further knowledge of the system design and evolution of change management plan
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITAD056B, ICAITT077B ICAITAD043B, ICAITT083B, ICAITS123B, ICAITAD041B
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ELEMENT	PERFORMANCE CRITERIA
1. Confirm delivery and acceptance plan	<ol style="list-style-type: none"> 1. Phased delivery (function content, location considerations, temporary interfaces) is confirmed with client and project team 2. Method of acceptance, acceptance criteria and acceptance test plan are confirmed as in place and agreed
2. Confirm data take-up plan	<ol style="list-style-type: none"> 1. Data source for each database is identified 2. Integrity constraints are analysed 3. Data conversion work flow is designed taking into consideration data validation, data cleanup and data loading 4. Interface requirements, data take-up method, complexity and effort required are identified 5. Data conversion contingencies are developed and agreed with higher authorities
3. Confirm cut-over plan	<ol style="list-style-type: none"> 1. Conversion window in operational time-scale is agreed with clients and higher authorities 2. Parallel running is agreed with clients and higher authorities 3. Dependencies are agreed with higher authorities 4. Fall-back options are agreed with higher authorities and confirmed with clients 5. Checkpoints, tests, responsibilities are agreed to by higher authorities 6. Resources, tasks and time-scales are agreed to by higher authorities

UNIT	ICAITAD055B Determine transition strategy
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Workplace environment	May involve: <ul style="list-style-type: none"> • a business involved in a total organisational change, • a systems only change, • a business improvement process, • an e-commerce solution involving the total organisation or part of the organisation
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates
Constraints	Depending on the size of the organisation, project and /or development team the constraints will vary. Time and budget constraints will vary according to project size and length
Administration System	Depending on the size of the project, a system is required to maintain order and manage the amount of information being processed by the project member/s
System	Can include legacy systems, green field sites, organisational wide or discrete
Client	May be a department within an organisation, a business requiring an e-commerce solution or a third party, and so the relationship and ease of access will vary. Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client data needs were considered and appropriate choices made given the business objectives and client requirements.
Statutory requirements	Can include legislation (such as Privacy Act), industry imposed controls and standards
Commercial and business requirements	Back-up, storage and recovery of data, access to internal network, passwords/logons, firewalls, hacking. Confidentiality, integrity, availability
Scope	Manual, automated or fully integrated into the programming environment
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used
Existing Architecture	Will vary from systems based around mainframes to networks of mid-range machines and/or desktop PCs. Networks can be local, wide or based on the Internet.
Quality process	Some organisations may be quality certified and have well documented standards for addressing quality while others will not.

EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm sufficient knowledge of interpreting software specifications Assessment must confirm the ability to refine the transition strategy in the light of further technical information and change management plans
Interdependent assessment of units	This unit may be assessed with any of the following:ICAITAD056B, ICAITT077B, ICAITAD043B, ICAITT083B, ICAITS123B, ICAITAD041B. The interdependence of units of competency for assessment will vary with the particular project or scenario.

UNIT

ICAITAD055B Determine transition strategy

Underpinning skills and knowledge

Underpinning knowledge

- A broad knowledge base incorporating some detailed theoretical concepts of cut-over strategies, for example when confirming delivery and acceptance plan
- A broad knowledge base incorporating some detailed theoretical concepts of data analysis, for example when confirming data take-up plan
- A broad knowledge base incorporating some detailed theoretical concepts of post converging strategies, for example when confirming data take-up plan and confirming cut-over plan
- A broad knowledge base incorporating some detailed theoretical concepts of conversion strategies, for example when confirming data take-up plan and confirming cut-over plan
- Current business practices in relation to transition strategies, for example when confirming delivery and acceptance plan

Underpinning skills

- Problem solving skills for a defined range of predictable problems, for example when data conversion contingencies are developed and agreed with higher authorities and when data source for each database is identified, and when data conversion work flow is designed taking into consideration data validation, data cleanup and data loading
- Data management skills in relation to data transition and data storage, for example when data source for each database is identified, and when data conversion work flow is designed taking into consideration data validation, data cleanup and data loading
- Research skills for specifying, analysing and evaluating broad features of a particular business domain and best practice in data transition, for example when phased delivery (function content, location considerations, temporary interfaces) is confirmed with client and project team
- Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when phased delivery (function content, location considerations, temporary interfaces) is confirmed with client and project team
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when resources, tasks and time-scales are agreed to by higher authorities

Resources

To demonstrate this unit of competence the candidate will require access to documents detailing:

- IT specifications,
- Change management plan.
- Acceptance test plan
- IT security assurance specifications.

Assessment of this unit of competence could include review of documents developed by the candidate, which relate to the decisions leading to the development of the transition strategy.

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

UNIT	ICAITAD055B Determine transition strategy
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Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the communication requirements in this unit.

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITAD056B Prepare disaster recovery/contingency plans
FIELD	Analyse and Design
DESCRIPTION	This unit defines the competency required to analyse the impact of the system on the organisation and carry out risk analysis and disaster planning for the project.
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include : ICAITT077B, ICAITAD043B, ICAITT083B, ICAITAD052B, ICAITH100A, ICPMM61cA, ICPMM81eA, ICPMM82eA, ICAITS123B, ICAITB059B, ICAITAD044B, ICAITAD054B, ICAITAD050A, ICAITAD042B

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate impact of system on business continuity	<ol style="list-style-type: none"> 1. Business critical functions are identified from project documentation and discussion with client business area and project team 2. Critical data and software are identified from project documentation 3. Potential impact of failure is assessed against business dependency on IT system 4. Contingency possibilities are identified and evaluated according to project specifications and cost constraints
2. Evaluate threats to system	<ol style="list-style-type: none"> 1. Threats to the system are identified taking into consideration security analysis and internal and external business environment 2. Alternatives to minimise risk are evaluated against project specifications and cost constraints
3. Formulate prevention and recovery strategy	<ol style="list-style-type: none"> 1. Prevention and recovery options to support critical business functions are evaluated against business requirements and cost constraints 2. In-built contingency is designed into the system and current site is in accordance with acceptance criteria 3. Current operational procedures are reviewed to ensure adequate risk safeguards and contingency plans 4. Disaster recovery and prevention strategy submitted to higher authorities for approval
4. Develop project plan to support strategy	<ol style="list-style-type: none"> 1. IT hardware, software, resources required for disaster recovery are identified and documented according to project specifications and cost constraints 2. Processes required for disaster strategy are identified and documented according to project standards 3. Criteria to be met before cutting over to disaster strategy is identified and agreed to by higher authorities 4. Disaster recovery plan is documented and submitted to higher authorities for review and sign off

UNIT	ICAITAD056B Prepare disaster recovery/contingency plan
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Threats	<ul style="list-style-type: none"> • physical (weather, earthquake, flooding), • security, • IT failure (equipment, software) • accident, • espionage, • sabotage (hackers), • telecommunications network failure, • denial of service and • virus attack <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to threats to the IT system were considered and appropriate choices made given the need to prevent, limit, recover, respond and recover from disasters.</p>
Back-up strategy	Hot standby site, warm standby site, cold standby site, mobile van, supplier, bureau, contacts through user group, ASP third parties
Business critical functions	Will vary from organisation to organisation and industry to industry. Typically could include financials, customer service functions, payroll
Contingency plan	<p>The contingency plan will vary in format and content detail, but will:</p> <ul style="list-style-type: none"> • identify weaknesses and provide for the implementation of a disaster prevention program • minimise disruption to business operations; • provide a coordinated approach to the disaster recovery process
Criteria to be met before cutting over	<p>Can include:</p> <ul style="list-style-type: none"> • estimate of time before system is operational, • estimate of business impact, • authorisations to cut-over, • actual system down time, • refresher of cut-over plan
Security environment	Includes all the laws, organisational security policies, customs, expertise, and knowledge that are, or may be, relevant. The security environment also includes the threats to security which are, or are held to be, present in the environment.
Integrity	Data integrity, storage, during processing, or while in transit. System integrity
Confidentiality	Against unauthorised reads, including data in storage, during processing, and while in transit
System engineering issues	Resilience of the system to security breaches, layered security, risk management in relation to overall system and to levels of security across system, upgrade/scalability of system and security controls, ease of implementation of security controls.

UNIT	ICAITAD056B Prepare disaster recovery/contingency plan
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Client	<p>May be a department within an organisation, a business requiring an e-commerce solution or a third party, and so the relationship and ease of access will vary.</p> <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the business critical functions were considered and appropriate choices made given the threats and potential contingencies</p>
Statutory requirements	<p>Can include legislation (such as Privacy Act), industry imposed controls and standards. In certain organisations such as health and banking there may be strict laws regarding confidentiality and reporting of data</p>
Commercial and business requirements	<ul style="list-style-type: none"> • Back-up, • storage and recovery of data, • access to internal network, • passwords/logons, • firewalls, • hacking • confidentiality, • integrity, • availability
Operating procedures	<p>Handling of internal security breaches and customer requirements for security, frequency and nature of archives, back-ups; alerts, audits, review and test</p>
IT requirements for back-up strategy	<p>Typically a subset of IT architecture, archiving and off-site procedures required for processing critical business functions. Will vary across organisations and critical business functions</p>
Site, equipment and resources requirements for back-up strategy	<p>Site: location, size, power, cabling, air-conditioning, raised floor</p> <p>Equipment: offices, telephones, cabinets, desk, chairs, storage facilities, consumables</p> <p>Other resources. Documentation: copy of current disaster plan, emergency contacts, processes and procedures, technical manuals, system architecture and configuration details</p>
Test objectives:	<p>Can include: Refine process and procedures for cutover, install and test new equipment, general education, and refresher; specify failings in plan, validate operation of equipment</p>
Test schedule	<p>Varies across organisations from an as needs basis, to regular tests each quarter, year</p>
Personnel/ contacts for back-up strategy	<p>Will cover senior personnel from business, IT division, suppliers, back-up site management, telecommunication carriers. Operational personnel: technical, support, coordination director. Contact methods : home, business, pager, mobile, e-mail</p>
Documentation and Reporting	<p>Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates</p>
Telecommunication needs for back-up strategy	<p>Voice and data. Dialup, extend private network to back-up site. Equipment and software duplication. Switching equipment</p>

UNIT	ICAITAD056B Prepare disaster recovery/contingency plan
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm the ability to specify contingencies that minimise down time to business critical functions</p> <p>Assessment must confirm the ability to clearly specify directions on how to handle serious downtime.</p> <p>Assessment must confirm the ability to coordinate, plan and articulate flexible logistics requirements</p> <p>The plan should cover:</p> <ul style="list-style-type: none"> • physical security, • IT failure, accident, sabotage (hackers), • denial of service, • virus attack and • telecommunications failure. <p>Assessment of this unit of competence could include review of the disaster recovery/ contingency plan developed by the candidate to ensure the following is covered:</p> <ul style="list-style-type: none"> • defined recovery requirements from the perspective of business functions ; • the impact of an extended loss to operations and key business functions ; • the contingency plan is understandable, easy to use and easy to maintain; • contingency planning considerations can be integrated into ongoing business planning and system development processes. <p>The disaster recovery plan is not a once off activity but rather an ongoing process</p>
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITT077B, ICAITAD043B, ICAITT083B, ICAITAD052B, ICAITH100A, ICPMM61cA, ICPMM81eA, ICPMM82eA, ICAITS123B, ICAITB059B, ICAITAD044B, ICAITAD054B, ICAITAD050A, ICAITAD042B. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>

UNIT

ICAITAD056B Prepare disaster recovery/contingency plan

Underpinning skills and knowledge

Underpinning knowledge

- A broad knowledge base incorporating basic engineering knowledge, for example when evaluating threats
- A broad knowledge base incorporating fire/safety knowledge, for example when formulating prevention and recovery strategy
- A detailed knowledge base incorporating back-up methodologies, for example when formulating prevention and recovery strategy
- A broad knowledge base incorporating systems engineering, for example when evaluating threats
- Specific components of the business planning process relevant to the development of IT business solutions, for example when evaluating impact of system on business continuity
- Broad general knowledge of the client business domain, for example when evaluating impact of system on business continuity
- Detailed knowledge of the system's current functionality, for example when evaluating impact of system on business continuity

Underpinning skills

- Logistic management skills for identified resources and procedures skills, for example when IT hardware, software, resources required for disaster recovery are identified and documented according to project specifications and cost constraints
- Negotiation skills in relation to self and other team members and applied to a defined range of predictable problems, for example when business critical functions are identified from project documentation and discussion with client business area and project team
- Project planning skills in relation to scope, time, cost, quality, communications, risk analysis and management, for example when business critical functions are identified from project documentation and discussion with client business area and project team, and when contingency possibilities are identified and evaluated according to project specifications and cost constraints
- Research skills for specifying, analysing and evaluating broad features of a particular business domain and best practice in system development, for example when threats to the system are identified taking into consideration security analysis and internal and external business environment
- Facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when business critical functions are identified from project documentation and discussion with client business area and project team, and when disaster recovery plan is documented and submitted to higher authorities for review and sign off

Resources

To demonstrate this unit of competence the candidate will require access to documents detailing:

- A vulnerability assessment and general definition of requirements
- Business Impact Analysis
- Acceptance test plan
- IT security assurance specifications.

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

UNIT	ICAITAD056B Prepare disaster recovery/contingency plan
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Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to analyse the business critical functions and threats to the system.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p>

Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	2

UNIT	ICAITAD057A Manage a reuse library
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FIELD	Analyse and design
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DESCRIPTION	This unit describes the skills required to store, document and maintain components for reuse
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include Project Management, Teamwork, Documentation and Build.
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ELEMENT	PERFORMANCE CRITERIA
1. Specify components for reuse library	<ol style="list-style-type: none"> 1. Component's suitability for reuse is determined by checking the quality and use/s of the component 2. The size and complexity of reuse components are reviewed for generalisation and any project specific refinement removed 3. Components including patterns, clusters and frameworks are evaluated and broken down into smaller components for greater flexibility or use 4. Components are reviewed for duplication and duplicates removed
2. Document the reuse library	<ol style="list-style-type: none"> 1. Components are sufficiently documented to ensure efficient retrieval 2. Information on functionality and industry domain (if required) are clearly and logically ordered 3. Possible relationships between CIRTs (Class Instance Role of Type) is clearly documented in the CIRT model and class specification
3. Set up library structure	<ol style="list-style-type: none"> 1. All CIRTs are classified in a consistent and faceted manner 2. An index and catalogue is chosen which allows multi-user access 3. The structure ensures all users can be readily aware of what is available 4. The structure is developed in a manner that avoids redundancy of the library

UNIT

ICAITAD057A Manage a reuse library

RANGE OF VARIABLES

VARIABLE	SCOPE
Documentation	Documentation should be consistent across all components. Documentation of different reuse libraries may be different though must be internally consistent
Catalogue	The cataloguing of information may be different across different reuse libraries
CIRT	Class, Instance, Role of Type – method and level of detail may vary
Browsing and retrieval tools	Browsing and retrieval tools will vary across different reuse libraries
Classification of reusable components	Classification of reusable components may divide into major categories such as: potential reusable components, generalised reuse components
Reuse components	May include but are not limited to code, design patterns, specifications, requirements or meta data
Application under development	Can vary from large system that will impact thousands of users in a large organisation to one used by a handful of people. Will also vary in complexity, size and operational characteristics.
Standards and procedures	Will vary from formal procedures that must be adhered to with check points and sign offs throughout development to less formal or non-existent standards.
Client User	May be a department within the organisation or a third party, and so the relation and ease of access will vary.
Development methods/tools	Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.
Documentation and Reporting	Audit trails, naming standards, version control
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used

UNIT	ICAITAD057A Manage a reuse library
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EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm sufficient knowledge of OO analysis and design				
	Assessment must confirm the ability to store, document and improve the quality of reuse components for efficient retrieval and use. Assessment must confirm the ability to organise, communicate what is available in library				
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITAD049A, ICAITAD058A, ICAITAD047B, ICAITAD046B, ICAITB060B, ICAITB065B, ICAITB066B, ICAITB067B, ICAITB075A. The interdependence of units of competency for assessment will vary with the particular project or scenario.				
Underpinning skills and knowledge	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%; text-align: left;">Underpinning knowledge</th> <th style="width: 50%; text-align: left;">Underpinning skills</th> </tr> <tr> <td> <ul style="list-style-type: none"> • A broad knowledge base incorporating some detailed theoretical concepts of library class incorporation • A broad knowledge base incorporating some detailed theoretical concepts of refinement of inheritance • A broad knowledge base incorporating some detailed theoretical concepts of reuse metrics • A broad knowledge base incorporating some detailed theoretical concepts of design paradigms • A broad knowledge base incorporating some detailed theoretical concepts of families, libraries content and structure • A broad knowledge base incorporating some detailed theoretical concepts of patterns, frameworks and idioms </td> <td> <ul style="list-style-type: none"> • Domain analysis skills in relation to the quality of reuse components for efficient retrieval and use • Completion of abstractions in relation to the quality of reuse components for efficient retrieval and use • Refinement of inheritance hierarchies in relation to the quality of reuse components for efficient retrieval and use • Indexing in relation to the quality of reuse components for efficient retrieval and use • Class naming in relation to the quality of reuse components for efficient retrieval and use • Abstract classes in relation to the quality of reuse components for efficient retrieval and use </td> </tr> </table>	Underpinning knowledge	Underpinning skills	<ul style="list-style-type: none"> • A broad knowledge base incorporating some detailed theoretical concepts of library class incorporation • A broad knowledge base incorporating some detailed theoretical concepts of refinement of inheritance • A broad knowledge base incorporating some detailed theoretical concepts of reuse metrics • A broad knowledge base incorporating some detailed theoretical concepts of design paradigms • A broad knowledge base incorporating some detailed theoretical concepts of families, libraries content and structure • A broad knowledge base incorporating some detailed theoretical concepts of patterns, frameworks and idioms 	<ul style="list-style-type: none"> • Domain analysis skills in relation to the quality of reuse components for efficient retrieval and use • Completion of abstractions in relation to the quality of reuse components for efficient retrieval and use • Refinement of inheritance hierarchies in relation to the quality of reuse components for efficient retrieval and use • Indexing in relation to the quality of reuse components for efficient retrieval and use • Class naming in relation to the quality of reuse components for efficient retrieval and use • Abstract classes in relation to the quality of reuse components for efficient retrieval and use
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Resources	Reuse objects, library structure. Peers and supervisors for obtaining information on the extent and quality of the contributions made				
Consistency	Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts				
Context	Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills				

Key Competencies						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITAD058A Apply skills in object oriented design
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FIELD	Analyse and design
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DESCRIPTION	This unit describes the cyclic process of iteration from identification of CIRTs (Class, Instance, Role, Type) to the final complete OO model of the application
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include Project Management, Teamwork, Documentation and Build.
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ELEMENT	PERFORMANCE CRITERIA
1. Derive the high level design from specification	<ol style="list-style-type: none"> 1. Design elaboration is systematic in approach to ensure coherence and cohesion of design 2. The design model is aligned to the conceptual model and meets time to develop, cost constraints, efficiency and performance requirements 3. Abstract candidates are identified and object components developed
2. Refine the design	<ol style="list-style-type: none"> 1. Detailed investigation of behavioural and state modes of classes is carried out 2. Refinement of the design is continued with each iteration 3. Base classes are identified by stripping out commonality and inheritance scenarios are developed 4. Generic class library items which may be used in place of in-house developed classes are identified
3. Validate the design	<ol style="list-style-type: none"> 1. Service criteria and autonomy of classes are reviewed and confirmed 2. Interface and communication requirements between classes are determined 3. Manager modules and driver programs are prepared to exercise classes 4. Documentation and access issues code for public functions are developed

RANGE OF VARIABLES	
VARIABLE	SCOPE
Criticality	Security, business criticality
Abstraction	The level of abstraction is a factor of the number of allowed iterations and developments of further granularity
Class Libraries	The level of use of generic libraries or frameworks is a variable of the application and the organisation
Service criteria	This is an issue relating to the number of iterations. As analysis proceeds, the amount of service provided by a class may increase or decrease. The class structure may be flat or deep with each class performing a large number of services, with a larger number of classes providing more specific service
Application under development	Can vary from large system that will impact thousands of users in a large organisation to one used by a handful of people. Will also vary in complexity, size and operational characteristics.
Standards and procedures	Will vary from formal procedures that must be adhered to with check points and sign offs throughout development to less formal or non-existent standards.
Client User	May be a department within the organisation or a third party, and so the relation and ease of access will vary.
Development methods/tools	Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.

UNIT	ICAITAD058A Apply skills in object oriented design
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RANGE OF VARIABLES	
VARIABLE	SCOPE
Documentation and Reporting	Audit trails, naming standards, version control
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used

EVIDENCE GUIDE					
Critical aspects of evidence	Assessment must confirm sufficient knowledge of OO techniques and analysis skills Assessment must confirm the ability to meet technical requirements by successfully producing the required design				
Interdependent assessment of units	This unit may be assessed with any of the following: ICPMM65cA, ICPMM67cA, ICAITB070A, ICAITB076B, ICAITB069A, ICAITAD049A, ICAITB060B, ICAITB065B, ICAITB068B, ICAITB075A. The interdependence of units of competency for assessment will vary with the particular project or scenario.				
Underpinning skills and knowledge	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding: 5px;">Underpinning knowledge</th> <th style="text-align: left; padding: 5px;">Underpinning skills</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top; padding: 5px;"> <ul style="list-style-type: none"> A broad knowledge base incorporating some detailed theoretical concepts of design refinement techniques Detailed knowledge of the implementation of design principles A broad knowledge base incorporating some detailed theoretical concepts of various lifecycle options A broad knowledge base incorporating some detailed theoretical concepts of methodological philosophy A broad knowledge base incorporating some detailed theoretical concepts of design quality metrics (eg. coupling and cohesion) </td> <td style="vertical-align: top; padding: 5px;"> <ul style="list-style-type: none"> Domain analysis in relation to successfully producing the required design Completion of abstractions in relation to successfully producing the required design Refinement of inheritance hierarchies in relation to successfully producing the required design Class naming in relation to successfully producing the required design Abstract classes in relation to successfully producing the required design </td> </tr> </tbody> </table>	Underpinning knowledge	Underpinning skills	<ul style="list-style-type: none"> A broad knowledge base incorporating some detailed theoretical concepts of design refinement techniques Detailed knowledge of the implementation of design principles A broad knowledge base incorporating some detailed theoretical concepts of various lifecycle options A broad knowledge base incorporating some detailed theoretical concepts of methodological philosophy A broad knowledge base incorporating some detailed theoretical concepts of design quality metrics (eg. coupling and cohesion) 	<ul style="list-style-type: none"> Domain analysis in relation to successfully producing the required design Completion of abstractions in relation to successfully producing the required design Refinement of inheritance hierarchies in relation to successfully producing the required design Class naming in relation to successfully producing the required design Abstract classes in relation to successfully producing the required design
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Resources	Peers and supervisors for obtaining information on the extent and quality of the contribution made.				
Consistency	Competence in this unit needs to be assessed over a period of time to ensure consistency of performance in a range of contexts				
Context	Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills This competency can be assessed in the workplace or in a simulated environment.				

Key Competencies						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITAD138A Determine acceptable solution providers for e-business projects
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FIELD	Analyse and Design
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DESCRIPTION	This unit defines the competency required to ensure that e-business development is contracted to credible solution providers/ developers who are able to accomplish the task within the confines of the mutually agreed parameters of the project.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Identify the development requirement	<ol style="list-style-type: none"> 1. Clear specifications and technical requirements for the development are prepared and documented. 2. Specifications are signed off and authority to contract a solution providers/ developer is granted. 3. Request For Tender documentation is prepared if appropriate, against business requirements 4. Agreed selection guidelines are prepared and documented if appropriate.
2. Identify potential developers	<ol style="list-style-type: none"> 1. Potential solution providers/ developers are sought in line with organisational policy and procedures 2. Potential solution providers/ developers are request to submit development quotes. 3. Quotes are assessed and a shortlist made against business requirements, where appropriate.
3. Select a potential developer	<ol style="list-style-type: none"> 1. Capability of solution providers/ developers to do the work is assessed. This may include assessing the financial position of the developer, number of staff assigned to do the development etc. 2. Confirm that the potential solution providers/ developers understand the scope of the work to be undertaken. 3. A due diligence check is conducted where appropriate and solution providers/ developers are quality assured. 4. Apply organisational selection guidelines to distinguish between candidates. 5. Solution Provider/ developer is informed of their selection according to organisational procedures/ guidelines.

UNIT	ICAITAD138A Determine acceptable solution provider for e-business projects
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4. Sign off the selection process	<ol style="list-style-type: none"> 1. Contract is prepared for signing according to enterprise procedures 2. Contract is signed and solution providers/ developer to commence work according to contract
5. Review the process	<ol style="list-style-type: none"> 1. Phases of development are identified and Gantt chart is developed and progress monitored 2. The project is tracked to ensure budget and timelines are maintained 3. Iteration of product/ solution still meets the business requirements and budget

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Specification Documentation

Candidates should have access to a set of development specifications and technical requirements.

Due diligence

This depends on the importance of the development, the greater the importance the more detailed the due diligence check.

Items covered include:

- getting referees of previous clients,
- identifying the work of the developer to be employed,
- conducting a check of reputation in the industry,
- checking with appropriate quality and industry bodies,
- checking for vendor certification,
- checking membership of professional bodies
- checking the developers web site and checking their 'seal of trust' credentials.

Software Requirements

A wide variety of soft ware could be used.

UNIT	ICAITAD138A Determine acceptable solution providers for e-business projects
Method of supplier selection	<p>In government organisations there may be well defined tender processes that have to be followed. In other organisations there may be no procedure and each tender handled differently.</p> <p>Different methods may include one or several of the following:</p> <ul style="list-style-type: none"> • Registration of Interest (ROI), • Request for Information (RFI), • Request for Proposal (RFP) <p>The above approaches could involve advertising to the open market, existing relationships or preferred supplier lists</p> <p>This can also be done by advertising, cold calling, responding to advertisements, on line searching, getting recommendation from someone trusted, extending an existing relationship or identifying a well designed e-business site and finding the developers.</p>
Products and Equipment	<p>May include a wide range of hardware including but not limited to routers, bridges, servers, PCs, drives, switches, printers, hubs, modems, personal organisers, firewalls, peripherals etc</p> <p>May include a wide range of software including but not limited to network operating systems, payment software, PC operating systems, database software, encryption protocols, accounting software, web browser software, website building software, spreadsheet software etc</p>
Identification of system components	<p>Identification of system components may require consideration of the following:</p> <ul style="list-style-type: none"> • current business and IT strategic plans • data models, • functional process descriptions, • user requirements, • architectures, • standards, • service levels, etc <p>In a small business not all of these documents will be available and therefore the current business plan, user requirements and required service levels will need to be considered.</p>
Hardware	<p>Can include IT equipment of all types;</p> <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers

UNIT	ICAITAD138A Determine acceptable solution provider for e-business projects
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E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm that candidates can systematically select professional and skilled solution providers/ developers who can successfully complete the required development project.	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	Underpinning knowledge: <ul style="list-style-type: none"> • Writing technical specifications and requirements • Business liaison • Business negotiation • Industry standards • Web site navigation • E-commerce standards • Australian Computer Society Code Of Ethics 	Underpinning skills: <ul style="list-style-type: none"> • Preparing contracts • Preparing tender documentation, if required. • Assessing candidates • Applying selection guidelines to determine the successful developer.
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Selection policies • Procurement policies • E-Business Plan <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>	

UNIT	ICAITAD138A Determine acceptable solution providers for e-business projects
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Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence in identifying and clearly articulating the development requirements and undertaking a systematic search and selection of possible developers. Particular attention should be paid to the way that candidates develop and apply the selection criteria, conduct a capability assessment and, if appropriate conduct a due diligence check.

Context

Breadth, depth and complexity involving analysis, documentation and design across a broad range of technical and/or managerial functions including identifying the technical and human computer interface requirements which drive design. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, evaluation, technical or leadership/guidance and communications functions related to products, services, operations, processes and procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

An individual demonstrating these competencies would be able to:

- Demonstrate understanding of specialised knowledge with depth in some areas;
- Analyse, diagnose, design and execute judgements across a broad range of technical or management functions;
- Demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills;
- Generate ideas through the analysis of information and concepts at an abstract level;
- Demonstrate accountability for personal outputs within broad parameters; and
- Demonstrate accountability for group outcomes within broad parameters.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	2

UNIT	ICAITAD139A Design a Database
FIELD	Analysis and Design
DESCRIPTION	This unit defines the competency required to design a Database
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
ELEMENT	PERFORMANCE CRITERIA
1. Scope and functionality of database is determined	<ol style="list-style-type: none"> 1. Conceptual data model is developed with reference to client requirements for database scope, functionality and scalability 2. Business rules of the client domain are identified and analysed for potential impact on database 3. Conceptual data model is validated by client 4. Relevant database software is identified and considered in relation to client and technical requirements 5. Target environment / platform is identified against technical requirements
2. Logical data model is developed	<ol style="list-style-type: none"> 1. Data items are identified 2. Data items are classified into data types 3. Data requirements of client are confirmed in relation to logical data model 4. Data model is normalised
3. Data structures are designed	<ol style="list-style-type: none"> 1. The operating environment and performance considerations are determined through consultation with client 2. The uses and characteristics of the data tables and forms are identified with reference to business requirements 3. Primary and foreign keys are identified within the tables 4. Referential integrity constraints imposed by client business rules are identified where relevant 5. DBMS constraints are identified as relevant 6. Constraints are incorporated into the design as required 7. The indexes and data dictionary are designed as required

UNIT	
ICAITAD139A Design a Database	
4. Queries, screens and reports are designed	<ol style="list-style-type: none"> 1. Queries are designed as required including ad-hoc query facilities 2. Input screens / views are designed 3. The range and structure of output reports and required by client is determined 4. Reports are designed in accordance with client requirements 5. Validation rules are defined 6. The physical design is reconciled against processing requirements
5. Access and security systems are designed	<ol style="list-style-type: none"> 1. Password and access system is designed with reference to enterprise security plan 2. Concurrency requirements are identified 3. User access profiles are designed with reference to client business model
6. Database design is confirmed	<ol style="list-style-type: none"> 1. Backup and recovery requirements are identified and documented 2. Database design is documented and confirmed with client

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Security	Access privileges and passwords must reflect the business /organisational requirements in terms of roles and functions performed by different positions.
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

UNIT	ICAITAD139A Design a Database
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Data	<p>Variables may include but are not limited to: established files, data from mixed sources and applications</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to data were considered and appropriate choices made given the business specifications and client requirements.</p> <p>Ask questions about different types of data other than the data used, to ensure the application of knowledge and skills to other contexts.</p>
Software	<p>Variables may include but are not limited to: commercial software applications and organisational specific software</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to the client database software and current and/or future applications software requirements were considered and appropriate choices (most effective, efficient and compatible with the business strategy) made.</p> <p>The final database software choice will meet business rules and be compatible with the business strategy, performance considerations and operating environment.</p>
Tools	<p>Variables may include but are not limited to: vendor specific database development tools. Tools include any item or tool used to develop databases.</p> <p>The most appropriate development tool was employed in the most efficient manner.</p>
DBMS	<p>Can include distributed or centralised, online, partitioned geographically or thematically distributed.</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to the design of the client database and subsequent choice of software and current and/or future applications software requirements were considered and appropriate choices (most effective, efficient and compatible with the business strategy) made. The final database will meet specified business rules, agreed budget and timeframe. The database will perform efficiently in the runtime environment (the environment required to operate the designed solution, not the development environment)</p>
Databases	<p>may include but are not limited to</p> <ul style="list-style-type: none"> • Oracle, • Sybase, • Microsoft SQL Server, • Ingres, • DB2, • Informix
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.</p> <p>Reports meet the specific output requirements and are presented in a logical and accessible manner.</p>

UNIT	ICAITAD139A Design a Database
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EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to design a well-structured database that represents the client’s business reality and provides the user with a productive business tool	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • OH&S principles and responsibilities in regard to the health and safety of oneself and others • The function and features of databases • Logical design concepts particularly in relation to designing data structures, queries screens and reports • Data modelling in relation to developing the conceptual data model • Object model design concepts particularly in relation to designing data structures, queries, screens and reports • Data analysis particularly in determining data types and data structures and query and report design • DBMS fundamentals in relation to overall unit of competence particularly during the design phase • The function and features of data types and data structures • Data redundancy • Encryption and authentication as they apply to database security features • Scalability of databases • Australian Computer Society Code Of Ethics • Copy write and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles. 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Techniques to elicit information from users particularly during the design and prototype phases • Analysis skills to determine data objects required, data structures, business requirements • Data modelling skills • Business analysis skills • SQL programming skills • Communicating with clients

UNIT	ICAITAD139A Design a Database
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Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Access to current industry accepted database software, network or other system for remote / multi user access • Business requirements <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate full range of elements and performance criteria in this unit.</p>
Context	<p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>The Candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.</p>

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD140A Design a Server
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FIELD	Analyse and Design
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DESCRIPTION	This unit defines the competency required to chose appropriate hardware and software and to design a Server
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Server application is chosen	<ol style="list-style-type: none"> 1. Customer requirements are determined through the identification and analysis of business needs; 2. Customer requirements are analysed to identify requirements of server; 3. Available applications and server features are identified; 4. Relevant applications are analysed with reference to identified requirements; 5. Alternate solutions are provided including system and network requirements and cost/benefit analysis; 6. Server application is chosen requirements and current and projected processing needs
2. Network operating system is chosen	<ol style="list-style-type: none"> 1. Required network operating system (NOS) features are identified with reference to required server solution and chosen application 2. Available NOSs are identified based on technical requirements; 3. Relevant NOSs are analysed with reference to identified requirements and current and projected processing needs; 4. Network operating system is chosen based on technical and business requirements.
3. Server components are selected	<ol style="list-style-type: none"> 1. Server components are identified with reference to required application and server features; 2. Product specifications and limitations are identified; 3. System interdependencies are identified and considered as required 4. Alternate solutions are provided with reference to required application and sever features including cost/benefit analysis; server components are selected.

UNIT	ICAITAD140A Design a Server
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4. Server is designed	<ol style="list-style-type: none"> 1. Product and vendor architecture and equipment specifications are revised; 2. Server is designed; 3. Server design is analysed against customer requirements by use of server selection tools 4. Changes to design are made as required from the outcomes of the design testing.
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Server applications	File sharing, printer sharing, messaging, web services, network and remote access, database and data warehousing, directory services, management, line of business applications, terminal services
Server Components	Processors, memory, storage solutions, RAID, communication, chassis design, power analysis, server appliances, hot plug peripherals, clustering, FRB
Server Design Considerations	Reliability, serviceability, performance output, peak load, availability, scalability and capacity planning, administration and manageability, longevity and headroom, physical constraints of the facility, cost, required and value added features, component selection
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Network Operating Systems	Features relate to: architecture, scalability, availability and reliability, client support, functionality (both features and limitations), server management, security, application development tools, middleware, maintenance and cost.

UNIT	ICAITAD140A Design a Server
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Operating systems	Solaris NT FreeBSD Linux Windows 2000 HP Unix AIX AS400 OS/2 CompacTru64 MacOS Netware IRIX
Servers	One or more servers depending on size and functionality of website and may include: <ul style="list-style-type: none"> • BEA Weblogic Servers, • Apache HTTP Server, • IBM VisualAge and WebSphere, • Microsoft-Internet-Information-Server, Microsoft-IIS, Microsoft-IIS-W, Microsoft-PWS-95, & Microsoft-PWS • Windows 2000 Server, • NetDynamics, • Lotus Domino • Netscape Enterprise Server, Netscape-FastTrack, Netscape-Commerce • Sun Micro Systems iPlanet Web Server, • iPlanet-Enterprise • Sun Micro Systems Java Web Server • Email Servers; • File & Print Servers; • FTP Servers; • Proxy Servers

EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm the ability to select the required hardware and software and design the server based on business and technical requirements
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT	ICAITAD140A Design a Server
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Underpinning skills and knowledge

Underpinning knowledge:

- Features of a current server applications depending on requirements: eg: Lotus Notes / Novell GroupWise for messaging;
 - Apache / MS IIS for web services;
 - Novel Border Manager / MS Proxy Server for network services;
 - Oracle / MS SQL Server / IBM DB2 for databases and data warehousing; Novell Directory Services / iPlanet for directory services;
 - HP Openview / Intel LAN Desk Server Manager / CA UniCenter for management;
 - SAP / PeopleSoft / Baan for line of business applications; and
 - MS Terminal Server / Citrix MetaFrame for terminal services.
- Features of a range of hardware components including:
 - single and multiple processors;
 - memory (SD and RD RAM, memory leads, bandwidth);
 - chassis (size, thermals, EMI specifications, security, drive bays, cable management, ease of maintenance, LED / LCD panels, aesthetics)
 - disk drives and internal / external storage devices (RAID solutions and functionality, drive formats, backup systems – DAT/DLT/AIT, storage area networks (SANs);
 - load balancers;
 - power (supply requirements and management, protection – backup / line conditioning / surge suppression, power budgeting)
 - hot plug peripherals (PCI expansion cards, power supplies, hard drives, fans).
 - ancillaries (racks, keyboard, monitor, cabinets, air flow)
- Scaling up and scaling out
- Fault tolerant failover clusters
- The data bus (SA bus, PCI bus)
- Memory cache and storage cache in relation to server performance and scalability
- Current storage interfaces (IDE, SCSI, SSA and Fibre Channel) in relation to storage selection
- Australian Computer Society Code Of Ethics

Underpinning skills:

- Capacity planning
- Performance modelling at the system and component level
- Cost / benefit analysis (including return on investment (ROI) and total cost of ownership (TCO) in relation to applications, NOSs and overall server design
- Product analysis Business modelling and needs analysis in relation to server design
- The use of capacity sizing tools eg: generic benchmarks, static sizing guides, software sizing models, workload testing, performance monitoring

UNIT

ICAITAD140A Design a Server

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Server hardware
- Requirements documentation
- Business planning documentation
- Network operating software

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence.

Context

Breadth, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.

The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of specialised knowledge with depth in some areas;
- analyse, diagnose, design and execute judgements across a broad range of technical or management functions;
- demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills
- generate ideas through the analysis of information and concepts at an abstract level;
- demonstrate accountability for personal outputs within broad parameters; and
- demonstrate accountability for group outcomes within broad parameters.

UNIT	ICAITAD140A Design a Server
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Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD141A Design dynamic websites to meet technical requirements
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FIELD	Analyse and Design
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DESCRIPTION	This unit defines the competency required to analyse the technical environment and design a dynamic website that meets current and future business needs.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Define the technical environment	<ol style="list-style-type: none"> 1. Business hardware and software required for the website are identified against the technical requirements 2. Likely changes to the technical environment are determined, for example are servers, databases or operating systems about to be upgraded or changed and documented 3. User software and hardware types are defined to ensure that site is designed to best meet business requirements and customer needs. 4. Security requirements are determined against business and customer expectations 5. Network characteristics are tabulated into technical details as a ready reckoner during development, eg download speed, bandwidth capacity, memory size etc 6. Multiple processes and dynamic aspects that the site is to perform are identified and separated for ease of use 7. Appropriate tools, software and hardware are identified to develop the site.

UNIT

ICAITAD141A Design dynamic websites to meet technical requirements

<p>2. Define the human computer interface</p>	<ol style="list-style-type: none"> 1. User analysis is conducted to determine a user profile drawing on customer and business stakeholders 2. Site purpose is clearly articulated and web designer understands the site strategy and the business and customer expectations 3. User input has been sought to ensure that the business purpose of the site aligns with the business's customer expectations of the site. 4. Task analysis, content and process design requirements are determined based on business and customer requirements 5. Business protocols are identified and used to meet business and customer needs. Eg, commonly used icons and tools are used to ensure user familiarity with design concepts and processes. 6. The appropriate 'ease of use' model (including the ability for the user to customise the site) is determined based on business and customer expectations, 7. Advanced navigation, search, database facilities, help functions and indexing are developed to enhance site performance. 8. Logical flow of processes are developed with an ability to skip through those functions and or pages not appropriate to the user. 9. Appropriate design principles for the site are determined based on business and customer requirements, eg should the site be built around user requirements such as a need to be able to customise the site or should design format be rigid to enable maximum performance for the business.
<p>3. Determine site hierarchy</p>	<ol style="list-style-type: none"> 1. The hierarchy of pages are determined according to information and customisation needs of the business and customers taking into account stateless or non-linear progression 2. Files, databases and auxiliary files are arranged in appropriate directories and /or sub-directories 3. Information flow is logical, dynamic and consistent with user information needs
<p>4. Develop a standards document</p>	<ol style="list-style-type: none"> 1. The technical characteristics are documented according to documentation standards 2. User, designer and implementer characteristics are documented for each process 3. The process flow and purpose of the site is documented 4. Standards and performance benchmarks are established for each process and for the integration of multiple processes 5. Security requirements are documented according to current and future needs 6. Disseminate all characteristics to the design and or development team

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ICAITAD141A Design dynamic websites to meet technical requirements	
5. Design website	<ol style="list-style-type: none"> 1. Appropriate information architecture is applied to site design for each process according to requirements 2. Existing or new database and search engines are incorporated 3. The site look is appropriate to business and customer aesthetic requirements 4. Design characteristics are consistent with specifications detailed in the standards document, eg bandwidth standards are not exceeded etc. 5. Process flow is logical and sequential with the ability for the user to customise and/or avoid processes where required and allows for stateless (non-linear) progression 6. Design documentation is completed.

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Business Documentation	Business documentation that has detailed the purpose and strategy for the web has been provided to candidates. The candidate is to be able to determine the number of services to be provided, appropriate ease of use design model to be selected and a range of possible customers.
Server analysis tools	<p>A number of commercially available software products may be used depending on functionality for example:</p> <ul style="list-style-type: none"> • Apache Jserv, • Apache JSSI, • Apache Jmeter,
Web development standards	<p>Web Content Accessibility Guidelines 1.0 (WCAG)</p> <p>Authoring Tool Accessibility Guidelines 1.0 (ATAG)</p> <p>User Agent Accessibility Guidelines 1.0 (UAAG)</p>
User software and hardware	if site is to be regularly downloaded by WAP enabled laptop computers technical requirements should stress simplicity and minimal graphics in order to minimise bandwidth usage
Customer Interface	Customer documentation is available that has identified the probable customer expectation; software, hardware and operating system preferences; and has enabled the candidate to conduct a user analysis.
Operating System	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware

UNIT	ICAITAD141A Design dynamic websites to meet technical requirements
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Servers	<p>One or more servers depending on size and functionality of website and may include:</p> <ul style="list-style-type: none"> • BEA Weblogic Servers, • Apache HTTP Server, • IBM VisualAge and WebSphere, • Microsoft-Internet-Information-Server, Microsoft-IIS, Microsoft-IIS-W, Microsoft-PWS-95, & Microsoft-PWS • Windows 2000 Server, • NetDynamics, • Lotus Domino • Netscape Enterprise Server, Netscape-FastTrack, Netscape-Commerce • Sun Micro Systems iPlanet Web Server, • iPlanet-Enterprise • Sun Micro Systems Java Web Server • Email Servers; • File & Print Servers; • FTP Servers; • Proxy Servers

UNIT	ICAITAD141A Design dynamic websites to meet technical requirements
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Hardware	<p>Can include IT equipment of all types;</p> <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers
Standards	<p>Standards are being introduced on a regular basis it is worthwhile monitoring the following organisations in relation to XML standards Organisation for the Advancement of Structured Information Standards, ISO and IEEE to web-oriented groups like IETF and W3C, IEEE Std. 2001-1999 Web Page Engineering, The Internet Commerce Standards 1.0</p>
Security standards	<p>May include: HB 231:2000 Information security risk management guidelines AS/NZS 4444.1:1999 Information security management - Code of practice for information security management AS/NZS 4444.2:2000 Information security management - Specification for information security management systems</p>
Security protocols	<p>May include: Secure Multipurpose Internet Mail Extensions Secure Socket Layer & Transport Layer Security IP Security Protocol (Domain Name System Security Extensions) (Data Over Cable Service Interface Specification) IEEE 802.11 Protocol standard for secure wireless Local Area Network products. (Point-to-Point Network Tunnelling Protocol) (Secure Electronic Transactions) (Secure Shell)</p>

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm the ability to identify the technical environment and human computer interface and select appropriate tools and procedures in order to develop an effective dynamic web site. An effective site takes into account the current and future technical needs where change in the technical environment is foreseeable.</p>
Interdependent assessment of units	<p>The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.</p>

UNIT	ICAITAD141A Design dynamic websites to meet technical requirements
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Underpinning skills and knowledge

Underpinning knowledge:

- Website architecture
- Business process design
- Linkage between processes
- Customer and business liaison
- Understanding how e-business sites fit into corporate strategy
- Understanding the implications of technology connectivity
- Stateless programming
- Copy write and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles.
- Documenting technical specifications
- Electronic Commerce Modelling Language
- Australian Computer Society Code Of Ethics

Underpinning skills:

- Website analysis
- HTML
- Scripting
- Information architecture
- Use site design software and hardware
- User analysis
- Integrating on line processes
- Ensure site usability
- Confirm accessibility of web sites design

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Webservers
- E-business website
- Site server
- Site servers software
- Analysis software
- Requirements documentation
- Customer Relationship Model

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

UNIT	ICAITAD141A Design dynamic websites to meet technical requirements
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Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate different stages in defining, documenting and designing within the technical and human interface requirements of the site.

Context

Breadth, depth and complexity involving analysis, documentation and design across a broad range of technical and/or managerial functions including identifying the technical and human computer interface requirements which drive design. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, evaluation, technical or leadership/guidance and communications functions related to products, services, operations, processes and procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

An individual demonstrating these competencies would be able to:

- Demonstrate understanding of specialised knowledge with depth in some areas;
- Analyse, diagnose, design and execute judgements across a broad range of technical or management functions;
- Demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills;
- Generate ideas through the analysis of information and concepts at an abstract level;
- Demonstrate accountability for personal outputs within broad parameters; and
- Demonstrate accountability for group outcomes within broad parameters.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	3	3

UNIT	ICAITAD142A Design a website to meet technical requirements
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FIELD	Analyse and Design
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DESCRIPTION	This unit defines the competency required to analyse the technical environment and the technical requirements a website must meet in order to operate effectively.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Define the technical environment	<ol style="list-style-type: none"> 1. Business hardware and software needs are identified 2. User software and hardware types are defined to ensure that site is designed to best meet business expectations. 3. Appropriate tools, software and hardware are identified to develop the site.
2. Define the human computer interface	<ol style="list-style-type: none"> 1. User analysis is conducted to determine a user profile and customer expectations 2. User analysis identifies capabilities of the interface that customers choose to use 3. Site purpose, the business and customer expectations are clearly articulated 4. Task analysis, content and process design requirements are determined 5. Appropriate design principles for the site are determined and incorporate existing business protocols
3. Determine site hierarchy	<ol style="list-style-type: none"> 1. The hierarchy of pages are identified 2. Content is logical and accessible to customers 3. Navigation between pages is consistent and clear
4. Design website	<ol style="list-style-type: none"> 1. Appropriate information hierarchy is applied to site design 2. Site look is appropriate to business and customer requirements 3. Process flow is developed in a logical and simple manner 4. Site search engine, site map, FAQ and news sections are tested against customer needs 5. Design documentation is completed.

UNIT	ICAITAD142A Design a website to meet technical requirements
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Business Documentation	Business documentation that has detailed the purpose and strategy for the web has been provided to candidates. The candidate is to be able to determine the number of services to be provided, appropriate ease of use design model to be selected and a range of possible customers.
Customer Interface	Customer documentation is available that has identified the probable customer expectation; software, hardware and operating system preferences; and has enabled the candidate to conduct a user analysis.
Software Requirements	A range of possible software choices to design the Website is available.
Hardware	Can include IT equipment of all types; <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers
Operating System	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware
Standards	Standards are being introduced on a regular basis it is worthwhile monitoring the following organisations in relation to XML standards Organisation for the Advancement of Structured Information Standards, ISO and IEEE to web-oriented groups like IETF and W3C, IEEE Std. 2001-1999 Web Page Engineering, The Internet Commerce Standards 1.0
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm the ability to identify and select appropriate tools and procedures in order to develop an effective website for a business
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT	ICAITAD142A Design a website to meet technical requirements
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Underpinning skills and knowledge

Underpinning knowledge:

- Website architecture
- Business process design
- Customer and business liaison
- Understanding how e-business sites fit into corporate strategy
- Understanding the implications of technology connectivity
- Documenting technical specifications
- Copy write and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles.
- Australian Computer Society Code Of Ethics
- Basic information architecture

Underpinning skills:

- Website analysis
- Use site design software
- User analysis

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Webservers
- E-business website
- Site server
- Site servers software
- Analysis software
- Requirements documentation
- Customer Relationship Model

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

UNIT	ICAITAD142A Design a website to meet technical requirements
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Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate different stages in defining, documenting and designing within the technical and human interface requirements of the site.

Context

Breadth, depth and complexity involving analysis, documentation and design across a broad range of technical and/or managerial functions including identifying the technical and human computer interface requirements which drive design. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, evaluation, technical or leadership/guidance and communications functions related to products, services, operations, processes and procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

An individual demonstrating these competencies would be able to:

- Demonstrate understanding of specialised knowledge with depth in some areas;
- Analyse, diagnose, design and execute judgements across a broad range of technical or management functions;
- Demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills;
- Generate ideas through the analysis of information and concepts at an abstract level;
- Demonstrate accountability for personal outputs within broad parameters; and
- Demonstrate accountability for group outcomes within broad parameters.

Key Competencies						
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Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITAD143A Implement process re-engineering strategies for e-business
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FIELD	Analyse and design
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DESCRIPTION	This unit defines the competency required to consider a variety of potential process reengineering strategies for e-business and make an appropriate selection for the business.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Identify reengineering strategies for e-business	<ol style="list-style-type: none"> 1. Process reengineering planning documentation is reviewed to ensure common understanding 2. Stakeholders are consulted and their commitment to process reengineering gained 3. The strategic importance of each process is reviewed and prioritised against business critical functions 4. Information, feedback and suggestions on reengineering are sought from staff and customers to reengineer processes using e-business 5. Brainstorming, Delphi process and or other techniques for innovation are conducted amongst focus groups from management and amongst the staff to identify additional or complimentary reengineering strategies
2. Implement process reengineering strategies for e-business	<ol style="list-style-type: none"> 1. Suggestions are compared against the process reengineering plan, business strategy and core competencies in order to determine strategic fit of the reengineering to business needs 2. Process reengineering enablers are identified and documented and enlisted during implementation 3. Process performance is measured and documented, against internal or external benchmarks – including financial and profitability measurements, in order to determine the health of each process 4. Performance benchmarks for process flow from supplier, through transformation and distribution to customer are implemented 5. A customer expectation focus is taken to ensure that maximum value for customers is built into the process 6. Cooperation across boundaries to create a ‘virtual corporation’ where a number of organisations combine to create a single process is undertaken, where applicable. 7. New process is implemented to ensure the optimal process flow and leave sufficient scope for changing capacity or upgrading etc. 8. New organisational structures, technological requirements and stakeholder change issues are reviewed against benchmarks.

UNIT	ICAITAD143A Implement process re-engineering strategies for e-business
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3. Monitor the organisational context.	<ol style="list-style-type: none"> 1. The organisational structure is monitored and measured against the new structure in order to determine the benefits of the reengineering process. 2. Training needs analysis for staff is identified and documented according to business procedures 3. Any additional cultural and political impact of the new process is determined and documented according to business procedures 4. Communication with the staff, customers and other stakeholders is commenced regarding improvements 5. Any additional new technological requirements are determined and documented according to business requirements
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Organisational Processes	A wide variety of processes may be considered in order to select an appropriate process to reengineer. Performance measures and statistics of processes being considered are to be made available to the candidate to assist in selecting an appropriate process to reengineer.
Organisational Structure	A wide variety of organisational structures support process flow and consequently a wide variety of issues may face the candidate preparing to apply process reengineering within an organisation. Candidates should be given a sound understanding of the structure of the organisation that is going to undertake the process reengineering.
Documentation Requirements	A wide variety of strategic contexts are available within which a process is selected and planned for reengineering. A detailed organisational strategy should be made available to the candidate to assist in selecting an appropriate process and determine the focus of the process to be reengineered. A stakeholder analysis and user analysis highlighting key issues should be provided to each candidate to assist in selecting an appropriate process to reengineer.
Evaluation	Evaluations often centre around real time delivery of service, increased individualisation of offering. Important questions such as the amount of decentralisation and delegation is involved. These factors must be weighed against the prevailing business culture and whether the organisation is able to adopt the strategy. Eg it will generally be difficult to adopt a highly decentralised strategy based on staff experience whom management delegate key decision making functions to if the staff are poorly trained, very young and lack motivation. Any change that will have dramatic impacts on the customers and internal stakeholders, such as staff, will need careful consideration. It will be appropriate to consult with the appropriate stakeholders to determine the acceptability of any proposal.
Risk	Where the risk levels are high consideration should be given to developing the strategy in a manner that mitigates the potential risk through prototyping, piloting or staggered implementation.
Hardware	Can include IT equipment of all types; <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models

UNIT	ICAITAD143A Implement process re-engineering strategies for e-business
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E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to implement a reengineering process that supports the company objectives whilst remaining sensitive to internal and external stakeholder needs. In particular the candidate will need to identify the complex interdependencies between organisational and extra organisational components.	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	Underpinning knowledge: <ul style="list-style-type: none"> • Organisational strategy • Impact of technology • Business case preparation • Consulting internally and externally • Copy write and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles. • Australian Computer Society Code Of Ethics 	Underpinning skills: <ul style="list-style-type: none"> • Environment scanning • Risk analysis • Market research, testing and using focus groups • Communications
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • An organisational structure and culture • An organisational strategy • A stake holder analysis • E-business models • Personnel computer • Analysis software • Modelling software <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>	

UNIT	ICAITAD143A Implement process re-engineering strategies for e-business
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Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence in appreciating and understanding the complexity of preparing and making strategic decisions.

Context

Breadth, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.

The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of specialised knowledge with depth in some areas;
- analyse, diagnose, design and execute judgements across a broad range of technical or management functions;
- demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills
- generate ideas through the analysis of information and concepts at an abstract level;
- demonstrate accountability for personal outputs within broad parameters; and
- demonstrate accountability for group outcomes within broad parameters.

Key Competencies						
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Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD144A Determine best fit topology for a local network
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FIELD	Analysis and Design
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DESCRIPTION	This unit defines the competency required to determine the best way computers can be connected to make a local network, LAN, VPN or WLAN
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include
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ELEMENT	PERFORMANCE CRITERIA
1. Determine user needs	<ol style="list-style-type: none"> 1. The different segments of the proposed LAN, VPN, WLAN are identified based on business requirements 2. Segment needs are determined using LAN, VPN, WLAN functional analysis 3. Traffic content and volumes are estimated based on business requirements 4. A prioritised organisational LAN, VPN, WLAN functional matrix is developed
2. Determine LAN specification	<ol style="list-style-type: none"> 1. Resource requirements are determined for each LAN, VPN, WLAN segment on the basis of functional analysis 2. Features of the physical environment are analysed for the effect on LAN, VPN, WLAN design 3. Typology options are costed 4. Typology options are considered with reference to available resources and LAN, VPN, WLAN functional matrix 5. Appropriate LAN, VPN, WLAN typology is selected based on business requirements and functional analysis

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Resource requirements

Includes number of users, average transaction and file transfer size, applications and telecommunication links

UNIT

ICAITAD144A Determine best fit topology for a local network**Hardware**

Can include IT equipment of all types:

- Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems,
- Bridges, 3Com, Compaq, CISCO, IBM
- modems, analogue, cable, ISDN, DSL
- servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys
- network cards, Adaptec, ARTIC, Compex, SMC
- switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies
- hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron,
- routers & gateways, 3Com, CISCO, D-Link, Intel,
- File & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems,

Cables

May include but not restricted to UTP, STP and fibre.

Documentation and Reporting

Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience. Reports meet the specific output requirements and are presented in a logical and accessible manner.

Routing

May include static and dynamic routers

Router protocols:

- Hot Standby Router Protocol (HSRP)
- Border Gateway Protocol (BGP)
- Cisco Discovery Protocol (CDP)
- (Enhanced) Interior Gateway Routing Protocol
- Routing Information Protocol
- NetWare Link State Protocol
- Open Shortest-Path First Interior Gateway Protocol

UNIT	ICAITAD144A Determine best fit topology for a local network
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Servers	<p>May include:</p> <ul style="list-style-type: none"> • Application/web servers; BEA Weblogic Servers, IBM VisualAge and WebSphere, Microsoft Host Integration Server, NetDynamics, Netscape Application Server • Email Servers; • File & Print Servers; • FTP Servers; • Proxy Servers
Security standards	<p>May include: HB 231:2000 Information security risk management guidelines AS/NZS 4444.1:1999 Information security management - Code of practice for information security management AS/NZS 4444.2:2000 Information security management - Specification for information security management systems</p>
Security protocols	<p>May include: Secure Multipurpose Internet Mail Extensions Secure Socket Layer & Transport Layer Security IP Security Protocol (Domain Name System Security Extensions) (Data Over Cable Service Interface Specification) IEEE 802.11 Protocol standard for secure wireless Local Area Network products. (Point-to-Point Network Tunnelling Protocol) (Secure Electronic Transactions) (Secure Shell)</p>
Operating systems	<p>Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare, Newton OS, Windows CE, EPOC</p>
E-commerce models	<p>Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models</p>
E-Business	<p>Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts</p>
Knowledge Economy	<p>Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.</p>

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm the ability to clearly identify the best LAN, VPN, WLAN topography based on the business or organisational needs.</p>
Interdependent assessment of units	<p>The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.</p>

UNIT

ICAITAD144A Determine best fit topology for a local network**Underpinning skills and knowledge****Underpinning knowledge:**

- The characteristics and relative strengths and weaknesses of five primary LAN typologies
- Line sharing protocols
- General knowledge of the following so that the candidate can define the requirements covering areas such as;
 - scope of operation, redundancy paths, High/Low speed links, protocols, security, traffic flow patterns, traffic load, response time and reliability requirements, types of user/applications, growth projections and capacity planning, constraints (costs, queuing)
- Detailed knowledge of: bridges; routers; gateways; TCP/IP; Ethernet; hubs; adapter cards; jacks
- Basic knowledge of cabling particularly UTP (Unshielded Twisted Pair), STP (Shielded Twisted Pair) or fibre
- Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations
- Current industry accepted hardware and software products with broad knowledge of general features and capabilities
- Copy write and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles.
- Australian Computer Society Code Of Ethics

Underpinning skills:

- Use of LAN functional matrixes
- Use of traffic simulation tools
- Basic traffic analysis
- Use of network protocols
- Basic skills connecting networks and keeping cables tidy - “plug and play” cabling

UNIT

ICAITAD144A Determine best fit topology for a local network

Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Business requirements • Equipment specifications <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency.</p>
Context	<p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p> <p>Applications involve responsibility for, and limited organisation of, others.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating some theoretical concepts; • apply solutions to a defined range of unpredictable problems; • identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas; • identify, analyse and evaluate information from a variety of sources; • take responsibility for ones own outputs in relation to specified quality standards; • and take limited responsibility for the quantity and quality of the output of others.

UNIT

ICAITAD144A Determine best fit topology for a local network**Key Competencies**

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	1	2	2	2	3	3

UNIT	ICAITAD145A Identify best fit topology for WAN network
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FIELD	Analysis and Design
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DESCRIPTION	This unit defines the competency required to identify the best way computers/LANs can be connected to make a wide area network
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include
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ELEMENT	PERFORMANCE CRITERIA
1. Identify WAN needs	<ol style="list-style-type: none"> 1. The different LAN/ WLAN or VPN segments of the proposed WAN are identified 2. Segment needs are determined using functional analysis 3. Traffic content and volumes are estimated according to expected organisational usage 4. An organisational WAN functional matrix is developed
2. Identify WAN specification	<ol style="list-style-type: none"> 1. Resource requirements are identified for each LAN/ WLAN or VPN segment on the basis of functional analysis 2. Features of the physical environment are considered for the effect on WAN design 3. Typology options are costed taking into account cost constraints 4. Typology options are considered with reference to available resources and WAN functional matrix 5. Appropriate WAN typology is selected based on organisational requirements and cost constraints

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

WAN requirements	includes number of users, average transaction and file transfer size, applications and telecommunication links
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UNIT	ICAITAD145A Identify best fit topology for WAN network
Telecommunications infrastructure	Analogue, digital, wireless, bandwidth, circuit types, modems, microwaves, satellites and multiplexers
The physical layer	Switched circuits (PVCs and SVCs), leased lines, T-carriers, Synchronous Optical Network (SONET) technologies, Asymmetrical Digital Subscriber Line (ADSL)
Layer 2 protocols	High Level Data Link Control (HDLC), Serial Line Internet Protocol (SLIP), and Point to Point Protocol (PPP)
Higher Layer Protocols	Integrated Services Digital Network (ISDN), Frame Relay and Asynchronous transfer mode (ATM)
Traffic content	Data, voice, video
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • Bridges, 3Com, Compaq, CISCO, IBM • modems, analogue, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • File & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems,
Cables	May include but not restricted to UTP, STP and fibre.
Security standards	<p>May include: HB 231:2000 Information security risk management guidelines AS/NZS 4444.1:1999 Information security management - Code of practice for information security management AS/NZS 4444.2:2000 Information security management - Specification for information security management systems</p>
Security protocols	<p>May include: Secure Multipurpose Internet Mail Extensions Secure Socket Layer & Transport Layer Security IP Security Protocol (Domain Name System Security Extensions) (Data Over Cable Service Interface Specification) IEEE 802.11 Protocol standard for secure wireless Local Area Network products. (Point-to-Point Network Tunnelling Protocol) (Secure Electronic Transactions) (Secure Shell)</p>

UNIT	ICAITAD145A Identify best fit topology for WAN network
Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.
	Reports meet the specific output requirements and are presented in a logical and accessible manner.
Routing	May include static and dynamic routers
	Router protocols:
	<ul style="list-style-type: none"> • Hot Standby Router Protocol (HSRP) • Border Gateway Protocol (BGP) • Cisco Discovery Protocol (CDP) • (Enhanced) Interior Gateway Routing Protocol • Routing Information Protocol • NetWare Link State Protocol • Open Shortest-Path First Interior Gateway Protocol
Servers	May include:
	<ul style="list-style-type: none"> • Application/web servers; BEA Weblogic Servers, IBM VisualAge and WebSphere, Microsoft Host Integration Server, NetDynamics, Netscape Application Server • Email Servers; • File & Print Servers; • FTP Servers; • Proxy Servers
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare

UNIT	ICAITAD145A Identify best fit topology for WAN network
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EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to clearly identify the configuration for connecting a LAN/ WLAN or VPN into a WAN given budget constraints and business needs	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	Underpinning knowledge: <ul style="list-style-type: none"> • telecommunications infrastructure including the difference between digital and analogue networks • modems, concepts and types • asynchronous and synchronous communication • the use of microwaves and satellites communication in networking • packet switching • router operations • TCP/IP protocols, IP Addressing, RIP • General knowledge of the following so that the candidate can define the requirements covering areas such as; <ul style="list-style-type: none"> • scope of operation, redundancy paths, High/Low speed links, protocols, security, traffic flow patterns, traffic load, response time and reliability requirements, types of user/applications, growth projections and capacity planning, constraints (costs, queuing) Voice network design principles • Copy write and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles. • Australian Computer Society Code Of Ethics 	Underpinning skills: <ul style="list-style-type: none"> • use of functional matrixes • Use of LAN functional matrixes • Use of traffic simulation tools • Basic traffic analysis • Use of network protocols

UNIT

ICAITAD145A Identify best fit topology for WAN network

Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Design documents relating to any LANs to be incorporated in the WAN • Equipment specifications <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency.</p>
Context	<p>Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.</p> <p>The self directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas; • analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations; • evaluate information using it to forecast for planning or research purposes; • take responsibility for own outputs in relation to broad quantity and quality parameters; • and take limited responsibility for the achievement of group outcomes.

UNIT

ICAITAD145A Identify best fit topology for WAN network**Key Competencies**

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	3	2	3

UNIT	ICAITAD146A Develop web site information architecture
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FIELD	Analyse and Design
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DESCRIPTION	This unit defines the competency required to develop an information architecture for a complex website that meets current and future business requirements
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Identify content needs	<ol style="list-style-type: none"> 1. Strategic intent of web site is identified from business requirements and customer expectations 2. Information requirements are developed based on the website intent, intended audiences, types of customer interactions, long and short term goals for the site 3. Required information is identified and grouped into business schemes and related to the business structure (information structure and related links) 4. Content requirements are determined for each process
2. Plan content structure	<ol style="list-style-type: none"> 1. Cluster information in related topics 2. Develop a hierarchy of information and check data to confirm sequence of hierarchy 3. Labels are clear, consistent and coherent and relatively intuitive for users to access
3. Develop navigation system	<ol style="list-style-type: none"> 1. Build navigational system for overall website based on business requirements 2. Navigation should be easily used, provide different ways of searching and provide feedback to users 3. The navigational system should give users the flexibility to find the information/ products they want 4. A consistent and logical labelling system is developed taking into account user demographics
4. Test and sign off	<ol style="list-style-type: none"> 1. Information architecture design is prototyped (may be a website prototype, diagrams or other representation of the information architecture) 2. A sample of users test the prototype for usability to determine if architecture meets customer expectation 3. Content that will format correctly in the business and users technical environment is used. 4. If necessary, adjustments to architecture are made based on user feedback 5. Prototype signed off as meeting current and future business requirements

UNIT	ICAITAD146A Develop web site information architecture
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.
Information gathering techniques	<p>Reports meet the specific output requirements and are presented in a logical and accessible manner.</p> <ul style="list-style-type: none"> • face-to-face meetings, • site critiques, both the existing business site and competitors • workshops, • customer surveys • reviews of existing business information
Navigational approaches	for example: site hierarchies and indexes, search interfaces, and tables of contents
Business context	business strategy, client management, knowledge management, project management, e-business and business-to-business
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers
Operating System	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware
Complex websites	May include any website with databases, search engines, etc (Real Time Sites, Quote Aggregators and other dynamic sites) and does not include Brochure Sites or other basic sites.

UNIT	ICAITAD146A Develop web site information architecture
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E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Standards	Standards are being introduced on a regular basis it is worthwhile monitoring the following organisations in relation to XML standards Organisation for the Advancement of Structured Information Standards, ISO and IEEE to web-oriented groups like IETF and W3C, IEEE Std. 2001-1999 Web Page Engineering, The Internet Commerce Standards 1.0

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm the ability to develop the information architecture of a complex website that meets the current and future business requirements.</p> <p>Assessment should confirm that users can confidently and readily access the information they require.</p>	
Interdependent assessment of units	<p>The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.</p>	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Website architecture and business process design and linkages between processes • Customer and business liaison and Understanding how e-business sites fit into corporate strategy • Understanding the implications of technology connectivity and Documenting technical specifications • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles. • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Website analysis • Use site design software and hardware • User analysis • Integrating on line processes

UNIT	ICAITAD146A Develop web site information architecture
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • E-business website • Business strategy • Customer demographics documentation <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate different stages in identifying, planning and applying content in a structure that achieves effective integration of content, technology and processes.</p>
Context	<p>Breadth, depth and complexity involving analysis, documentation and design across a broad range of technical and/or managerial functions including identifying the technical and human computer interface requirements which drive design. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.</p> <p>Applications involve significant judgement in planning, design, evaluation, technical or leadership/guidance and communications functions related to products, services, operations, processes and procedures.</p> <p>The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • Demonstrate understanding of specialised knowledge with depth in some areas; • Analyse, diagnose, design and execute judgements across a broad range of technical or management functions; • Demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills; • Generate ideas through the analysis of information and concepts at an abstract level; • Demonstrate accountability for personal outputs within broad parameters; and <p>Demonstrate accountability for group outcomes within broad parameters.</p>

UNIT

ICAITAD146A Develop web site information architecture**Key Competencies**

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	3	2

UNIT	ICAITAD147A Determine that database functionality and scalability suits business requirements
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FIELD	Analysis and Design
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DESCRIPTION	This unit defines the competency required to identified the current and future business requirements for the database
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Database functionality is determined	<ol style="list-style-type: none"> 1. Business objectives and goals for the project are defined and validated by client 2. Business entities and relationships between entities are identified and defined 3. Business rules of the client domain are identified and analysed for potential impact on database 4. Existing and planned business models are identified and documented as required 5. Database functionality is defined and validated by client as required
2. Scalability requirements are identified	<ol style="list-style-type: none"> 1. Reserve capacity of the database is identified and defined with reference to business model, client business plan and acceptable service outages 2. Long term capacity of the database is identified and defined with reference to business model, client business plan and acceptable service outages 3. Scalability requirements are identified based on the outcomes of 2.1 and 2.2
3. Database scalability and functionality is evaluated	<ol style="list-style-type: none"> 1. Implications for system architecture are identified with reference to determined functionality and scalability requirements of database 2. Implications for data models and data structures are identified with reference to determined functionality and scalability requirements of database 3. Hardware and software implications are identified with reference to determined functionality and scalability requirements of database
4. Database functionality and scalability report is prepared	<ol style="list-style-type: none"> 1. Functionality of database is documented as required by client 2. Database scalability requirements are documented as required by client 3. Conceptual data model is developed with reference to client requirements for database scope, functionality and scalability 4. Report is submitted to client as required

UNIT	ICAITAD147A Determine that database functionality and scalability suits business requirements
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Data	<p>Variables may include but are not limited to: established files, data from mixed sources and applications</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to data were considered and appropriate choices made given the business specifications and client requirements.</p> <p>Ask questions about different types of data other than the data used, to ensure the application of knowledge and skills to other contexts.</p>
Scalability	<p>Scalability has two aspects: reserve capacity and long term capacity. In relation to databases, scalability relates to multi-tier architecture, scalable workflow architecture, database replication, distributed databases, server clustering for example</p>
E-commerce models	<p>Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models</p>
E-Business	<p>Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts</p>
Knowledge Economy	<p>Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.</p>
Databases	<p>May include but are not limited to Oracle, Sybase, Microsoft SQL Server, Ingres, DB2, Informix</p>
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that the target audience will readily understand it.</p> <p>Reports meet the specific output requirements and are presented in a logical and accessible manner.</p>

EVIDENCE GUIDE	
Critical aspects of evidence	<p>Assessment must confirm the ability to develop a well-structured report that represents the client’s business reality and provides them with advice in relation to the scalability requirements and functionality of their planned database</p>
Interdependent assessment of units	<p>The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.</p>

UNIT	ICAITAD147A Determine that database functionality and scalability suits business requirements
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Underpinning skills and knowledge

Underpinning knowledge:

- OH&S principles and responsibilities in regard to the health and safety of oneself and others
- The function and features of databases
- Data modelling in relation to developing the conceptual data model
- Network architecture
- Common system hardware in relation to client/server/database architecture
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles
- Australian Computer Society Code Of Ethics

Underpinning skills:

- Techniques to elicit information from users particularly during the design and prototype phases
- Short and long term capacity planning
- Business analysis skills
- Communicating with clients
- Modelling of data processes
- Report writing

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Business requirements documentation
- Business planning documentation
- Documentation relating to the technical architecture

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence

UNIT	ICAITAD147A Determine that database functionality and scalability suits business requirements
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Context

Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.

The self directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.

Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas;
- analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations;
- evaluate information using it to forecast for planning or research purposes;
- take responsibility for own outputs in relation to broad quantity and quality parameters;
- and take limited responsibility for the achievement of group outcomes.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD148A Identify new technology models for e-business
FIELD	Analyse and design
DESCRIPTION	This unit defines the competency required to identify new approaches to using technology or new technology to enable efficient models of e-business.
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.

ELEMENT	PERFORMANCE CRITERIA
1. Identify processes to be improved by the application of a new model	<ol style="list-style-type: none"> 1. Existing process flow is mapped, documented and benchmarked against relevant performance standards, including competitors and best practice organisations, in order to identify areas that may need improvement. 2. Document results to clearly outline emerging models and processes. 3. Changes in the technological, customer and supply chain environment are identified and documented in order to determine changes that will necessitate an improvement within the business's existing model. 4. Environmental scanning is conducted to identify where technology is being applied to deliver improved effectiveness, efficiency or competitiveness that consequently establishes new expectations and performance benchmarks amongst customers, in the supply chain or internally by the business's stakeholders. 5. Changing customer expectations are identified and documented. 6. Expectations at every stage in the transaction process are identified.
2. Identify existing models	<ol style="list-style-type: none"> 1. Existing e-business models in use by the business are detailed 2. Existing e-business models in use in other similar businesses are identified. This may include scanning for sectoral, occupational geographic and structural similarities. 3. E-business models in use and development in other industry sectors are identified and examined for relevance. 4. Existing models in other parts of the businesses supply chain are mapped.

UNIT

ICAITAD148A Identify new technology models for e-business

<p>3. Identify new e-business models for business opportunities</p>	<ol style="list-style-type: none"> 1. Business to business e-business models focused on deriving efficiencies in the supply chain to reduce production cost are identified 2. Business to business or business to customer models focused on better serving customers or businesses further down the supply and or value chain to improve value adding are explored 3. Business to business or business to customer models focussed on developing new channels to international customers to improve international or domestic competitiveness are identified 4. Business to business or business to customer model focussed on improving the relationship with existing and potential customers in order to compete against new international competition to improved international competitiveness are researched 5. Business to business or business to customer model focussed on changing service or product offering to better meet market expectations and introduce new products are explored
<p>4. Process improvement is selected and matched to appropriate e-business model</p>	<ol style="list-style-type: none"> 1. Business to business model focussed on better integrating existing business processes in the supply and or value chains to create new or improved business processes is identified 2. Key areas of improvement such as, simplifying processes, improving tracking and benchmarking, shortening time cycles, improving staff productivity or competitiveness, accelerating feedback and better matching technology to processes are identified 3. Business to business or business to customer models focused on building relationships with new customers and protecting relationships with existing customers by developing new or improved channels and value in the market offering improved customer relationships are documented
<p>5. Select the appropriate model</p>	<ol style="list-style-type: none"> 1. A model or models that improve the process to be addressed is selected and documented. 2. Performance benchmarks are developed to measure different approach thereby providing empirical decision support. 3. Modelling of the new process and/ or e-business model is conducted and documented. 4. Collaboration with other businesses, especially within the supply chain, is considered and where appropriate modelling is extended to their organisation. 5. Market research or testing is conducted where appropriate.
<p>6. Document and sign off the proposal</p>	<ol style="list-style-type: none"> 1. The model proposal is documented according to the business requirements. 2. Performance benchmarks are developed for the new model based on business requirements. 3. Decision and benchmarks are signed off as accepted by the business.

UNIT	ICAITAD148A Identify new technology models for e-business
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Process improvements	<ul style="list-style-type: none"> • Reduce production cost • Improve value adding • Improved international or domestic competitiveness • Improved international competitiveness • New products • New or improved business processes • Improve customer relationships
Software	All software required to measure existing performance, determine future performance and to model proposals is available. This may include a variety of commercially available or specifically produced software
Products and Equipment	<p>May include a wide range of hardware including but not limited to routers, bridges, servers, PCs, drives, switches, printers, hubs, modems, personal organisers, firewalls, peripherals etc</p> <p>May include a wide range of software including but not limited to network operating systems, payment software, PC operating systems, database software, encryption protocols, accounting software, web browser software, website building software, spreadsheet software etc</p>
Hardware	<p>Can include IT equipment of all types;</p> <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

UNIT	ICAITAD148A Identify new technology models for e-business
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Operating system	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware
Small business	In a small business, there may not be e-business developers or separate clients and so the identification of new e-business models will be based on overall business needs and maybe identified by one individual or in conjunction with hired in expertise. Procedures for business sign off will vary

EVIDENCE GUIDE	
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Critical aspects of evidence	<p>Assessment must confirm the ability to identify new approaches to using technology or new technology to enable efficient models of e-business</p> <p>Candidates must be able determine the appropriate focus of the selected e-business model in order to achieve the desired performance improvement.</p>
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT

ICAITAD148A Identify new technology models for e-business

Underpinning skills and knowledge**Underpinning knowledge:**

- Website architecture
- Technical environment characteristics
- Read and interpret design specifications
- Environmental scanning
- Determining the impact of technological change
- Business process design
- Benchmark selection and development
- Modelling
- Value and supply chain management
- Business to business and business to customer interface and liaison
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles
- Australian Computer Society Code Of Ethics
- Electronic Commerce Modelling Language

Underpinning skills:

- Technical model design
- Prototyping
- Model evaluation
- Documenting benchmarking standards
- Using data obtained from modelling to support decision making
- Data gathering and analysis techniques

UNIT

ICAITAD148A Identify new technology models for e-business

Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • E-business websites • Analysis software • Modelling software • Business requirements • Current industry news, forums, lists, chat rooms etc. • User analysis • Supply and value chain analysis <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence in determining which processes are to have a new e-business model applied to it and identifying a model that will produce business improvements. This competence is supported by the ability to model, conduct environmental scanning and using modelling data to support decision making.</p>
Context	<p>Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.</p> <p>The self directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas; • analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations; • evaluate information using it to forecast for planning or research purposes; • take responsibility for own outputs in relation to broad quantity and quality parameters; • and take limited responsibility for the achievement of group outcomes.

UNIT

ICAITAD148A Identify new technology models for e-business**Key Competencies**

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD149A Implement quality assurance process for e-business solutions
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FIELD	Analyse and Design
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DESCRIPTION	This unit defines the competency required to define and implement the processes and procedures that need to be followed to ensure that there is confidence that an e-business solution achieves quality performance expectations this does not supersede ISO9000 certification.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Plan quality	<ol style="list-style-type: none"> 1. Quality performance expectations are enumerated as a set of measurable benchmarks and agreed by the business. 2. Standards and guidelines for achieving each benchmark are developed and documented according to business requirements 3. Key quality responsibilities for meeting the standards and guidelines are allocated according to business procedures 4. Quality achievement mechanisms to be adopted are communicated to appropriate stakeholders according to communication plan 5. All of the above is documented into a single project wide quality plan based on business documentation standards
2. Implement quality	<ol style="list-style-type: none"> 1. The plan is disseminated and feedback on the appropriateness of the measures and the understanding of key role players is obtained. 2. Corrective action that can be taken immediately and at the lowest level are developed, documented and disseminated. 3. Ensure that allocation of key quality tasks and functions has been effectively conducted. 4. A quality reporting and monitoring regime is established which clearly articulates what quality measures are to be monitored and reported. 5. Skills of the staff are checked and documented to ensure that they are able to meet the quality standards required.

UNIT	
ICAITAD149A Implement quality assurance process for e-business solutions	
3. Control Quality	<ol style="list-style-type: none"> 1. Implement quality performance guidelines, procedures and processes as per the quality plan. 2. Stakeholder feedback is obtained, including customer satisfaction to monitor implementation 3. Quality performance is monitored and reported as per the quality plan. 4. Immediate corrective action is taken where necessary and possible. 5. When immediate corrective action cannot take place, or problems occur frequently, corrective action is initiated to improve quality.
4. Improve quality	<ol style="list-style-type: none"> 1. Quality performance results are collected, analysed and measured against benchmarks to determine quality standard. 2. Frequency of quality shortfalls are determined in order to identify whether defects are isolated incidents or require a wider analysis to determine corrective action. 3. Corrective measures to be taken are determined and responsibility for taking the action is assigned where appropriate. 4. Corrective action solutions are implemented and performance is measured. 5. Benchmark standards are reviewed and adjusted periodically in order to improve quality performance. 6. Quality performance results are documented and disseminated as appropriate.

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

E-business solutions	A variety of e-business solutions are available. The range of customers and on line processes is documented and disseminated prior to assessment.
Quality reports	Will contain what is to be measured, who is to do the monitoring and reporting, who they are reported to, in what format monitoring and reporting occurs, and how frequently monitoring and reporting activities are to occur
Information	Information to be drawn on may include: organisation policy and guidance; the project management body of knowledge; Australian and international quality standards; legislation affecting quality management; other legislation related to particular occupations and industries; international conventions in project management best practice
Quality Management Systems	Quality Management Systems may be based on ISO 9000 Series or they may be designed to meet the specific needs of the project
Quality Management Plans	Quality Management Plans may include processes, authorisations and responsibilities for quality control, quality assurance, continuous improvement, communications and responsibilities. They may also contain quality policies, critical success factors, measurement criteria, QM documentation requirements, and inspection, audit, report and review procedures.

UNIT	ICAITAD149A Implement quality assurance process for e-business solutions
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Documentation Requirements	User and business expectations documentation will need to be made available to candidates. These will vary widely depending on the type of e-business solution being implemented
Hardware	Can include IT equipment of all types: <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers
Operating system	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OS X, Linux, Netware
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Standards	Standards are being introduced on a regular basis it is worthwhile monitoring the following organisations in relation to XML standards Organisation for the Advancement of Structured Information Standards, ISO and IEEE to web-oriented groups like IETF and W3C, IEEE Std. 2001-1999 Web Page Engineering, The Internet Commerce Standards 1.0

EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm the competence to plan and implement appropriate processes and procedures that ensure that quality expectations are met. Standards should be quantitative and applied universally wherever possible. Quality assurance standards should be well documented and disseminated. A quality master plan should be developed as a part of the project management plan.
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT	ICAITAD149A Implement quality assurance process for e-business solutions
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Underpinning skills and knowledge

Underpinning knowledge:

- Website architecture
- Website security
- Work Load Metrics
- Technical Performance Measurement
- Business process design
- Customer and business liaison
- Website privacy, accessibility and equity legislation
- Electronic Commerce Modelling Language
- Australian Computer Society Code Of Ethics
- ISO9000 qualifications and accreditation processes
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles
- Quality concepts

Underpinning skills:

- Website development
- Website analysis
- Technical test design
- Test implementation
- Test evaluation
- Evaluation feedback
- Evaluation analysis

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Quality guidelines

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency in controlling quality by developing and implementing a plan that includes clear procedures for improving the quality standard over time. Continuous improvement is built into the process through regular reviews of standards and analysis of performance results.

UNIT	ICAITAD149A Implement quality assurance process for e-business solutions
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Context

Breadth, depth and complexity involving analysis, documentation and design across a broad range of technical and/or managerial functions including identifying the technical and human computer interface requirements, which drive design. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, evaluation, technical or leadership/guidance and communications functions related to products, services, operations, processes and procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

An individual demonstrating these competencies would be able to:

- Demonstrate understanding of specialised knowledge with depth in some areas;
- Analyse, diagnose, design and execute judgements across a broad range of technical or management functions;
- Demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills;
- Generate ideas through the analysis of information and concepts at an abstract level;
- Demonstrate accountability for personal outputs within broad parameters; and
- Demonstrate accountability for group outcomes within broad parameters.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD150A Evaluate vendor products and equipment
FIELD	Analysis and Design
DESCRIPTION	This unit defines the competency required to evaluate a range of vendor products and equipment against a client's business requirements.
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.

ELEMENT	PERFORMANCE CRITERIA
1. Business requirements are established	<ol style="list-style-type: none"> 1. Accurate, complete and prioritised business requirements are identified through functional analysis 2. Conflicting or overlapping requirements are identified 3. Functional/business requirements are validated by client 4. Available resources and budget are identified and validated by client 5. Scope of work is defined and validated by client
2. Vendor products and equipment are identified	<ol style="list-style-type: none"> 1. Relevant products and equipment are identified with reference to business requirements 2. Interdependencies are identified and documented as required 3. Technical alternatives are identified against business requirements 4. Products and equipment are researched for availability
3. Vendor products, services and equipment are evaluated	<ol style="list-style-type: none"> 1. Customer support and satisfaction is rated 2. Vendors are rated for quality and support documentation 3. Specifications and limitations are accounted for and assessed with reference to business requirements 4. Candidate products and equipment are documented for performance and integration capabilities and cost 5. Cost/benefit analysis report is completed in which time, technology and resource constraints are identified

UNIT	ICAITAD150A Evaluate vendor products and equipment
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4. Evaluation report is prepared	<ol style="list-style-type: none"> 1. Evaluation documentation / information is accurate, clear and concise and linked to business needs 2. Product and equipment analysis is evaluated against business requirements 3. Best product and equipment solution, including limitations, is identified and documented 4. Prepared report containing solution is validated by client
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Products and Equipment	<p>May include a wide range of hardware including but not limited to routers, bridges, servers, PCs, drives, switches, printers, hubs, modems, personal organisers, firewalls, peripherals etc</p> <p>May include a wide range of software including but not limited to network operating systems, payment software, PC operating systems, database software, encryption protocols, accounting software, web browser software, website building software, spreadsheet software etc</p>
Identification of system components	<p>Identification of system components may require consideration of the following:</p> <ul style="list-style-type: none"> • current business and IT strategic plans • data models, • functional process descriptions, • user requirements, • architectures, • standards, • service levels, etc <p>In a small business not all of these documents will be available and therefore the current business plan, user requirements and required service levels will need to be considered.</p>
Small business	<p>In a small business, there may not be systems developers or clients and so the identification of system components will be based on overall business needs and maybe identified by one individual or in conjunction with hired in expertise. Procedures for top management approval and sign off will vary</p>

UNIT	ICAITAD150A Evaluate vendor products and equipment
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E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Method of supplier selection	<p>In government organisations there may be well defined tender processes that have to be followed. In other organisations there may be no procedure and each tender handled differently.</p> <p>Different methods may include one or several of the following:</p> <ul style="list-style-type: none"> • Registration of Interest (ROI), • Request for Information (RFI), • Request for Proposal (RFP) <p>The above approaches could involve advertising to the open market, existing relationships or preferred supplier lists</p>

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to evaluate a range of vendor products and equipment against a client’s functional requirements
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT

ICAITAD150A Evaluate vendor products and equipment**Underpinning skills and knowledge****Underpinning knowledge:**

- Relevant knowledge of current and future technical systems
- The features and function of relevant hardware components
- The features and function of relevant software products
- The interaction between relevant hardware and software products
- Broad general knowledge of the client business domain, for example when confirming system components to acquire, and when agreeing to methods to acquire components
- Current industry accepted hardware and software products with knowledge of general features and capabilities and detailed knowledge in some areas
- Broad knowledge base of vendor product directions
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles
- Australian Computer Society Code Of Ethics

Underpinning skills:

- Ability to identify key sources of information
- Ability to understand specification sheets
- Ability to accurately summarise and document information
- Ability to see the conflicts and integration capabilities between diverse equipment
- Ability to organise and assess importance and relevance of product information
- Ability to communicate with vendors effectively
- Ability to organise performance deviations

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Client functional requirements
- Hardware and software specifications from vendors

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

UNIT	ICAITAD150A Evaluate vendor products and equipment
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Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence.

Context

Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.

The self directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.

Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas;
- analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations;
- evaluate information using it to forecast for planning or research purposes;
- take responsibility for own outputs in relation to broad quantity and quality parameters;
- and take limited responsibility for the achievement of group outcomes.

Key Competencies						
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Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD151A Gather data to identify business requirements
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FIELD	Analysis and Design
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DESCRIPTION	This unit defines the competency required to identify, analyse and document the client requirements
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Identify the key information sources	<ol style="list-style-type: none"> 1. Information repositories are identified across the business 2. Reliable and current documentation obtained for review and analysis 3. Critical questions are developed to elicit information from key stakeholders 4. Methods for gathering data ensures a QA methodology and meets budgetary constraints
2. Gather data through formal processes	<ol style="list-style-type: none"> 1. Information gathering workshops and interviews meet company practices 2. Facilitation processes maximise participant input and different points of view 3. Questions are open ended and target critical information required to identify business requirements 4. Business critical factors relating to current and future directions are confirmed with stake holders 5. Group and individual responses are analysed and the business priorities are clearly defined
3. Ensure analysis is accurate and complete	<ol style="list-style-type: none"> 1. Information and data analysis techniques are appropriate to the brief 2. Information is analysed for accuracy and consistency 3. Any conflicts in information and /or points of view are resolved with stakeholders
4. Gain consensus	<ol style="list-style-type: none"> 1. Detailed documentation is prepared according to documentation standards and company templates 2. Documentation is succinct and written in a style appropriate to the audience 3. Requirements are communicated to client and agreement secured

UNIT	ICAITAD151A Gather data to identify business requirements
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Critical documents	Business plans, marketing plans, technical specifications of existing technologies
Business critical factors	Response times, scalability, traffic, data knowledge/ management, security, customer demographics, customer confidence and expectations
Client	May be: <ul style="list-style-type: none"> • a department within an organisation, • a business requiring an e-business solution • or a third party and so the relationship and ease of access will vary.
Workplace environment	May involve: <ul style="list-style-type: none"> • a business involved in a total organisational change, • a systems only change, a business improvement process, • an e-business solution involving the total organisation or part of the organisation
Business Solutions	Business solutions may include: <ul style="list-style-type: none"> • green field sites, • the integration of new solutions with existing IT infrastructures, • e-business solutions, that include different business models depending on the final requirement Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to possible business solutions were considered and appropriate choices made given the business objectives and client requirements.
Documentation and Reporting	Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach, information gathering processes may have associated templates
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Analysis Techniques	May include: <ul style="list-style-type: none"> • gap analysis, • urgency and impact, • statistical and a range of current requirements gathering methodologies

UNIT

ICAITAD151A Gather data to identify business requirements**EVIDENCE GUIDE****Critical aspects of evidence**

Assessment must confirm the ability to accurately and clearly document business requirements based on business strategy current and future directions. A consensus positions needs to be facilitated amongst client stakeholders where different points of view exist.

Interdependent assessment of units

The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT

ICAITAD151A Gather data to identify business requirements

Underpinning skills and knowledge

Underpinning knowledge

- Broad knowledge of the client business domain, so that the business need is fully understood by project team and client
- Broad knowledge base incorporating theoretical concepts of three or more current industry systems development methodologies, for example when planning the requirements phase and setting system boundaries, scope and methodologies to be used
- Broad knowledge base incorporating theoretical concepts of three or more current industry information gathering methodologies, for example when gathering the requirements data
- Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas, for example when specifying a position for designing the new/additional system and specifying physical requirements of the system are identified taking into account current system functionality, geography, environment, client user and cost constraints
- Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement, for example when specifying people (especially the owner, sponsor and those that will contribute to defining the requirements and using the system), and roles of client users are identified
- Detailed knowledge of the systems current functionality, for example when specifying physical requirements of the system are identified taking into account current system functionality, geography, environment, client user and cost constraints
- Broad knowledge base of quality assurance practices, for example when planning the requirements phase
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles
- Australian Computer Society Code Of Ethics

Underpinning skills

- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when conflicting information is investigated and a single position is developed
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when any questionnaires or material needed for workshops and interviews are developed and trialled
- Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when questionnaires are issued and participation in workshops and interviews have occurred as per the requirements plan.
- Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when consensus is gained with key client users subject to project brief and cost constraints
- Function point analysis skills in relation to analysis, evaluation and presentation of information, for example when the physical requirements of the system are identified taking into account current system functionality, geography, environment, client user and cost constraints and all functional areas included by the project brief are covered in the analysis and meet the client's stated business expectations
- Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when system boundaries, scope and methodologies to be used are determined and all functional areas included by the project brief are covered in the analysis and meet the client's stated business expectations.
- Research skills for specifying, analysing and evaluating broad features of a particular business domain and best practice in system development, for example when specifying the context of the business need/problem

UNIT

ICAITAD151A Gather data to identify business requirements

Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Project brief • Business documentation <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence.</p>
Context	<p>Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.</p> <p>The self directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas; • analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations; • evaluate information using it to forecast for planning or research purposes; • take responsibility for own outputs in relation to broad quantity and quality parameters; • and take limited responsibility for the achievement of group outcomes.

UNIT

ICAITAD151A Gather data to identify business requirements**Key Competencies**

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD152A Implement risk management processes
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FIELD	Analyse and Design
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DESCRIPTION	This unit defines the competency required to implement procedures that provide guidelines to identify, analyse, evaluate, mitigate and monitor risks involved in technological change.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Establish the risk context	<ol style="list-style-type: none"> 1. Organisational and technical environment are defined and documented 2. Risk boundaries are established and documented according to business operating and strategic environment
2. Identify risk factors	<ol style="list-style-type: none"> 1. Project risks, driven by scale, importance, complexity and time are identified and documented according to documentation standards 2. Technological risks are identified and documented according to business strategy. 3. Business impact of change is identified and documented according to current and future business directions.
3. Implement risk management plans	<ol style="list-style-type: none"> 1. Plans for treating each risk factor according to its classification are reviewed and monitored 2. Measurable benchmarks to track the treatment of risk are identified, eg number of files unable to be read after migration to new system are monitored. 3. Risk management intervention points according benchmarked performance tolerances are adhered to. 4. Risk contingency plans that provide redundancy to mitigate unacceptable risks are implemented according to business needs. 5. Phased implementation and piloting are implemented to compartmentalise risk factors

UNIT	ICAITAD152A Implement risk management processes
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4. Monitor, update and report risk profile	<ol style="list-style-type: none"> 1. Routine regular risk updates to add new risks and remove old risks are conducted, eg once a part of a system has been migrated migration ceases being a risk but implementation becomes a new risk. 2. Pre-programmed risk reviews are conducted at major project milestones 3. Feedback channels are established to provide warning of potential new risks according to business needs
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Documentation	Design specification documentation that has detailed the purpose, strategy and maintenance of the web has been provided to candidates. User analysis has been provided to ensure that the candidate understands the potential risk faced by users.
Technological risk	<p>These relate to whether the technology is proven or emerging, if technology is customised or off the shelf, whether data conversion and transfer is simple or complex, whether a single technology is applied or multiple technologies are integrated.</p> <p>Typical business risks relate to how important the processes affected by change are to the business or customer, whether processes or technology will change, whether other projects or technologies are affected, whether structural changes are caused by new technology and whether third party businesses – such as suppliers or contractors – are affected by the new technology.</p>
Hardware	<p>Can include IT equipment of all types;</p> <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers • And updates or replacements to any of the equipment types
Operating System	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware and updates and replacements or to any of the above
Risk contingency plans	For example use copied files to transfer to new technology ensuring that the old technology remains on line until the new system is developed and proven.

UNIT	
ICAITAD152A Implement risk management processes	
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Risk factors and evaluation	The risk analysis, identification of risk factors and the evaluation of risk factors are not covered in this unit. These areas are covered in the unit of competence: ICAITAD156A Review and plan for risk to e-business solution providers
Risk management tools and techniques	Risk management tools and techniques may involve: calling upon personal experience and/or subject matter experts; conducting or directing qualitative and/or quantitative risk analysis, such as schedule simulation, decision analysis, contingency planning, alternative strategy development; collating and using the products of specialist risk analysis to make project-wide risk management decisions; assessing and reporting the potential impact of project risk on the organisation
Risk management plans	Risk management plans may include: potential risk events, preferred and alternative risk management strategies and actions, formal arrangements, responsibility assignment, contingency plans and assigned risk responsibilities.
EVIDENCE GUIDE	
Critical aspects of evidence	<p>Assessment must confirm the ability to implement procedures that identify where risk occurs and what measures need to be taken to treat the risk.</p> <p>Effective implementation procedures include preventative considerations such as establishing warning systems and establishing an on going process, which includes regular or programmed reviews to the risk profile.</p> <p>Risk management must include managing those factors that may have an adverse effect on an external party such as an e-business web site customer or supplier. Consequently, risk management may need to be a collaborative process that involves users and other members of a businesses e-supply chain.</p>
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT

ICAITAD152A Implement risk management processes

Underpinning skills and knowledge**Underpinning knowledge:**

- Technology updating guidelines
- Business process design
- Maintaining and administering a site
- Understanding how e-business sites fit into corporate strategy
- Policy writing and dissemination
- Documenting technical specifications
- Understanding the business supply chain
- Understanding user analysis and the CRM
- Copy write and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles
- Australian Computer Society Code Of Ethics

Underpinning skills:

- Capacity planning
- Technology transfer
- Information architecture
- Use site design software and hardware
- Project management

UNIT

ICAITAD152A Implement risk management processes**Resources**

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Webservers
- E-business website
- Site server
- Site servers software
- Analysis software
- Requirements documentation
- The risk management plan
- User analysis
- Updated or new technology to be applied to any of the above

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence in all facets of managing risk. Candidates must be able to manage the risks involved in changing software, hardware and technical processes and procedures.

UNIT	ICAITAD152A Implement risk management processes
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Context

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for ones own outputs in relation to specified quality standards;
- and take limited responsibility for the quantity and quality of the output of others.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD153A Model data objects
FIELD	Analysis and Design
DESCRIPTION	This unit defines the competency required to model data objects
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.

ELEMENT	PERFORMANCE CRITERIA
1. Scope and functionality of database is determined	<ol style="list-style-type: none"> 1. Client requirements for database scope, functionality and scalability are identified 2. Business process models of the client domain are identified and analysed for potential impact on data models 3. Target environment / platform is identified and considered in relation to client requirements 4. Conceptual data model is validated by client
2. Entities and relationships are identified	<ol style="list-style-type: none"> 1. Entities within scope are identified in a complete and accurate form 2. Attributes of entities are defined 3. Entity relationships are determined 4. Cardinality and options are identified and defined 5. Identified entities attributes and relationships are reviewed with reference to relevant business rules
3. Tables are developed	<ol style="list-style-type: none"> 1. Tables are developed with reference to attributes and relationships 2. Column names are chosen with reference to naming rules 3. Valid data for each column is identified and specified with reference to data type, length and default value 4. Identifiers are selected and documented 5. Data model is normalised to match user specifications according to established company policies 6. Constraints are identified and accounted for as required 7. Tables are revised with reference to required data retrieval speed and degree of flexibility required

UNIT	ICAITAD153A Model data objects
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4. Model is validated	<ol style="list-style-type: none"> 1. Data model is validated by client 2. Issues are resolved and recommendations are fed back into the modelling process 3. Validation process and outcome is documented in a complete and concise form
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Entities	Person, object or concept about which information will be stored
Attributes	The properties of each entity that are commonly values, but may include multi media objects such as documents, video or mixed media, image and voice.
Relationships	One-to-many, many-to-one, many-to-many and one-to-one
Data Type Categories	Categories may be: <ul style="list-style-type: none"> • numeric, • character string, • double-byte (or graphic) character string, • date-time and binary string
Data Types	<ul style="list-style-type: none"> • Large Object (LOB) – binary large object (BLOB), • Character large object (CLOB), double-byte character large object (DBCLOB); • User Defined Type (UDT); • Structured Types and Reference Types
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Constraints	Unique, referential, table check, triggers

UNIT	ICAITAD153A Model data objects
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EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm the ability to model valid data objects and normalise the model	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • the function and features of databases; knowledge of database software eg: IBM DB2, Oracle8, Lotus Domino etc • knowledge of the particular business or domain; knowledge of validation procedures and processes • the function and features of an approach to data modelling eg: the entity – relationship model, the Natural Language Information Analysis Method (NIAM) of data modelling • knowledge of database identifiers and their impact on database usability • the function and features of user defined types, structured types, reference types and user defined functions • type hierarchies eg: sub types, supertypes, root types with reference to the development of structured data types • the features and function of keys eg: unique keys, composite keys, primary keys and primary index • the features and function of timestamps in relation to the use of keys • knowledge of normalisation rules and processes • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • skills in data modelling • ability to transfer customer requirements into data model • developing entity-relationship models in tables • ability to relate identifier selection to business domain • ability to relate user specifications to data model

UNIT	ICAITAD153A Model data objects
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Client business requirements • Database software <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate the skills required to model data.</p>
Context	<p>Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.</p> <p>The self directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas; • analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations; • evaluate information using it to forecast for planning or research purposes; • take responsibility for own outputs in relation to broad quantity and quality parameters; • and take limited responsibility for the achievement of group outcomes.

UNIT	ICAITAD153A Model data objects
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Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD154A Model data processes
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FIELD	Analysis and Design
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DESCRIPTION	This unit defines the competency required to model data processes within an organisation
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Scope of modelling is developed	<ol style="list-style-type: none"> 1. Relevant data processes are identified and validated by client 2. Relevant sources of information are identified and validated by client 3. Relevant and affordable methods for gathering information are identified and validated by client 4. Modelling methodology is validated by client 5. Client requirements are documented
2. Process data is gathered	<ol style="list-style-type: none"> 1. Relevant process data is collected in accordance with client requirements 2. Functions are identified and documented where relevant 3. Procedures and results are identified and documented as required 4. External and temporal events are identified and documented where relevant 5. Process decomposition is applied as required 6. Processes and elementary processes are identified and documented as required 7. Interdependencies are identified where relevant
3. Process data is modelled and validated	<ol style="list-style-type: none"> 1. Process data is modelled according to agreed methodology 2. Model validation tests are conducted as required 3. Validation process and outcome is documented in a complete and concise form 4. Business rules of the client domain are revised and analysed for potential impact on process models
4. Models are validated with client	<ol style="list-style-type: none"> 1. Issues surrounding client business rules are resolved and recommendations are fed back into the modelling process and the client domain 2. Completed data models are validated by client

UNIT	ICAITAD154A Model data processes
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience. Reports meet the specific output requirements and are presented in a logical and accessible manner.
Data Type Categories	Categories may be: <ul style="list-style-type: none"> • numeric, • character string, • double-byte (or graphic) character string, • date-time and binary string
Data Types	<ul style="list-style-type: none"> • Large Object (LOB) – binary large object (BLOB), • Character large object (CLOB), double-byte character large object (DBCLOB); • User Defined Type (UDT); • Structured Types and Reference Types
Process modelling	Descriptive modelling and active modelling
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Modelling deliverables	Will depend on functionality of modelling software / methodology but may include Activity Hierarchy Diagrams (process diagrams), Activity Definition Report (process definition), Activity Dependency Diagram

EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm the ability to identify and model data processes that represents the client’s business reality and provides the user with a productive business tool
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT	ICAITAD154A Model data processes
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Underpinning skills and knowledge

Underpinning knowledge:

- OH&S principles and responsibilities in regard to the health and safety of oneself and others
- Logical design concepts particularly in relation to designing process models
- Data analysis particularly in determining process flows
- The features and functions of process mappers eg: IEF, Isee, ProcessWise Workbench, ARIS, PROTOS
- Modelling rules and conventions with reference to naming processes and events
- Copy write and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles
- Australian Computer Society Code Of Ethics

Underpinning skills:

- Analysis skills to determine business requirements
- Techniques to elicit information from users
- skills in process modelling using relevant methodologies including Object-Oriented Cooperative Process Modelling, OIKOS, SOCCA etc

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Client business requirements
- Database software

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence

UNIT	ICAITAD154A Model data processes
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Context

Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.

The self directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.

Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas;
- analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations;
- evaluate information using it to forecast for planning or research purposes;
- take responsibility for own outputs in relation to broad quantity and quality parameters;
- and take limited responsibility for the achievement of group outcomes.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD155A Plan process re-engineering strategies for e-business
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FIELD	Analyse and Design
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DESCRIPTION	This unit defines the competency required to select a process to be reengineered and plan the reengineering of that process in a manner that understands the strategic, organisational and change context of the process to be reengineered.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Select the process to be reengineered	<ol style="list-style-type: none"> 1. Major processes are identified, mapped and documented according to business strategy. 2. Boundaries and external interfaces of the process are identified and documented. 3. Stakeholders in each process and their interests are identified and documented, including customers, suppliers and staff. 4. The strategic importance of each process according to the business strategy is identified and documented. 5. Process performance is measured and documented, against internal or external benchmarks – including financial and profitability measurements, in order to determine the health of each process. 6. A process is selected and the decision documented. In some cases the decision will reflect the process that is strategically most important, or worst performing. 7. In the case where the process is new many of the above steps will not be necessary.
2. Identify the strategic context	<ol style="list-style-type: none"> 1. The purpose of the process and where it fits into a business strategy is determined and documented. 2. The strategic focus of the reengineering is identified and documented according to business requirements 3. The strategic interests of stakeholders are identified and documented and the process interface between stakeholders is identified and documented. 4. The dimensions of the e-business solution are determined, including the nature of the transaction, the scope of operations, means of payment and approach to security are determined and documented. 5. The current process cost is determined and documented according to business requirements 6. A vision and broad objectives for the process are determined and documented.

UNIT

ICAITAD155A Plan process re-engineering strategies for e-business

3. Design the new process	<ol style="list-style-type: none"> 1. Process reengineering enablers are identified and documented. 2. Process flow from supplier, through transformation and distribution to customer is designed based on business strategy 3. A customer expectation focus is taken to ensure that maximum value for customers is built into the process. 4. Cooperation across boundaries to create a 'virtual corporation' where a number of organisations combine to create a single process is considered, where applicable. 5. New process is modelled using a variety of variables in order to identify the optimal process flow and leave sufficient scope for changing capacity or upgrading etc. 6. New organisational structures, technological requirements and stakeholder change issues are determined based on business needs
4. Determine the organisational context.	<ol style="list-style-type: none"> 1. The current organisational structure is determined and measured against the new structure in order to determine the depth and breadth of organisational change that will accompany the reengineering process. 2. New and different stakeholder interface points are determined according to business needs. 3. Training needs analysis for staff is identified and documented. 4. Cultural and political impact of the new process is determined and documented. 5. Communication with the staff, customers and other stakeholders is commenced according to preferred methodology 6. Any additional new technological requirements are determined and documented.
5. Determine the change context	<ol style="list-style-type: none"> 1. The impact of the change to process is determined and documented for each stakeholder group. 2. Communication and or negotiations with stakeholders are conducted according to business procedures in order to determine their attitude to the change, where appropriate. 3. A change management focus is developed for each stakeholder group according to the preferred methodology
6. A process reengineering plan for e-business is developed	<ol style="list-style-type: none"> 1. Vision, mission and objectives are determined for the process and documented according to business standards 2. Key performance indicators, measurements and or benchmarks are developed for the process. 3. Key implementation responsibilities are determined and documented according to business needs 4. Project management plan is developed in order to implement the plan based on business needs 5. A supporting change management plan is developed according to business standards 6. Other supporting plans are developed, such as budgets; training, infrastructure requirements etc are developed based on business needs 7. Plan is collated, signed off and handed over to implementation team.

UNIT	ICAITAD155A Plan process re-engineering strategies for e-business
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Organisational Processes	<p>A wide variety of processes may be considered in order to select an appropriate process to reengineer. Performance measures and statistics of processes being considered are to be made available to the candidate to assist in selecting an appropriate process to reengineer.</p> <p>However other factors, such as ease of gaining support from stakeholders or amount of disruption to existing business might be the major decisional factor. Each circumstance will be different and will ultimately relate to the potential benefits of applying an e-business solution.</p>
Organisational Structure	<p>A wide variety of organisational structures support process flow and consequently a wide variety of issues may face the candidate preparing to apply process reengineering within an organisation. Candidates should be given a sound understanding of the structure of the organisation that is going to undertake the process reengineering.</p> <p>Partnerships with other companies will need to incorporate a cost benefit analysis and detailed due diligence checking of potential partners to ensure financial and technical capacity.</p>
Strategic focus	<p>Common examples are to reduce process time, reduce cost, increase quality and or increase flexibility, however a single focus should be identified as being the primary objective of the reengineering effort.</p>
Process costs	<p>This may include non-financial costs such as reputation, timeliness or quality standards where appropriate.</p>
Communication	<p>This may take place very early in the process, especially if a collaborative approach to change management is desired</p>
Stake holder change impact	<p>Eg if the process change requires a different approach to input delivery negotiations with suppliers will be required. Or, if suppliers won't change their offering new suppliers might be sought, organisational restructuring and training initiatives might be applied to staff and help desk support for customers is required during implementation.</p>
Documentation Requirements	<p>A wide variety of strategic contexts are available within which a process is selected and planned for reengineering. A detailed organisational strategy should be made available to the candidate to assist in selecting an appropriate process and determine the focus of the process to be reengineered. A stakeholder analysis and user analysis highlighting key issues should be provided to each candidate to assist in selecting an appropriate process to reengineer.</p>
Liaison methods	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • websites, • web applications, • CRM technologies, • written reports, • group meetings, • one on one meetings, • e-mail, telephone calls, newsletters, etc.
Consulting techniques	<p>May include: interviews, surveys, chat rooms, focus groups</p>
Analysis Techniques	<p>May include: gap analysis, urgency and impact, statistical and a range of current methodologies</p>
Hardware	<p>Can include IT equipment of all types;</p> <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers

UNIT	ICAITAD155A Plan process re-engineering strategies for e-business
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E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm that candidates identify a process to be reengineered and plan the reengineering of that process in a manner that supports the strategic, organisational and change context of the process to be reengineered.</p> <p>A candidate must demonstrate an awareness of the impact that changes in one part of a system might have on other parts of the system. Sensitivity to the dramatic impact that process reengineering can have on the people and cultures involved, including the organisation’s staff, customer and or other stakeholders will also need to be demonstrated. A successful plan will include a clear vision, mission, objectives, performance metrics and key responsibilities and also incorporate a supporting change management strategy.</p>		
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.		
Underpinning skills and knowledge	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; vertical-align: top;"> <p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Organisational strategy • Organisational development and structure • Stakeholder liaison and negotiation • Industry standards • Organising and planning • E-commerce standards • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics </td> <td style="width: 50%; vertical-align: top;"> <p>Underpinning skills:</p> <ul style="list-style-type: none"> • Writing plans • Benchmarking • Stake holder communication and negotiation • Change management • Training needs analysis </td> </tr> </table>	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Organisational strategy • Organisational development and structure • Stakeholder liaison and negotiation • Industry standards • Organising and planning • E-commerce standards • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Writing plans • Benchmarking • Stake holder communication and negotiation • Change management • Training needs analysis
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UNIT	ICAITAD155A Plan process re-engineering strategies for e-business
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • An organisational structure and culture • An organisational strategy • A stake holder analysis • E-business models • Personal computer • Analysis software • Modelling software <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence in preparing a plan that appreciates the inter relationship between business structures, processes, strategies and stakeholders.</p>
Context	<p>Breadth, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.</p> <p>The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.</p> <p>Applications involve significant judgement in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.</p> <p>The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of specialised knowledge with depth in some areas; • analyse, diagnose, design and execute judgements across a broad range of technical or management functions; • demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills • generate ideas through the analysis of information and concepts at an abstract level; • demonstrate accountability for personal outputs within broad parameters; and • demonstrate accountability for group outcomes within broad parameters.

UNIT	ICAITAD155A Plan process re-engineering strategies for e-business
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Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD156A Review and plan for risk to e-business solution providers
FIELD	Analyse and Design
DESCRIPTION	This unit defines the competency required to identify and plan for the financial and technological risks facing e-business solution providers adopting new technologies.
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.

ELEMENT	PERFORMANCE CRITERIA
1. Establish the risk context	<ol style="list-style-type: none"> 1. Organisational and technical environment are defined and documented 2. Risk boundaries are established and documented based on the proposed e-business solution 3. Generic risk is identified and insured against. This may involve transferring risk to external technicians or ensuring that indemnity insurance is valid as appropriate to the situation 4. Unacceptable risk consequences are established, based on business critical functions
2. Identify risk factors	<ol style="list-style-type: none"> 1. Project risks, driven by scale, importance, complexity and time are identified and documented 2. Technological risks based on proposed e-business solution are identified 3. Business impact of change is identified and documented based on the current business environment
3. Conduct risk analysis	<ol style="list-style-type: none"> 1. Possible causes of risk are identified based on both internal and external business and technology factors 2. The likelihood of the risk is determined against possible phased project rollout 3. The impact of the risk is identified and documented

UNIT	ICAITAD156A Review and plan for risk to e-business solution providers
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4. Evaluate risk factors	<ol style="list-style-type: none"> 1. Risk factors are ranked and documented according to impact and likelihood 2. Level of risk acceptability is determined and documented 3. Risk profile is developed and documented to identify prevalent risks that must be managed 4. Risks are documented against management treatment according to business processes
5. Develop and implement risk management plans	<ol style="list-style-type: none"> 1. Plans to treat each risk factor according to its classification in 4.4 and priority documented in 4.1 are developed 2. Measurable benchmarks to track the treatment of risk are developed and documented, eg number of files unable to be read after migration to new system 3. Risk management intervention points according benchmarked performance tolerances are identified and documented 4. Risk contingency plans to provide redundancy to mitigate unacceptable risks are developed based on business critical functions 5. Risk factors to avoid risk being amplified throughout a system are compartmentalised, this can be achieved by phased implementation, piloting etc. 6. Each plan is implemented and risk management awareness training is conducted 7. Risk warning feedback channels to warn of unforeseen risk are established
6. Monitor, update and report risk profile	<ol style="list-style-type: none"> 1. Routine regular risk updates are conducted to add new risks and remove old risks 2. Pre-programmed risk reviews are conducted at major project milestones 3. Feedback channels are established to provide warning of potential new risks

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Documentation	Design specification documentation that has detailed the purpose, strategy and maintenance of the web has been provided to candidates. Analysis has been completed to ensure that the candidate understands the potential risk faced by the solution providers.
Effective management procedures	Effective management procedures include preventative considerations such as establishing warning systems and conducting risk awareness training and establishing an on going process, which includes regular or programmed reviews to the risk profile.

UNIT	ICAITAD156A Review and plan for risk to e-business solution providers
Unacceptable risk exposure	Eg no exposure to a risk that might cause a breakdown in the main server is acceptable.
Technological risk	These relate to whether the technology is proven or emerging, if technology is customised or off the shelf, whether data conversion and transfer is simple or complex, whether a single technology is applied or multiple technologies are integrated
Typical business risks	Typical business risks relate to how important the processes affected by change are to the business or customer, whether processes or technology will change, whether other projects or technologies are affected, whether structural changes are caused by new technology and whether third party businesses – such as suppliers or contractors – are affected by the new technology.
Risk management factors	These include, likelihood reduction to minimise frequency of risk, consequence reduction to limit the impact of risk, risk avoidance by not proceeding or adopting an alternate technological solution, transfer risk to another party such as a supplier, and accept risk where the consequences are limited and the cost of mitigation high.
Intervention points	eg if 10 % of files are unable to be read after migration of 25 % of files to the new system the migration is to stop.
Contingency options	For example use copied files to transfer to new technology ensuring that the old technology remains on line until the new system is developed and proven.
Routine risk updates	eg once a part of a system has been migrated migration ceases being a risk but implementation becomes a new risk
Hardware	Can include IT equipment of all types; <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers • And updates or replacements to any of the equipment types
Operating System	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware and updates and replacements or to any of the above
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

UNIT	ICAITAD156A Review and plan for risk to e-business solution providers
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Risk management tools and techniques	Risk management tools and techniques may involve: calling upon personal experience and/or subject matter experts; conducting or directing qualitative and/or quantitative risk analysis, such as schedule simulation, decision analysis, contingency planning, alternative strategy development; collating and using the products of specialist risk analysis to make project-wide risk management decisions; assessing and reporting the potential impact of project risk on the organisation
Risk management plans	Risk management plans may include: potential risk events, preferred and alternative risk management strategies and actions, formal arrangements, responsibility assignment, contingency plans and assigned risk responsibilities.

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm the ability to develop procedures that identify where risk occurs and what measures need to be taken to treat the risk.</p> <p>Risk management must include managing those factors that may have an adverse effect on an external party such as an e-business web site user or supplier.</p> <p>Consequently risk management may need to be a collaborative process that involves users and other members of a businesses e-supply chain.</p>		
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.		
Underpinning skills and knowledge	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Technology updating guidelines • Business process design; maintaining and administering a site; understanding how e-business sites fit into corporate strategy • Policy writing and dissemination • Documenting technical specifications • Understanding the business supply chain • Understanding user analysis and the CRM • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics </td> <td style="width: 50%; vertical-align: top;"> <p>Underpinning skills:</p> <ul style="list-style-type: none"> • File transfer • Technology transfer • Information architecture • Use site design software and hardware • Project management </td> </tr> </table>	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Technology updating guidelines • Business process design; maintaining and administering a site; understanding how e-business sites fit into corporate strategy • Policy writing and dissemination • Documenting technical specifications • Understanding the business supply chain • Understanding user analysis and the CRM • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • File transfer • Technology transfer • Information architecture • Use site design software and hardware • Project management
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UNIT

ICAITAD156A Review and plan for risk to e-business solution providers**Resources**

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to some of the equipment identified below:

- Webservers
- E-business website
- Site server
- Site servers software
- Analysis software
- Requirements documentation
- Customer Relationship Model
- User analysis
- Updated or new technology to be applied to any of the above

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence in all facets of managing risk. Candidates must be able to manage the risks involved in changing software, hardware and technical processes and procedures.

UNIT	ICAITAD156A Review and plan for risk to e-business solution providers
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Context

Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.

The self directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.

Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas;
- analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations;
- evaluate information using it to forecast for planning or research purposes;
- take responsibility for own outputs in relation to broad quantity and quality parameters;
- and take limited responsibility for the achievement of group outcomes.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD157A Develop technical requirements for an e-business solution
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FIELD	Analyse and Design
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DESCRIPTION	This unit defines the competency required to develop the technical and related requirements that will enable an e-business solution to be implemented into an organisation.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Adopt an e-business model to be developed and applied	<ol style="list-style-type: none"> 1. Type of model or hybrid model, eg B2B, B2C complete with the associated CRM is identified 2. A vision and strategic mission is determined and documented for the e-business solution to be adopted 3. Key stakeholders, their business and other needs, are identified and documented 4. Processes to be changed are identified based on business requirements
2. Identify the external technical environment	<ol style="list-style-type: none"> 1. Transaction and or process interface points with external processes or parties in the value and or supply chain are identified and documented 2. Technical requirements to effectively interface with external parties is determined and documented 3. Key input and output requirements, such as turn around time, quality standards and flow capacity are determined and documented 4. A set of requirements which meet all of the elements documented in 2.2 and 2.3 are developed and documented as the external technical environment requirements

UNIT	
ICAITAD157A Develop technical requirements for an e-business solution	
3. Identify the internal technical environment	<ol style="list-style-type: none"> 1. Process flow is designed and or developed and documented, taking into account existing technology solutions if necessary 2. Process objectives are determined and documented against business needs 3. Current internal equipment characteristics, if appropriate, are audited and evaluated against the external requirements (2.4) 4. Based on 3.3 upgrade or new hardware, network or software requirements are identified. 5. Technical requirements for internal process performance are developed and documented. 6. Technical requirements to meet capacity change, such as expansion or modification, are developed where necessary. 7. All the internal requirements are collated into a final technical requirements document
4. Identify support needs	<ol style="list-style-type: none"> 1. Training needs to upgrade staff skills are identified and incorporated as technical requirements. 2. Organisational change needs are identified and documented against business requirements 3. Time to implement the changes are defined and documented as a technical requirement. Eg the solution must be live by x day, x month 200x. 4. Process performance standards are developed to benchmark performance against. 5. Budget is developed as a technical requirement as part of the requirements documentation 6. All technical requirements are collated in a single document
5. Technical requirements are signed off	<ol style="list-style-type: none"> 1. Technical requirements specifications are modelled where appropriate 2. Technical requirements are signed off and handed over to project implementation team, if required

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Hardware Variables

A variety of hardware may need to be used. This will include being able to identify the key hardware characteristics of internally used hardware and external hardware that must be interfaced with.

UNIT	
ICAITAD157A Develop technical requirements for an e-business solution	
Interface with external parties	Eg the operating system, specific hardware specifications or key software characteristics are determined and documented.
Training needs identification	Eg 3 x staff are to be trained in advanced systems administration prior to the implementation date.
Organisational change needs	eg a specific information management function may become necessary as a result of the e-business solution or a distribution function may be out-sourced.
Network Variables	A variety of networks may need to be used. This will include being able to identify the key network characteristics of internally used networks and external networks that must be interfaced with.
Operating System	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Security standards	May include: HB 231:2000 Information security risk management guidelines AS/NZS 4444.1:1999 Information security management - Code of practice for information security management AS/NZS 4444.2:2000 Information security management - Specification for information security management systems
Security protocols	May include: Secure Multipurpose Internet Mail Extensions Secure Socket Layer & Transport Layer Security IP Security Protocol (Domain Name System Security Extensions) (Data Over Cable Service Interface Specification) IEEE 802.11 Protocol standard for secure wireless Local Area Network products. (Point-to-Point Network Tunnelling Protocol) (Secure Electronic Transactions) (Secure Shell)
EVIDENCE GUIDE	
Critical aspects of evidence	Assessment must confirm the ability to identify the internal and external technical environments and develop a corresponding list of technical requirements that enable the technology to provide the e-business solution. An effective set of requirements takes into account the current and future technical needs where change is foreseeable.
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT	ICAITAD157A Develop technical requirements for an e-business solution
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Underpinning skills and knowledge

Underpinning knowledge:

- Website architecture
- Business process design
- Customer and business liaison
- Understanding how e-business solution fits into corporate strategy
- Understanding the implications of technology connectivity
- Documenting technical specifications
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles
- Australian Computer Society Code Of Ethics

Underpinning skills:

- Website analysis
- Information architecture
- Use site design software and hardware
- User analysis
- Organisational analysis

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Business requirements documentation
- E-business model
- Customer Relationship Model

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence in determining the technical requirements for the solution to effectively interface with external processes, technologies and people. Additionally documenting the internal technical and organisational requirements that will need to change in order to implement the new e-business solution.

UNIT	ICAITAD157A Develop technical requirements for an e-business solution
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Context

Breadth, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.

The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of specialised knowledge with depth in some areas;
- analyse, diagnose, design and execute judgements across a broad range of technical or management functions;
- demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills
- generate ideas through the analysis of information and concepts at an abstract level;
- demonstrate accountability for personal outputs within broad parameters; and
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Key Competencies

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There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITAD158A Translate business needs into technical requirements
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FIELD	Analyse and Design
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DESCRIPTION	This unit defines the competency required to identify the needs of a business or business process and quantify those needs into technical requirements that will enable the needs the business or process to meet expectation.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Identify the business needs context	<ol style="list-style-type: none"> 1. The business problem is framed, clarified and confirmed with client 2. The vision, strategic mission and or objectives of the business or business process are understood and confirmed 3. Key stakeholders, their business and other needs, are identified and documented 4. Business needs are categorised and documented into sub components and confirmed with client
2. Identify input requirements	<ol style="list-style-type: none"> 1. Based on business objectives suppliers are identified and their technical requirements are assessed and documented. 2. Appropriate supplier driven interfaces are identified and evaluated to determine the technical requirements to operate effectively with them the results are documented. 3. Where no existing input suppliers exist, or where input supplier is performing below expectation, an analysis of the potential suppliers technical interfaces and other business needs are assessed to determine technical requirements. 4. The results are documented and recommendations made against business requirements

UNIT		ICAITAD158A Translate business needs into technical requirements
3. Identify output requirements	<ol style="list-style-type: none"> 1. Output customers are identified and their technical requirements are assessed and documented 2. Output quality and customer needs are assessed and appropriate measurements are developed and documented as technical requirements. 3. Output production capacity is determined and documented leaving sufficient scope, where appropriate, for future change. 4. Customer expectations are assessed by management and where appropriate turned into technical requirements. Eg 24-hour access, help desk availability etc. 	
4. Identify interface requirements	<ol style="list-style-type: none"> 1. The network is identified over which input and output flows are evaluated and technical requirements developed to make best use of those interfaces, eg capacity of existing telephone infrastructure. 2. Planned future upgrade of key network infrastructure is assessed and incorporated into technical requirements if appropriate. 3. Security and privacy provisions are determined and documented against business requirements 4. Extra feedback channel requirements are determined and documented as technical requirements. 	
5. Identify process flow requirements	<ol style="list-style-type: none"> 1. Quantity and quality requirements are determined and documented based on business needs. Eg concurrently generate 10 individual itineraries at an average process time of 1 minute. 2. Internal item tracking is determined and documented where appropriate. 3. Occupational Health and Safety requirements are determined and documented according to business requirements 4. Inventory management, such as stockholding, requirements are determined and documented based on business requirements 	
6. Identify measurement requirements	<ol style="list-style-type: none"> 1. Critical effectiveness and or efficiency measurement systems are determined and documented as technical requirements. Eg time lag between order receipt and satisfaction, system down time, etc. 2. Benchmarks from other best practice models used where appropriate as technical requirements. 3. All critical business functions have clearly identified measurement benchmarks 	
7. Technical requirements are signed off	<ol style="list-style-type: none"> 1. Technical requirements specifications are modelled where appropriate and as required 2. Technical requirements reflect business requirements 3. Technical requirements are signed off and further developed as a part of the project management process. 	

UNIT	ICAITAD158A Translate business needs into technical requirements
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Client	May be: <ul style="list-style-type: none"> • a department within an organisation, • a business requiring an e-business solution • or a third party and so the relationship and ease of access will vary.
Business suppliers	Eg a supplier might use an automatic inventory management and distribution system that requires certain interface compliance requirements to operate within the business.
Outputs	Out put customer might require specific product data to be available at all times. Customers may require products or services to have built in self-diagnostic software. System may be able to accept 500 orders per hour and process them within 60 seconds.
Security	May include SET standards for bill payment and account access standards are clearly articulated as technical requirements.
Feedback requirements	A 1800 telephone hotline capable of handling 10 concurrent incoming calls, a frequently asked questions page to answer the seven most frequently asked after sales service questions is to be maintained or automatic electronic customer surveying of 10 percent of customers is required.
Workplace environment	May involve: <ul style="list-style-type: none"> • a business involved in a total organisational change, • a systems only change, a business improvement process, • an e-business solution involving the total organisation or part of the organisation
Sources of information	May involve change management plans, project management plans, current systems design plans, business strategic plans
Consulting techniques	May include: interviews, surveys, chat rooms, focus groups, questionnaire, surveys
Analysis Techniques	May include: gap analysis, urgency and impact, statistical and a range of current requirements gathering methodologies
System	Can include legacy systems, green field sites, organisational wide or discrete
Operating System	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

UNIT	ICAITAD158A Translate business needs into technical requirements
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm the ability to understand a business’s needs and categorise them as input, output, interfaces, flow and measurement technical requirements that enable the technology to be further developed into an e-business solution.</p> <p>An effective set of requirements takes into account the current and future technical needs where change is foreseeable.</p>		
Interdependent assessment of units	<p>The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.</p>		
Underpinning skills and knowledge	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Website architecture • Business process design • Customer and business liaison • Understanding how e-business solution fits into corporate strategy • Understanding the implications of technology connectivity • Documenting technical specifications • Benchmarking • Electronic Commerce Modelling Language • Copy write and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning skills:</p> <ul style="list-style-type: none"> • Website analysis • Information architecture • Use site design software and hardware • User and supplier analysis • Organisational analysis </td> </tr> </table>	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Website architecture • Business process design • Customer and business liaison • Understanding how e-business solution fits into corporate strategy • Understanding the implications of technology connectivity • Documenting technical specifications • Benchmarking • Electronic Commerce Modelling Language • Copy write and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Website analysis • Information architecture • Use site design software and hardware • User and supplier analysis • Organisational analysis
<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Website architecture • Business process design • Customer and business liaison • Understanding how e-business solution fits into corporate strategy • Understanding the implications of technology connectivity • Documenting technical specifications • Benchmarking • Electronic Commerce Modelling Language • Copy write and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Website analysis • Information architecture • Use site design software and hardware • User and supplier analysis • Organisational analysis 		

UNIT	ICAITAD158A Translate the business needs into technical requirements
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Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • the businesses current needs • project requirements, • a client expectations brief, • the businesses objectives, • information on a range of IT business solutions. • E-business model • Customer Relationship Model <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence in understanding business needs, breaking them into appropriate technical requirements that accurately describe a system that best meets the business needs.</p>
Context	<p>Breadth, depth and complexity involving analysis, documentation and design across a broad range of technical and/or managerial functions including identifying the technical and human computer interface requirements which drive design. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.</p> <p>Applications involve significant judgement in planning, design, evaluation, technical or leadership/guidance and communications functions related to products, services, operations, processes and procedures.</p> <p>The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • Demonstrate understanding of specialised knowledge with depth in some areas; • Analyse, diagnose, design and execute judgements across a broad range of technical or management functions; • Demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills; • Generate ideas through the analysis of information and concepts at an abstract level; • Demonstrate accountability for personal outputs within broad parameters; and • Demonstrate accountability for group outcomes within broad parameters.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

4. Build IT Solutions

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UNIT	ICAITB059B Develop detailed technical design
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FIELD	Build Information Technology Solutions
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DESCRIPTION	This unit identifies the competency required to assist in the development of a detailed technical design
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITT077B, ICAITAD043A, ICAITT083B, ICAITAD042B, ICAITB069B, ICAITAD056A
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ELEMENT	PERFORMANCE CRITERIA
1. Contribute to the determination of technical design features	1. The design model is revised based on iteration and design changes 2. Outstanding design points are incorporated according to acceptance criteria 3. Reports are reissued identifying changes and implications for higher authorities to review
2. Contribute to design review	1. Design is compared against requirements model and tuned as necessary 2. Design is confirmed with project team and / or higher authority 3. Design features are compared with client business requirements
3. Contribute to the development of program specifications	1. Modules to be implemented by incremental development techniques (eg. prototyping) are identified and documented 2. User authority and suitably skilled builders for each module are identified 3. Detailed specifications of implementation for each module that will not be incrementally built are prepared and documented according to project requirements

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Systems environment	The environment is dependent on the size and complexity of the application/system. It should be noted that the development environment should match (as closely as possible) the eventual live environment
Architecture	Describes detail of IT platform on which system will operate. Components of the architecture will vary from project to project and will consist of various types and size of hardware, networks and software
Application under development	Can vary from large system that will impact on thousands of users in a large organisation to one used by a handful of people. Will also vary in complexity, size and operational characteristics.

UNIT	ICAITB059B Develop detailed technical design
Languages used	<p>Will vary from traditional third generation languages to modern object oriented languages. Each will tend to also have standards for the documenting, structuring and testing of the code produced.</p> <ul style="list-style-type: none"> • AS 10179-1998 Information technology - Processing languages - Document style semantics and specification language, • AS 1189.15-1987 Data processing - Vocabulary - Programming languages, • AS/NZS 14882:1999 Programming languages - C ++ International and Australian <p>Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p>
Environment	<p>The level of separation between development and production is an organisational issue. Assessment can only be carried out within the organisational guidelines, i.e. The project budget may restrict the candidate from implementing the most beneficial environment</p>
Small business	<p>The level of pre build communication will be dependent on the size of the application and the number of team members depending on the size of the company</p>
Design features	<p>The development of the detailed technical design will include evidence of algorithm selection, data structure refinement, detailed design document preparation</p> <p>Various methodologies will have different design processes i.e. waterfall, RAD, OO but all should cover:</p> <ul style="list-style-type: none"> • software design principles, • structuring and modularisation structure, • charts, • pseudo-code, • coupling and cohesion, • strategies/approaches, • Functional Decomposition, • data flow, • data structure
Standards and procedures	<p>May include formal procedures that must be adhered to with check points and sign offs with documented procedures and templates, implementation of financial control mechanisms, communication with stakeholders, dispute resolution and modification procedures, processes for determining size and cost</p>
Development methods/tools	<p>Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.</p>
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.</p> <p>Reports meet the specific output requirements and are presented in a logical and accessible manner.</p>
OH and S Standards	<p>As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency</p>

UNIT	ICAITB059B Develop detailed technical design
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of design fundamentals and processes</p> <p>Assessment must confirm the ability to prepare a clear and best fit technical design for a set project.</p> <p>The plan should adhere to specifications, should be logical and well structured.</p> <p>In the technical design consideration should be given to;</p> <ul style="list-style-type: none"> • error handling, • module documentation, • input assertions, • output assertions, • use of input parameters, • assignment of output parameters, • hardware or system dependent features, • appropriately designed local data structures 		
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITT077B, ICAITAD043B, ICAITT083B, ICAITAD042B, ICAITB069B, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>		
Underpinning skills and knowledge	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px; vertical-align: top;"> <p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad knowledge base incorporating theoretical concepts of design fundamentals and refinement, for example when contributing to the determination of technical design features • Broad general knowledge of the client business domain, for example when contributing to design review • Broad general knowledge of the client's business critical functions and processes, for example when contributing to design review • A broad knowledge base incorporating some theoretical concepts of current various lifecycle options, for example when contributing to the determination of technical design features • A broad knowledge base incorporating some theoretical concepts of design quality metrics (eg. coupling and metrics), for example when contributing to the determination of technical design features and when contributing to the development of program specifications </td> <td style="width: 50%; padding: 5px; vertical-align: top;"> <p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when the design model is revised based on iteration and design changes and when design is compared against requirements model and tuned as necessary • Facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts • Problem solving skills in relation to developing algorithms, for example when contributing to the determination of technical design features and when contributing to the development of program specifications </td> </tr> </table>	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad knowledge base incorporating theoretical concepts of design fundamentals and refinement, for example when contributing to the determination of technical design features • Broad general knowledge of the client business domain, for example when contributing to design review • Broad general knowledge of the client's business critical functions and processes, for example when contributing to design review • A broad knowledge base incorporating some theoretical concepts of current various lifecycle options, for example when contributing to the determination of technical design features • A broad knowledge base incorporating some theoretical concepts of design quality metrics (eg. coupling and metrics), for example when contributing to the determination of technical design features and when contributing to the development of program specifications 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when the design model is revised based on iteration and design changes and when design is compared against requirements model and tuned as necessary • Facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts • Problem solving skills in relation to developing algorithms, for example when contributing to the determination of technical design features and when contributing to the development of program specifications
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UNIT	ICAITB059B Develop detailed technical design
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Resources	<p>To demonstrate this unit of competence the candidate will require access to documents detailing:</p> <ul style="list-style-type: none"> • the requirements model, • business requirements, • the project deliverables, • the acceptance criteria, • current IT blueprint, <p>Assessment of this unit of competence could include review of documents developed by the candidate, which incorporate the detailed technical design.</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the iteration and design changes.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>The candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.</p>

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITB060B Identify physical database requirements
FIELD	Build Information Technology Solutions
DESCRIPTION	This unit details the competency required to create the physical database from the data dictionary and design specifications
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITB061A, ICAITT077B, ICAITAD043A, ICAITT083B, ICAITAD042B, ICAITB069B, ICAITAD056A

ELEMENT	PERFORMANCE CRITERIA
1. Identify database scope	<ol style="list-style-type: none"> 1. Architecture, client user requirements and nature of information to be loaded are confirmed against architecture and client user requirements 2. DBMS options are evaluated through iteration against technical specifications and client requirements 3. Database size is determined from client requirements and technical specifications
2. Identify database requirements	<ol style="list-style-type: none"> 1. Database files and relationships are identified from technical specifications 2. Database dictionary is specified from technical specifications 3. Database reports are developed from acceptance criteria and client requirements 4. DBMS and user security are iterated and aligned to security system plan 5. Performance/recovery/audit trail requirements are identified and evaluated

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Data	<p>Variables may include but are not limited to: established files, data from mixed sources and applications</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to data requirements were considered and appropriate choices made given the business specifications and client requirements.</p> <p>Questions may be asked about different types of data other than the data used, to ensure the application of knowledge and skills to other contexts.</p>
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UNIT	ICAITB060B Identify physical database requirements
Tools	<p>Variables may include but are not limited to: vendor specific database development tools. Tools include any item or tool used to develop databases. CASE tools</p> <p>The most appropriate development tool employed in the most efficient manner.</p>
DBMS	<p>Can include distributed or centralised, online, partitioned geographically or thematically distributed.</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to the design of the client database and subsequent choice of software and current and/or future applications software requirements were considered and appropriate choices (most effective, efficient and compatible with the business strategy) made.</p>
Databases	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • Oracle, • Sybase, • Microsoft SQL Server, • Ingres, • DB2, • Informix, • mSQL, • MySQL, • SQL Server etc <p>The final database software choice will meet business rules and be compatible with the business strategy, performance considerations and operating environment.</p>
SQL	<p>May include proprietary extensions.</p> <p>AS/NZS 3968.0:1994 Information technology - Database languages - SQL - Definition of data structures and basic operations</p>
Database options	<p>Can include but are not limited to:</p> <ul style="list-style-type: none"> • relational databases, • object-relational databases, • proprietary databases, • off the shelf database packages

UNIT	ICAITB060B Identify physical database requirements
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • bridges, 3Com, Compaq, CISCO, IBM • modems, analog, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • file & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems, <p>The candidate will need to implement a range of equipment or a number of the same hardware components. The size of the storage device, load, traffic and access speed will need to be considered during development.</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to hardware were considered and appropriate choices made given the business specifications and client requirements.</p>
Architecture	Describes detail of IT platform on which database will sit. Components of the architecture will vary from project to project and will affect considerations such as: database options, size of database, performance of database.
Database prototype	Depending on the tools used to develop the application. A range of GUI, 'client side' database maintenance/change tools are available
Performance/ Tuning enhancements	Can include, but are not restricted to: improvements to response time, simultaneous access
Database support functions	<p>Can include, but are not restricted to:</p> <ul style="list-style-type: none"> • database administrator, • supplier support, • development support – database designer, • maintenance of database dictionary, • database security

UNIT	ICAITB060B Identify physical database requirements
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Client	<p>May be a department within an organisation, a business requiring an e-commerce solution or a third party and so the relationship and ease of access will vary.</p> <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client information requirements were considered and appropriate choices made given the business objectives.</p>
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.</p>

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm the ability to identify technical considerations affecting the physical design of the database. Assessment must confirm the ability to build a database which meets the client’s database performance requirements.</p> <p>The final database will meet specified business rules, agreed budget and timeframe. The database will perform efficiently in the runtime environment (the environment required to operate the designed solution, not the development environment)</p> <p>Reports meet the specific output requirements and are presented in a logical and accessible manner.</p>	
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITB061B, ICAITT077B, ICAITAD043B, ICAITT083B, ICAITAD042B, ICAITB069B, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario</p>	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad knowledge base incorporating theoretical concepts of three or more current principles of databases, for example when identifying database scope • Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas, for example when identifying database scope • Broad knowledge base incorporating theoretical concepts of database design, for example when identifying database scope • Broad knowledge base of quality assurance practices, for example when identifying database scope and when identifying database requirements • Broad general knowledge of the client business domain, for example when identifying database scope • Detailed technical knowledge of required database, for example when identifying database requirements 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Design and analysis skills for identifying, analysing and evaluating a range of different solutions, for example when DBMS options are evaluated through iteration against technical specifications and client requirements • DBMS administration skills for identifying, analysing and evaluating a range of different solutions • Data modelling skills for identifying, analysing and evaluating a range of different solutions, for example when identifying database requirements • Problem solving skills for a defined range of unpredictable problems involving participation in the development of technical solutions, for example when DBMS options are evaluated through iteration against technical specifications and client requirements

UNIT	ICAITB060B Identify physical database requirements
Resources	<p>To demonstrate this unit of competence the candidate will require access to documents detailing:</p> <ul style="list-style-type: none"> • the client’s requirements, • the project deliverables, • the acceptance criteria, • current IT blueprint, • security system plan, • technical specifications. <p>The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit</p> <p>Assessment of this unit of competence could include review of:</p> <ul style="list-style-type: none"> • a requirements document developed by the candidate that includes detail: <ul style="list-style-type: none"> • of the database directories, • calculation of space requirements for tables, • additional space requirements, • the design of nodegroups. <p>Documentation defining architecture, platform, user requirements; operational system according to specifications; database supplier technical specifications and manuals; data samples; database package</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the ongoing implementation and monitoring aspects of this unit.</p>

UNIT

ICAITB060B Identify physical database requirements

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.

The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of specialised knowledge with depth in some areas;
- analyse, diagnose, design and execute judgements across a broad range of technical or management functions;
- demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills
- generate ideas through the analysis of information and concepts at an abstract level;
- demonstrate accountability for personal outputs within broad parameters; and
- demonstrate accountability for group outcomes within broad parameters.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	2	2	3	3

UNIT	ICAITB061B Monitor physical database implementation
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FIELD	Build Information Technology Solutions
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DESCRIPTION	This unit details the competency required to model and monitor database performance
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITB060A, ICAITT077B, ICAITS024B, ICAITS025B, ICAITT083B, ICAITAD042B, ICAITB069B, ICAITAD056A
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ELEMENT	PERFORMANCE CRITERIA
1. Undertake DBMS modelling	1. Data samples are loaded according to technical sequence 2. Load conditions are based on prototype and iteration outcomes 3. Performance is monitored against prototype outcomes
2. Monitor database performance	1. Database performance is evaluated against acceptance criteria 2. Areas needing enhancement are identified, tuned and documented 3. Database is modified and changes are documented according to project standards 4. Readiness for data load is determined from client acceptance criteria

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Database options	Can include, but are not limited to: relational databases, object-relational databases, proprietary databases, off the shelf database packages
Tools	Variables may include but are not limited to: vendor specific database development tools. Tools include any item or tool used to develop databases. The most appropriate development tool is employed in the most efficient manner.
Databases	May include but are not limited to Oracle, Sybase, Microsoft SQL Server, Ingres, DB2, Informix, mSQL, MySQL, SQL Server etc
SQL	May include proprietary extensions. AS/NZS 3968.0:1994 Information technology - Database languages - SQL - Definition of data structures and basic operations

UNIT	ICAITB061B Monitor physical database implementation
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • bridges, 3Com, Compaq, CISCO, IBM • modems, analog, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • file & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems,
Data	<p>Variables may include but are not limited to: established files, data from mixed sources and applications</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to client data requirements were considered and appropriate choices made given the business specifications.</p> <p>Questions may be asked about different types of data other than the data used, to ensure the application of knowledge and skills to other contexts.</p>
DBMS	<p>Can include distributed or centralised, online, partitioned geographically or thematically distributed.</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to the design of the client database and subsequent choice of software and current and/or future applications software requirements were considered and appropriate choices (most effective, efficient and compatible with the business strategy) made.</p> <p>The final database will meet specified business rules, agreed budget and timeframe. The database will perform efficiently in the runtime environment (the environment required to operate the designed solution, not the development environment)</p>
Architecture	<p>Describes detail of IT platform on which database will sit. Components of the architecture will vary from project to project and will affect considerations such as: database options, size of database, performance of database.</p>

UNIT	ICAITB061B Monitor physical database implementation
Database prototype	Depending on the tools used to develop the application. A range of GUI, 'client side' database maintenance/change tools are available
Performance/ Tuning enhancements	Can include, but are not restricted to: improvements to response time, simultaneous access
Database support functions	<p>Can include, but are not restricted to:</p> <ul style="list-style-type: none"> • database administrator, • supplier support, • development support – database designer, • maintenance of database dictionary, • database security
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.</p> <p>Reports meet the specific output requirements and are presented in a logical and accessible manner.</p>
EVIDENCE GUIDE	
Critical aspects of evidence	Assessment must confirm the ability to identify technical considerations affecting implementation of the database. Assessment must confirm the ability to analyse performance issues during implementation of the database
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITB060B, ICAITT077B, ICAITS024C, ICAITS025B, ICAITT083B, ICAITAD042B, ICAITB069B, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario

UNIT

ICAITB061B Monitor physical database implementation

Underpinning skills and knowledge

Underpinning knowledge

- Broad knowledge base incorporating theoretical concepts of three or more current principles of databases, for example when undertaking DBMS modelling
- Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas
- Broad knowledge base incorporating theoretical concepts of database design, for example when undertaking DBMS modelling
- Broad knowledge base of quality assurance practices, for example when undertaking DBMS modelling and when monitoring database performance
- Broad general knowledge of the client business domain, for example when monitoring database performance
- Detailed technical knowledge of required database, for example when undertaking DBMS modelling and when monitoring database performance

Underpinning skills

- Design and analysis skills for identifying, analysing and evaluating a range of different solutions
- DBMS administration skills for identifying, analysing and evaluating a range of different solutions
- Data modelling skills for identifying, analysing and evaluating a range of different solutions
- Problem solving skills for a defined range of unpredictable problems involving participation in the development of technical solutions

Resources

To demonstrate this unit of competence the candidate will require access to documents detailing:

- the client's requirements,
- the project deliverables,
- the acceptance criteria,
- security system plan,
- technical specifications.

The candidate will need access to the outcomes of the business analysis process (separate to this unit of competence) to demonstrate competence in this unit

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the ongoing performance monitoring and tuning aspects of this unit.

UNIT	ICAITB061B Monitor physical database implementation
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Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.

The candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITB062B Perform data conversion
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FIELD	Build Information Technology Solutions
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DESCRIPTION	This unit describes the skills required to successfully prepare and support data conversion
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITT077B, ICAITT083B, ICAITAD042B, ICAITB060A, ICAITB061A, ICAITB069B, ICAITAD055A, ICAITAD056A
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ELEMENT	PERFORMANCE CRITERIA
1. Prepare system for conversion	<ol style="list-style-type: none"> 1. All necessary data stores from old system are obtained 2. All required data fields are mapped from the old system to the new / or upgraded system 3. Field validation requirements are determined from conversion plan 4. If appropriate, (i.e. converted data is being used in unit testing) the coding team is involved in the conversion plan 5. Data conversion program modules are designed from conversion specifications 6. Data conversion program modules are coded and tested according to conversion specifications 7. Approach for dealing with data that failed conversion parameters is determined
2. Perform data conversion	<ol style="list-style-type: none"> 1. Resources are managed to ensure successful non-disruptive conversion to clients 2. Conversion program modules to convert data into correct format or to integrate information modules are successfully executed

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

DBMS	Can include distributed or centralised, online, partitioned geographically or thematically distributed. Client/server or legacy databases may include DB2, Tandem Enscribe, IMS, Informix, Oracle, SAP R/3, Sybase, NCR Teradata, and VSAM. Object-oriented databases and relational databases
Architecture	Describes detail of IT platform on which database will sit. Components of the architecture will vary from project to project and will affect considerations such as: database options, size of database, performance of database.

UNIT	ICAITB062B Perform data conversion
Tools	<p>The main types of data conversion tools are:</p>
	<ul style="list-style-type: none"> • tools that analyse data quality (QDB/Analyze, WizRule, and Unitech Systems Inc have tools for analysing data quality), • tools for extraction and transformation (ETI Extract, Passport, Warehouse Manager, InfoPump, InfoHub, InfoRefiner and InfoSuite) and • tools for cleansing data (Integrity, Enterprise/Integrator). • data management tools
Data	<p>Variables may include but are not limited to: established computer based files, data from mixed sources and applications such as mainframe hierarchical files, standard relational tables, and proprietary application file systems such as SAP</p>
	<p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that:</p> <ul style="list-style-type: none"> • all data is complete and valid, • the structural integrity of both the legacy system and the new database/data warehouse is sound, • the data reflects and works with the business rules and data standards, • the data will work well with the conversion process.
Hardware	<p>Can include IT equipment of all types:</p>
	<ul style="list-style-type: none"> • workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • bridges, 3Com, Compaq, CISCO, IBM • modems, analog, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • file & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems,
Client	<p>May be a department within an organisation, a business requiring an e-commerce solution or a third party and so the relationship and ease of access will vary.</p>
	<p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client business information requirements were considered and appropriate choices made given the business objectives and client information and archiving requirements.</p>

UNIT	ICAITB062B Perform data conversion
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OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience. Reports meet the specific output requirements and are presented in a logical and accessible manner.

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of the inherent data requirements of both old and upgraded or new systems. Assessment must confirm the ability to remodel data to achieve successful conversion.</p> <p>The candidate must ensure that:</p> <ul style="list-style-type: none"> • all data is complete and valid, • the structural integrity of both the legacy system and the new database/data warehouse is sound, • the data reflects and works with the business rules and data standards <p>The data conversion process should include/cover:</p> <ul style="list-style-type: none"> • replacing missing data values, • ensuring correct field values to match field definitions, • removing unwanted duplicates, • establishing storage and data presentation standards, • standardising abbreviations, • removing unwanted or unnecessary characters and datatypes, • checking the consistency of data across files and testing data integrity rules
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD042B, ICAITB060B, ICAITB061B, ICAITB069B, ICAITAD055B, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario

UNIT	ICAITB062B Perform data conversion	
<p>Underpinning skills and knowledge</p>	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • A broad knowledge base incorporating current industry accepted DBMS modelling • A broad knowledge base incorporating some theoretical concepts of conversion from legacy systems • A broad knowledge base incorporating theoretical concepts of current industry data conversion tools • Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas • A broad knowledge base incorporating theoretical concepts of current data modelling methodologies 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when performing data conversion • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information
<p>Resources</p>	<p>To demonstrate this unit of competence the candidate will require access to:</p> <ul style="list-style-type: none"> • the analysis of the source data; • data mappings; • the logic to convert the data; • the plan and generation of the conversion routines; and • the business quality assurance rules associated with that data. <p>The candidate will need access to the data conversion plan to demonstrate competence in this unit.</p> <p>The data conversion process should include/cover:</p> <ul style="list-style-type: none"> • replacing missing data values, • ensuring correct field values to match field definitions, • removing unwanted duplicates, • establishing storage and data presentation standards, • standardising abbreviations, • removing unwanted or unnecessary characters and datatypes, • checking the consistency of data across files and testing data integrity rules <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>	

UNIT

ICAITB062B Perform data conversion

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address any failed conversions with contingencies.

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.

The candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	2	3	3	3

UNIT	ICAITB063B Monitor data conversion
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FIELD	Build Information Technology Solutions
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DESCRIPTION	This unit describes the skills required to successfully prepare and support data conversion
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITT077B, ICAITT083B, ICAITAD042B, ICAITB060A, ICAITB061A, ICAITB069B, ICAITAD055A, ICAITAD056A
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ELEMENT	PERFORMANCE CRITERIA
1. Monitor data conversion	<ol style="list-style-type: none"> 1. Data accuracy and integrity are validated according to conversion specifications 2. Control tools are verified according to conversion plan 3. Running of system according to client user’s business requirements is determined
2. Support conversion	<ol style="list-style-type: none"> 1. Results are verified with Domain Expert, signed off and passed on to appropriate personnel 2. Backup copies of conversion files are maintained and documented according to project requirements 3. Technical documentation is developed in a clear and coherent manner

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Data	<p>Variables may include but are not limited to: established computer based files, data from mixed sources and applications such as, mainframe hierarchical files, standard relational tables, and proprietary application file systems such as SAP</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that:</p> <ul style="list-style-type: none"> • all data is complete and valid, • the structural integrity of both the legacy system and the new database/data warehouse is sound, • the data reflects and works with the business rules and data standards, • the data will work well with the conversion process?
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UNIT	ICAITB063B Monitor data conversion
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • bridges, 3Com, Compaq, CISCO, IBM • modems, analog, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • file & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems,
Tools	<p>The main types of data conversion tools are:</p> <ul style="list-style-type: none"> • tools that analyse data quality (QDB/Analyze, WizRule, and Unitech Systems Inc have tools for analysing data quality), • tools for extraction and transformation (ETI Extract, Passport, Warehouse Manager, InfoPump, InfoHub, InfoRefiner and InfoSuite), • tools for cleansing data (Integrity, Enterprise/Integrator), and • data management tools.
DBMS	<p>Can include distributed or centralised, online, partitioned geographically or thematically distributed. Client/server or legacy databases may include DB2, Tandem Enscribe, IMS, Informix, Oracle, SAP R/3, Sybase, NCR Teradata, and VSAM. Object-oriented databases and relational databases</p>
Architecture	<p>Describes detail of IT platform on which database will sit. Components of the architecture will vary from project to project and will affect considerations such as: database options, size of database, performance of database.</p>
Client	<p>May be a department within an organisation, a business requiring an e-commerce solution or a third party and so the relationship and ease of access will vary.</p> <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the data conversion were considered and appropriate choices made given the conversion specifications.</p>
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.</p> <p>Reports meet the specific output requirements and are presented in a logical and accessible manner.</p>

UNIT	ICAITB063B Monitor data conversion
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of the inherent data requirements of both old and upgraded or new systems. Assessment must confirm the ability to achieve a physical transfer/transformation of data</p> <p>To demonstrate this unit of competence the candidate will during the monitoring process give consideration to</p> <ul style="list-style-type: none"> • data migration from the legacy systems to the staging area (if necessary) • data conditioning, cleaning, transformation, and integration in the staging area • administering the primary and foreign keys for the data warehouse • data migration from the staging area to the data warehouse server • storing, updating, and exporting converted metadata to the data warehouse's metadata repository • data loading and indexing on the data warehouse server • ensuring data quality throughout the data conversion process 		
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD042B, ICAITB060B, ICAITB061B, ICAITB069B, ICAITAD055B, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario</p>		
Underpinning skills and knowledge	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px; vertical-align: top;"> <p>Underpinning knowledge</p> <ul style="list-style-type: none"> • A broad knowledge base incorporating current industry accepted DBMS modelling • A broad knowledge base incorporating some theoretical concepts of data conversion to legacy systems • A broad knowledge base incorporating theoretical concepts of current industry data conversion tools • Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas • A broad knowledge base incorporating theoretical concepts of current data modelling methodologies </td> <td style="width: 50%; padding: 5px; vertical-align: top;"> <p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example data accuracy and integrity are validated according to conversion specifications • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information , for example when results are verified with Domain Expert, signed off and passed on to appropriate personnel, and when technical documentation is developed in a clear and coherent manner • Facilitation and presentation skills in relation to transferring and collecting information </td> </tr> </table>	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • A broad knowledge base incorporating current industry accepted DBMS modelling • A broad knowledge base incorporating some theoretical concepts of data conversion to legacy systems • A broad knowledge base incorporating theoretical concepts of current industry data conversion tools • Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas • A broad knowledge base incorporating theoretical concepts of current data modelling methodologies 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example data accuracy and integrity are validated according to conversion specifications • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information , for example when results are verified with Domain Expert, signed off and passed on to appropriate personnel, and when technical documentation is developed in a clear and coherent manner • Facilitation and presentation skills in relation to transferring and collecting information
<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • A broad knowledge base incorporating current industry accepted DBMS modelling • A broad knowledge base incorporating some theoretical concepts of data conversion to legacy systems • A broad knowledge base incorporating theoretical concepts of current industry data conversion tools • Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas • A broad knowledge base incorporating theoretical concepts of current data modelling methodologies 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example data accuracy and integrity are validated according to conversion specifications • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information , for example when results are verified with Domain Expert, signed off and passed on to appropriate personnel, and when technical documentation is developed in a clear and coherent manner • Facilitation and presentation skills in relation to transferring and collecting information 		
Resources	<p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • the data conversion plan • conversion specifications • documentation guidelines <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>		

UNIT	ICAITB063B Monitor data conversion
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Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to monitor the data conversion and confirm data accuracy.

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.

The candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	2	3	3	3

UNIT	ICAITB064B Prepare software development review
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FIELD	Build Information Technology Solutions
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DESCRIPTION	This unit describes the competency required to establish the standards associated with the IT technical requirements
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITAD058A, ICAITB076A, ICAITAD041B, ICAITT077B, ICAITT083B, ICAITAD042B, ICAITAD048B, ICAITB069B, ICAITAD055A, ICAITAD056A
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ELEMENT	PERFORMANCE CRITERIA
1. Review software standards	<ol style="list-style-type: none"> 1. All parties (sponsor, user, development team) are cognisant of the organisational standards and agree to adherence 2. Software standards are documented according to project documentation standards
2. Review implementation standards	<ol style="list-style-type: none"> 1. Relevant standards are assigned to particular functions according to detailed technical plan 2. Communication and distribution strategies are clear, coherent and meet overall project plan requirements 3. Implementation of standards are monitored against acceptance criteria and detailed technical specifications
3. Review software metrics and milestones	<ol style="list-style-type: none"> 1. Metrics are defined in relation to the project milestones, timeframe and cost considerations 2. Quality reviews are scheduled 3. Quality considerations identifying in-process measurement points that relate to critical business requirements are determined 4. Method to benchmark and scale achievement against stated client requirements and cost considerations are determined 5. Metrics and milestones are conveyed to client and developers in a clear and coherent manner, and their agreement in writing is ensured

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

UNIT	ICAITB064B Prepare software development review
Client	May be a department within an organisation, a business requiring an e-commerce solution or a third party and so the relationship and ease of access will vary.
	Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client business requirements were considered and appropriate choices made given the business objectives and client requirements.
Test and acceptance processes	Will vary according size, type and scope of the project. AS 4009-1992 Software reviews and audits, and AS 4006-1992 Software test documentation may be relevant to this unit. International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/
Software metrics	Size of each development work package, milestones is a variable determined by the sponsor, project manager, development team.
Workplace environment	<p>May involve:</p> <ul style="list-style-type: none"> • a business involved in a total organisational change, • a systems only change, • a business improvement process, • an e-commerce solution involving the total organisation or part of the organisation
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Constraints	Depending on the size of the organisation, project and /or development team the constraints will vary. Time and budget constraints will vary according to project size and length
Administration System	Depending on the size of the project, a system is required to maintain order and manage the amount of information being processed by the project member/s
Sources of information	May involve change management plans, project management plans, current systems design plans, business strategic plans
Consulting techniques	May include: interviews, surveys, chat rooms, focus groups, questionnaire, surveys, soft system methodologies, JAD
Analysis Techniques	May include: gap analysis, urgency and impact, statistical and a range of current requirements gathering methodologies
System	Can include legacy systems, green field sites, organisational wide or discrete
Quality benchmarks	<p>There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE, the Software Engineering Institute (SEI), and the ISO standards.</p> <p>Relevant quality standards include: AS 4043-1992 Software configuration management, AS 4042-1992 Software configuration management plans, AS 3925.1-1994 Software quality assurance – Plans, AS/NZS 4258:1994 Software user documentation process, AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/</p>

UNIT	ICAITB064B Prepare software development review
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Development methods/tools	Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.
Quality process	Some organisations may be quality certified and have well documented standards for addressing quality while others will not.
Project standards	Can include, but are not limited to: development methodology, reporting mechanisms, project plan, change control, quality of software modules, sharing of code/libraries, ease of modification and maintenance, delivery against required milestones and budget
Application under development	Can vary from large system that will impact thousands of users in a large organisation to one used by a handful of people. Will also vary in complexity, size and operational characteristics.

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to establish the standards associated with the IT technical requirements taking into account any AQ processes that are in place for the development of software	
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITAD058A, ICAITB076B, ICAITAD041B, ICAITT077B, ICAITT083B, ICAITAD042B, ICAITAD048B, ICAITB069B, ICAITAD055B, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad general knowledge of the client business domain, for example when reviewing implementation standards • Broad knowledge base of quality assurance practices and the identification of standards, for example when reviewing software standards, and reviewing software metrics and milestones • Current industry accepted software configuration management processes with knowledge of general features and capabilities • Broad knowledge base incorporating theoretical concepts of software metrics development 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Data modelling skills for identifying, analysing and evaluating a range of different solutions • Problem solving skills for a defined range of unpredictable problems involving participation in the development of technical solutions • Design and analysis skills for identifying, analysing and evaluating a range of different solutions • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when all parties (sponsor, user, development team) are cognisant of the organisational standards and agree to adherence, and when communication and distribution strategies are clear, coherent and meet overall project plan requirements • Negotiation and influencing skills, for example when all parties (sponsor, user, development team) are cognisant of the organisational standards and agree to adherence, and when metrics and milestones are conveyed to client and developers in a clear and coherent manner, and their agreement in writing is ensured • Risk assessment skills for identifying, analysing and evaluating a range of different solutions

UNIT

ICAITB064B Prepare software development review

Resources

To demonstrate this unit of competence the candidate will require access to documents detailing:

- technical specifications,
- organisational standards for documentation and version control,
- project management process and hierarchy,
- future organisational business processes,
- Software Requirements Specification,
- Interface Requirements Specification,
- System Requirements
- Design Specification
- a project budget, timeframe.

Assessment of this unit of competence could include review of documents developed by the candidate, which relate to the clear identification of the software review process.

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	3	3	3

UNIT	ICAITB065B Prepare for the build phase
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FIELD	Build Information Technology Solutions
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DESCRIPTION	This unit details the competency required for activities to prepare the development environment prior to actual coding of the system
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITB069B, ICAITAD054B, ICAITAD058A
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ELEMENT	PERFORMANCE CRITERIA
1. Identify best development platform for project	1. Critical components from design solution required for development platform are identified from detailed technical plan 2. Technical specifications of development platform are suitable for project specifications
2. Identify best development tools for project	1. Development processes support technical methodology 2. Library tools, code generation tools, simulation tools, screen/report generator tools, test tools all meet project and industry standards
3. Prepare development environment	1. Technical guidelines, module standards, data dictionary and library system for controlling program modules that are being built are administered / maintained 2. Code modules or group work are assigned as necessary 3. Group/individual timeframes are assigned and agreed 4. In a Client/Server environment, DBMS is completed to a useable stage

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Client	<p>May be a department within an organisation, a business requiring an e-commerce solution or a third party and so the relationship and ease of access will vary.</p> <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client business requirements were considered and appropriate choices made given the business objectives and client requirements.</p>
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UNIT	ICAITB065B Prepare for the build phase
Test and acceptance processes	Will vary according size, type and scope of the project. AS 4006-1992 Software test documentation may be relevant to this unit. International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/
Software metrics	Size of each development work package, milestones is a variable determined by the sponsor, project manager, development team
Systems environment	The environment is dependent on the size and complexity of the application. It should be noted that the development environment should match (as closely as possible) the eventual production environment
Languages used	Will vary from traditional third generation languages to modern object oriented languages. Each will tend to also have standards for the documenting, structuring and testing of the code produced.
Environment	The level of separation between development and production is an organisational issue. Assessment can only be carried out within the organisational guidelines, i.e. Budget may restrict the candidate from implementing the most beneficial environment
Application under development	Can vary from large system that will impact thousands of users in a large organisation to one used by a handful of people. Will also vary in complexity, size and operational characteristics.
Development methods/tools	Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.
Existing Architecture	Will vary from systems based around mainframes to networks of mid-range machines and/or desktop PCs. Networks can be local, wide or based on the Internet.
Quality benchmarks	There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE, the Software Engineering Institute (SEI), and the ISO standards. Relevant quality standards include: AS 4043-1992 Software configuration management, AS 4042-1992 Software configuration management plans, AS 3925.1-1994 Software quality assurance – Plans, AS/NZS 4258:1994 Software user documentation process, AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/
OH and S Standards	Will vary according to the type of organisation and the benchmarks will cover technical, cost savings, performance and quality. Some organisations may be quality certified and have well documented standards for addressing quality while others will not. In a simulated environment best practice workplace examples will be used.
Proposed Solution	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Proposed Solution	Will vary from building everything to acquiring packages with possible modification. May require additional hardware and network equipment as well as software.

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of the coding phase in a number of key areas. Coding, testing, administration, GUI design etc are all components of this phase</p> <p>Assessment must confirm the ability to meet technical requirements by successfully preparing the development environment</p>
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UNIT	ICAITB065B Prepare for the build phase
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Interdependent assessment of units

This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITB069B, ICAITAD054B, ICAITAD058A. The interdependence of units of competency for assessment will vary with the particular project or scenario

Underpinning skills and knowledge

Underpinning knowledge

- A broad knowledge base incorporating current industry accepted coding in a recognised language with knowledge features and capabilities and detailed knowledge in some areas
- A broad knowledge base incorporating current industry accepted DBMS modelling techniques
- Broad knowledge base incorporating theoretical concepts of three or more current principles of databases
- Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas
- Broad knowledge base incorporating theoretical concepts of database design
- Broad knowledge base of quality assurance practices, for example when identifying best development platform for project
- Broad general knowledge of the client business domain, for example when identifying best development platform for project
- Broad knowledge base incorporating theoretical concepts of client/server architecture, for example when preparing development environment

Underpinning skills

- Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when technical specifications of development platform are suitable for project specifications
- Data modelling skills for identifying, analysing and evaluating a range of different solutions
- Algorithms skills for identifying, analysing and evaluating a range of different solutions
- Problem solving skills for a defined range of predictable problems, for example when identifying best development tools for project

Resources

To demonstrate this unit of competence the candidate will require access to documents detailing:

- technical specifications,
- version control standards,
- Software Requirements Specification,
- System Requirements
- Design Specification

Assessment of this unit of competence could include review of documents developed by the candidate, which relate to the documentation of the build phase.

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

UNIT	ICAITB065B Prepare for the build phase
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Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	1	2	2	3

UNIT	ICAITB066B Coordinate the build phase
FIELD	Build Information Technology Solutions
DESCRIPTION	This unit details the competency required to coordinate the activities to be carried out prior to actual coding of the system
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITB069B, ICAITAD054B, ICAITAD048B

ELEMENT	PERFORMANCE CRITERIA
1. Provide development environment	<ol style="list-style-type: none"> 1. Development environment matches production environment as closely as possible. 2. Development environment is configured according to requirements so as to maximise productivity 3. Test data, demonstration/ review schedules, training and performance benchmarking, are targeted, documented and confirmed both by sponsor/s and coding groups 4. Unit and system testing requirements are prepared for development from technical plan 5. Detailed work schedules for coding and unit testing are developed according to overall project plan
2. Design work units	<ol style="list-style-type: none"> 1. All systems modules are identified and included from detailed technical design 2. Module design documentation is prepared according to project and module development standards 3. Unit and string testing requirements are designed from detailed technical plan
3. Review designs and estimates with programmers	<ol style="list-style-type: none"> 1. Specifications and estimates are reviewed with programmer/s to ensure clear understanding of specifications and estimates 2. Outstanding design points are incorporated according to acceptance criteria 3. Compatibility standards with other modules are identified and meet technical specifications 4. Module test plan is drafted against detailed technical plan 5. Prepare and recursively refine planning information, system overview, data models, data flows, detailed designs, program structures and diagrams 6. Detailed specifications of implementation for each module that will not be incrementally built are prepared and documented according to detailed technical plan 7. Investigate instances of libraries, reusable patterns, designs, code etc.

UNIT

ICAITB066B Coordinate the build phase

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Client	<p>May be a department within an organisation, a business requiring an e-commerce solution or a third party and so the relationship and ease of access will vary.</p> <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client business requirements were considered and appropriate choices made given the business objectives and client requirements.</p>
Test and acceptance processes	<p>Will vary according size, type and scope of the project. AS 4006-1992 Software test documentation may be relevant to this unit. International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/</p>
Software metrics	<p>Size of each development work package, milestones is a variable determined by the sponsor, project manager, development team</p>
Systems environment	<p>The environment is dependent on the size and complexity of the application. It should be noted that the development environment should match (as closely as possible) the eventual production environment</p>
Languages used	<p>Will vary from traditional third generation languages to modern object oriented languages. Each will tend to also have standards for the documenting, structuring and testing of the code produced.</p>
Environment	<p>The level of separation between development and production is an organisational issue. Assessment can only be carried out within the organisational guidelines, i.e. Budget may restrict the candidate from implementing the most beneficial environment</p>
Application under development	<p>Can vary from large system that will impact thousands of users in a large organisation to one used by a handful of people. Will also vary in complexity, size and operational characteristics.</p>
Development methods/tools	<p>Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.</p>
Existing Architecture	<p>Will vary from systems based around mainframes to networks of mid-range machines and/or desktop PCs. Networks can be local, wide or based on the Internet.</p>

UNIT	ICAITB066B Coordinate the build phase
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of the coding phase in a number of key areas, Coding, testing, administration, GUI design etc are all components of this phase that need to be coordinated</p> <p>Assessment must confirm the ability to successfully coordinate the technical requirements by successfully coordinating the allocated tasks</p>	
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITB069B, ICAITAD054B, ICAITAD048B. The interdependence of units of competency for assessment will vary with the particular project or scenario</p>	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • A broad knowledge base incorporating current industry accepted coding in a recognised language with knowledge features and capabilities and detailed knowledge in some areas • A broad knowledge base incorporating current industry accepted DBMS modelling techniques • Broad knowledge base incorporating theoretical concepts of three or more current principles of databases • Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas • Broad knowledge base incorporating theoretical concepts of database design • Broad knowledge base of quality assurance practices, for example when providing development environment and designing work units • Broad general knowledge of the client business domain • Broad knowledge base incorporating theoretical concepts of client/server architecture 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when development environment matches production environment as closely as possible and when detailed work schedules for coding and unit testing are developed according to overall project plan • Data modelling skills for identifying, analysing and evaluating a range of different solutions • Algorithms skills for identifying, analysing and evaluating a range of different solutions • Problem solving skills for a defined range of predictable problems, for example when development environment matches production environment as closely as possible, and when outstanding design points are incorporated according to acceptance criteria

UNIT

ICAITB066B Coordinate the build phase

Resources

To demonstrate this unit of competence the candidate will require access to documents detailing:

- technical specifications,
- version control standards,
- Software Requirements Specification,
- System Requirements
- Design Specification

Assessment of this unit of competence could include review of documents developed by the candidate, which relate to the clear documentation of:

- test results,
- performance benchmarks and module design,
- planning information system overview and module implementation specifications.

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address outstanding design points and refine program structures and diagrams.

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	2	2	2

UNIT	ICAITB067B Prepare for Software Development using RAD
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FIELD	Build Information Technology Solutions
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DESCRIPTION	This unit describes the competency required to carry out RAD, but may also be applicable in any phased implementation method
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITB069B, ICAITAD054B, ICAITAD048B, ICAITAD049A, ICAITAD057A, ICAITAD058A
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ELEMENT	PERFORMANCE CRITERIA
1. Determine RAD requirements	<ol style="list-style-type: none"> 1. Use of the most suitable industry standard tool set is demonstrated 2. A prioritised plan using a series of recursive stages of build and review for delivery of the system is implemented. 3. A physical database is implemented 4. Modules to be implemented by incremental development techniques (eg. prototyping) are identified, documented and formally 'timeboxed' 5. Authorised users and suitably skilled builders for each module are identified and formally allocated responsibilities 6. Reviews, administration schedules and milestones are set down for endorsement
2. Determine work metrics	<ol style="list-style-type: none"> 1. Goals are set for developers. 2. Agreement and adherence to a single common notation is sought. 3. Tools, features and techniques most appropriate to the development environment are sought 4. Facilitate planning and develop version/change control methods 5. Facilitate the training and exposure to the user participants via JAD
3. Implement administration method	<ol style="list-style-type: none"> 1. Agreement of all parties on the specifics is ensured 2. Dates for milestones are confirmed and secured with written agreement 3. Production system parties are informed and secured with written acknowledgment 4. Relevant time recording and management methodologies are administered and maintained

UNIT

ICAITB067B Prepare for Software Development using RAD

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Languages used	Will vary from traditional third generation languages to modern object oriented languages. Each will tend to also have standards for the documenting, structuring and testing of the code produced. Java, C, C++, Pascal, Visual Basic, Perl.
RAD tools	<ul style="list-style-type: none"> • Delphi, • Visual Studio, • Power Builder, • Cocktail, • interad Build IT
RAD techniques	<p>Can include: CASE tools, iterative life-cycles, prototyping, workshops, SWAT teams, timebox development, and Re-use of applications, templates and code</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to quality issues were considered and appropriate choices made given the chosen RAD technique</p>
Client	<p>May be a department within an organisation, a business requiring an e-commerce solution or a third party and so the relationship and ease of access will vary.</p> <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client business requirements were considered and appropriate choices made given the business objectives and client requirements.</p>
Systems environment	The environment is dependent on the size and complexity of the application. It should be noted that the development environment should match (as closely as possible) the eventual production environment
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • bridges, 3Com, Compaq, CISCO, IBM • modems, analog, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omntron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • file & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems,

UNIT	ICAITB067B Prepare for Software Development using RAD
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Documentation and Reporting Systems	Organisational, budgetary, time constrained. Audit trails, naming standards, version control
Application under development	Can vary from large system that will impact thousands of users in a large organisation to one used by a handful of people. Will also vary in complexity, size and operational characteristics.
Standards and procedures	May include formal procedures that must be adhered to with check points and sign offs throughout development. 1012a-1998 IEEE Standard for Software Verification and Validation
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Proposed Solution	Will vary from building everything to acquiring packages with possible modification. May require additional hardware and network equipment as well as software.
Existing Architecture	Will vary from systems based around mainframes to networks of mid-range machines and/or desktop PCs. Networks can be local, wide or based on the Internet.

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of RAD tools and prototyping methods. Assessment must confirm the ability to meet client requirements by meeting the agreed deadlines and client performance requirements</p> <p>Assessment should confirm that code produced is bug free</p>	
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITB069B, ICAITAD054B, ICAITAD048B, ICAITAD049A, ICAITAD057A, ICAITAD058A. The interdependence of units of competency for assessment will vary with the particular project or scenario</p>	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Current industry accepted prototyping tools with broad knowledge of general features and capabilities and detailed knowledge in some areas • Broad knowledge of the client business domain, for example when determining RAD requirements • Broad knowledge base incorporating theoretical concepts of three or more programming languages • Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement, for example when determining RAD requirements • Broad knowledge base of quality assurance practices, for example when determining RAD requirements • Broad knowledge base incorporating theoretical concepts of three or more current industry development methodologies 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when a prioritised plan using a series of recursive stages of build and review for delivery of the system is implemented • Problem solving skills for a defined range of unpredictable problems, for example when determining RAD requirements • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when agreement of all parties on the specifics is ensured • Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when facilitating planning and developing version/change control methods, and when agreement of all parties on the specifics is ensured • Facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when facilitating planning and developing version/change control methods and when facilitating the training and exposure to the user participants via JAD • Prototyping tools skills for identifying, analysing and evaluating a range of different solutions

UNIT

ICAITB067B Prepare for Software Development using RAD

Resources

To demonstrate this unit of competence the candidate will require access to:

- CASE tools,
- Prototyping software,
- Detailed user requirements,
- A CASE repository to facilitate the re-use of templates and components
- A requirements document including model and scope

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the ongoing administration and monitoring aspects of this unit.

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	3	2	2	2	3	2

UNIT	ICAITB068B Build using RAD
FIELD	Build Information Technology Solutions
DESCRIPTION	This unit describes the competency required to build using RAD, but may also be applicable in any phased implementation method
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITB069B, ICAITAD052A, ICAITAD054B, ICAITAD048B, ICAITAD049A, ICAITAD057A, ICAITAD058A

ELEMENT	PERFORMANCE CRITERIA
1. Construct the application using RAD	<ol style="list-style-type: none"> 1. Code is developed by case tool, code generator or industry standard tools and delivered within the 'timebox' 2. Each completed transaction is built and demonstrated to end-users for revision within the agreed terms of reference 3. The developers cater for continuous changes in design by involving end-users in iteration process 4. QA testing occurs throughout this phase by providing feedback to the development administrators 5. Code optimisers and performance tools are used
2. Prepare the handover stage	<ol style="list-style-type: none"> 1. Modules being implemented are tracked and followed up where necessary by the developer and/or responsible parties 2. User authorities and builders for each module are actively engaged in review of the deliverables 3. Specifications and implementation schedules for each module are compared and the functional requirements are confirmed according to project requirements

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Languages used

Will vary from traditional third generation languages to modern object oriented languages. Each will tend to also have standards for the documenting, structuring and testing of the code produced. Java, C, C++, Pascal, Visual Basic, Perl,

Assessment should confirm that code produced is bug free

UNIT	ICAITB068B Build using RAD
RAD tools	<ul style="list-style-type: none"> • Delphi, • Visual Studio, • Power Builder, • Cocktail, • interad Build IT
RAD techniques	<p>Can include: CASE tools, iterative life-cycles, prototyping, workshops, SWAT teams, timebox development, and Re-use of applications, templates and code</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to quality issues were considered and appropriate choices made given the chosen RAD technique</p>
Client	<p>May be a department within an organisation, a business requiring an e-commerce solution or a third party and so the relationship and ease of access will vary.</p> <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client business requirements were considered and appropriate choices made given the business objectives and client requirements.</p>
Systems environment	The environment is dependent on the size and complexity of the application. It should be noted that the development environment should match (as closely as possible) the eventual production environment
Documentation and Reporting Systems	Organisational, budgetary, time constrained. Audit trails, naming standards, version control
Application under development	Can vary from large system that will impact thousands of users in a large organisation to one used by a handful of people. Will also vary in complexity, size and operational characteristics.
Standards and procedures	May include formal procedures that must be adhered to with check points and sign offs throughout development. 1012a-1998 IEEE Standard for Software Verification and Validation
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Proposed Solution	Will vary from building everything to acquiring packages with possible modification. May require additional hardware and network equipment as well as software.
Existing Architecture	Will vary from systems based around mainframes to networks of mid-range machines and/or desktop PCs. Networks can be local, wide or based on the Internet.
Object methods	May vary depending upon the development method or language used.
EVIDENCE GUIDE	
Critical aspects of evidence	Assessment must confirm sufficient knowledge of the fundamentals and features of RAD. Assessment must confirm the ability to build using RAD within the required timeframe and to technical and client specifications. Code produced is bug free.
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITB069B, ICAITAD052B, ICAITAD054B, ICAITAD048B, ICAITAD049A, ICAITAD057A, ICAITAD058A. The interdependence of units of competency for assessment will vary with the particular project or scenario

UNIT	ICAITB068B Build using RAD
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Underpinning skills and knowledge

Underpinning knowledge

- Current industry accepted prototyping tools with broad knowledge of general features and capabilities and detailed knowledge in some areas
- Broad general knowledge of the client business domain, for example when developing construction stage
- Broad knowledge base incorporating theoretical concepts of three or more programming languages
- Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement
- Broad knowledge base of quality assurance practices, for example when developing construction stage
- Broad knowledge base incorporating theoretical concepts of three or more current industry development methodologies

Underpinning skills

- Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when code is developed by case tool, code generator or industry standard tools and delivered within the 'timebox', and when specifications and implementation schedules for each module are compared and the functional requirements are confirmed according to project requirements
- Problem solving skills for a defined range of unpredictable problems, for example when each completed transaction is built and demonstrated to end-users for revision within the agreed terms of reference
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when each completed transaction is built and demonstrated to end-users for revision within the agreed terms of reference
- Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when the developers cater for continuous changes in design by involving end-users in iteration process
- Facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when user authorities and builders for each module are actively engaged in review of the deliverables
- Prototyping tools skills for identifying, analysing and evaluating a range of different solutions

Resources

To demonstrate this unit of competence the candidate will require access to:

- CASE tools,
- Prototyping software,
- Detailed user requirements,
- A CASE repository to facilitate the re-use of templates and components
- Code generator
- A requirements document including model and scope

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

UNIT	ICAITB068B Build using RAD
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Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the iteration and QA testing aspects of this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p>

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	2	3	2

UNIT	ICAITB069B Develop software
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FIELD	Build Information Technology Solutions
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DESCRIPTION	This unit describes the technical skills required to develop software in line with client requirements and software specifications. This is done in different styles for the conventional approach and for incremental development, but always involves coding, and a program review.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include the Analysis and Design, Project Management, Test, Implement, the teamwork functional areas and documentation
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ELEMENT	PERFORMANCE CRITERIA
1. Code each program module	<ol style="list-style-type: none"> 1. Design documentation is obtained and the requirements for the programs are reviewed and clarified. 2. The approach to be taken in coding and the modules and links required is planned. 3. Code is created that conforms to organisational standards and those agreed to by the development team 4. The static code is checked prior to a unit test for conformity to the development method 5. Code is compiled or run to ensure all syntax errors are corrected 6. Any limits, exceptions and other aspects built into the program modules are successfully tested against software specifications
2. Review each program module	<ol style="list-style-type: none"> 1. References for module tables, files, business functions are revised according to software specifications 2. Feedback/input is gained from user if applicable 3. Changes to code are made and tested against software specifications
3. Document each program module	<ol style="list-style-type: none"> 1. Diagrams of program module design are structured according to project standards 2. Imposed limits are documented according to project standards 3. Special routines or procedures are documented according to project standards

UNIT	ICAITB069B Develop software
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RANGE OF VARIABLES	
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VARIABLE	SCOPE
Languages used	Will vary from traditional third generation languages to modern object oriented languages.
Level of Supervision	May be limited or minimum supervision
Revision	Depending on the budgetary constraints, revision may be repeated a number of times
Procedures	Procedures are those prescribed during the project development phase and are based on client organisational requirements and project development requirements
Application under development	Can vary from large system that will impact thousands of users in a large organisation to one used by a handful of people. Will also vary in complexity, size and operational characteristics.
Standards and procedures	Will vary from formal procedures that must be adhered to with check points and sign offs throughout development to less formal or non-existent standards.
Client User	May be a department within the organisation or a third party and so the relation and ease of access will vary.
Development methods/tools	Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.
Documentation and Reporting	Audit trails, naming standards, version control
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Metrics and planning method	Will vary depending upon whether the organisation uses a formal method for development. In some sites there will be no guidelines to follow

EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm sufficient knowledge of interpreting software specifications. Assessment must confirm the ability to meet client requirements by combining an industry recognised program language, the software specifications and quality standards. Competence in this unit is based on the fact that the delivered unit operates according to specification
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITAD054B, ICAITAD048B, ICAITAD049A, ICAITAD057A, ICAITAD058A. The interdependence of units of competency for assessment will vary with the particular project or scenario

UNIT	ICAITB069B Develop software
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Underpinning skills and knowledge

Underpinning knowledge

- Broad knowledge of the client business domain
- Broad knowledge base incorporating theoretical concepts of programming languages, 2 or more procedural languages and 1 or more OO languages
- Detailed knowledge of the operating system
- Broad knowledge base incorporating theoretical concepts of real-time programming
- Broad knowledge base incorporating theoretical concepts of Input/ Output drivers
- A broad knowledge base incorporating current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas
- Broad knowledge base incorporating theoretical concepts of software development configuration management processes
- Broad knowledge base incorporating theoretical concepts of size estimation

Underpinning skills

- Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when diagrams of program module design are structured according to project standards
- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when design documentation is obtained and the requirements for the programs are reviewed and clarified.
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when feedback/input is gained from user if applicable
- Size estimation skills in relation to analysis, evaluation and identification of boundaries
- Facilitation and presentation skills in relation to transferring and collecting information, for example when feedback/input is gained from user if applicable
- Algorithms skills in relation to analysis, evaluation and identification of solutions

Resources

This competency can be assessed in the workplace or in a simulated environment. Questions may be directed to peers and supervisors for obtaining information on the extent and quality of the contribution made.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment

Key Competencies						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	3	3	3

UNIT	ICAITB070B Create code for applications
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FIELD	Build
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DESCRIPTION	This unit describes the competency required to produce commercial grade program code and capture and handle errors which occur as part of the program operation
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include the Analysis and Design, Project Management, Test, Implement, the teamwork functional areas and documentation
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ELEMENT	PERFORMANCE CRITERIA
1. Declare and assign variables	<ol style="list-style-type: none"> 1. Naming conventions are correctly employed 2. Variables are declared according to scope requirements, ie. global, instance, local 3. Dynamic variables are garbage collected after use
2. Develop structure of code sections	<ol style="list-style-type: none"> 1. Class instances or code modules are developed as specified 2. Modules meets cohesion and coupling standards 3. Dynamic arrays, tables and memory structures are developed
3. Unit test each module.	<ol style="list-style-type: none"> 1. Testing routines are developed to verify the code produced actually fulfils the requirement 2. Memory structures eg. Arrays, are tested for boundary violations 3. Control structures or loops are terminated
4. Identify range of exceptions	<ol style="list-style-type: none"> 1. The coding areas where exceptions may occur are determined 2. The system areas where exceptions may occur, eg. file opening are determined 3. A global approach to exception handling is prepared
5. Determine handling and propagation procedures for exceptions	<ol style="list-style-type: none"> 1. An exception handling code section is developed 2. All exceptions are caught 3. All try and catch routines with specific traces are documented
6. Use debugging and error handling techniques	<ol style="list-style-type: none"> 1. Debugging techniques eg. Set-jump are disabled for live running 2. Specific documentation for error handling methods such as assert and exit is developed 3. External (eg. Use of Database) error handling methods remain highly cohesive and loosely coupled

UNIT	ICAITB070B Create code for applications
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RANGE OF VARIABLES	
VARIABLE	SCOPE
Systems environment	May involve LAN, WAN, stand alone, peer to peer
Languages used	Will vary from traditional third generation languages to modern object oriented languages.
Level of Supervision	May be limited or minimum supervision
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • bridges, 3Com, Compaq, CISCO, IBM • modems, analog, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • file & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems, <p>The candidate will need to implement a range of equipment or a number of the same hardware components.</p> <p>Generally the larger and more expensive the equipment the less likely in-house expertise will be available and the supplier will be relied on for support.</p>
Revision	Depending on the budgetary constraints, revision may be repeated a number of times
Procedures	Procedures are those prescribed during the project development phase and are based on client organisational requirements and project development requirements
Application under development	Can vary from large system that will impact thousands of users in a large organisation to one used by a handful of people. Will also vary in complexity, size and operational characteristics.
Standards and procedures	Will vary from formal procedures that must be adhered to with check points and sign offs throughout development to less formal or non-existent standards.
Client User	May be a department within the organisation or a third party and so the relation and ease of access will vary.

UNIT	
ICAITB070B	Create code for applications
Development methods/tools	Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.
Documentation and Reporting	Audit trails, naming standards, version control
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used
Quality process	Some organisations may be quality certified and have well documented standards for addressing quality while others will not.
Metrics and planning method	Will vary depending upon whether the organisation uses a formal method for development. In some sites there will be no guidelines to follow

EVIDENCE GUIDE	
Critical aspects of evidence	Assessment must confirm the ability to write code which is verifiable against the specification. The code will be verifiable against the actual running of the program and the testing regime
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITAD054B, ICAITAD048B, ICAITAD049A, ICAITAD057A, ICAITAD058A. The interdependence of units of competency for assessment will vary with the particular project or scenario

UNIT	ICAITB070B Create code for applications
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Underpinning skills and knowledge

Underpinning knowledge

- Detailed knowledge of development methodologies
- Broad knowledge of the client business domain, for example when declaring variables and assigning valuables and when debugging and error handling techniques are deployed
- Broad knowledge base incorporating theoretical concepts of at least three programming languages, one of which will be an Object Oriented language.
- Detailed knowledge of the operating system
- Broad knowledge base incorporating theoretical concepts of real-time programming
- Broad knowledge base incorporating theoretical concepts of Input/ Output drivers
- A broad knowledge base incorporating current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas
- Broad knowledge base incorporating theoretical concepts of software development configuration management processes
- Broad knowledge base incorporating theoretical concepts of size estimation

Underpinning skills

- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when testing routines are developed to verify the code produced actually fulfils the requirement
- Algorithms skills in relation to analysis, evaluation and identification of solutions
- Project planning skills in relation to scope, time, cost, quality, communications and risk management.

Resources

This competency can be assessed in the workplace or in a simulated environment. Questions may be directed to peers and supervisors for obtaining information on the extent and quality of the contribution made

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment

Key Competencies						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITB071A Review developed software
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FIELD	Build Information Technology Solutions
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DESCRIPTION	This unit identifies the skills required when applying quality standards associated with software development.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include the Analysis and Design, Project Management, Test, Implement, the teamwork functional areas and documentation
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ELEMENT	PERFORMANCE CRITERIA
1. Review quality standards	<ol style="list-style-type: none"> 1. Copies of the organisation's quality standards and international standards related to software development are obtained 2. Any quality personnel are contacted and their involvement in the development is discussed 3. The approach to be used to validate the quality during development are documented
2. Determine development quality issues	<ol style="list-style-type: none"> 1. Processes that have a significant impact on the quality of the development process are examined 2. Discussions on quality issues are held with development staff with responsibilities agreed and allocated 3. Procedures to ensure quality of development are agreed with authority from senior management obtained where necessary
3. Review specific development quality areas	<ol style="list-style-type: none"> 1. Plans are reviewed to ensure that they are adequate to control the development process 2. Test processes are reviewed to ensure that defect free software will be developed 3. Documentation and methods for development are examined to ensure that software will be supportable 4. Client requirements are monitored and met

RANGE OF VARIABLES	
VARIABLE	SCOPE
Project standards	Can include, but are not limited to: development methodology, reporting mechanisms, project plan, change control, quality of software modules, sharing of code/libraries, ease of modification and maintenance, delivery against required milestones and budget
Audience	Can include, but are not limited to: all members of project team, operations, support, users, suppliers

UNIT	
ICAITB071A Review developed software	
Quality process	Some organisations may be quality certified and have well documented standards for addressing quality while others will not.
Communication strategies	Can include but are not limited to: oral, written, face to face, informal, presentations, project status reports
Distribution strategies	Can include, but are not limited to hard copy or electronic, (floppy, WWW/Internet/intranet, server)
Test Harness	Application and data requirements determine the test policy
Blueprint	The accuracy of the blueprint matches QA requirements.
Documentation	Organisational requirement
Application under development	Can vary from large system that will impact thousands of users in a large organisation to one used by a handful of people. Will also vary in complexity, size and operational characteristics.
Standards and procedures	Will vary from formal procedures that must be adhered to with check points and sign offs throughout development to less formal or non-existent standards.
Client User	May be a department within the organisation or a third party and so the relation and ease of access will vary.
Development methods/tools	Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.
Documentation and Reporting	Audit trails, naming standards, version control
Object methods	May vary depending upon the development method or language used.
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
EVIDENCE GUIDE	
Critical aspects of evidence	Assessment must demonstrate knowledge of QA requirements in relation to software development. The candidate must demonstrate the ability to determine quality standards and procedures which will support the development of defect free products to meet client requirements
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITB069B, ICAITAD054B, ICAITAD048B, ICAITAD049A, ICAITAD057A, ICAITAD058A. The interdependence of units of competency for assessment will vary with the particular project or scenario

UNIT

ICAITB071A Review developed software

Underpinning skills and knowledge

Underpinning knowledge

- Broad general knowledge of the client business domain, for example when reviewing quality standards
- Broad knowledge base of quality assurance practices and the identification of standards, for example when reviewing quality standards
- Broad knowledge base incorporating theoretical concepts of programming languages, 2 or more procedural languages and 3 or more OO languages
- Broad knowledge base incorporating theoretical concepts of software metrics development
- Detailed knowledge of the operating system
- Broad knowledge base incorporating theoretical concepts of real-time programming
- Broad knowledge base incorporating theoretical concepts of Input/ Output drivers
- A broad knowledge base incorporating current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas
- Broad knowledge base incorporating theoretical concepts of software development configuration management processes
- Broad knowledge base incorporating theoretical concepts of size estimation

Underpinning skills

- Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when plans are reviewed to ensure that they are adequate to control the development process
- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when test processes are reviewed to ensure that defect free software will be developed
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when the approach to be used to validate the quality during development is documented
- Data modelling skills for identifying, analysing and evaluating a range of different solutions, for example when processes that have a significant impact on the quality of the development process are examined
- Design and analysis skills for identifying, analysing and evaluating a range of different solutions, for example when processes that have a significant impact on the quality of the development process are examined
- Size estimation skills in relation to analysis, evaluation and identification of boundaries, for example when client requirements are monitored and met
- Algorithms skills in relation to analysis, evaluation and identification of solutions

Resources

This competency can be assessed in the workplace or in a simulated environment. Resources include access to standards, data dictionary and DBMS; coding standards and specs; a developed scenario for simulation/project purposes. Questions may be directed to peers and supervisors for obtaining information on the extent and quality of the contribution made.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment

Key Competencies

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITB072B Develop integration blueprint
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FIELD	Build Information Technology Solutions
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DESCRIPTION	This unit identifies the competency required to document and maintain details of the technology components.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITB059B, ICAITAD041B, ICAITT077B, ICAITT083B, ICAITAD042B, ICAITAD054B, ICAITAD048B, ICAITAD049A, ICAITAD057A, ICAITAD058A
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ELEMENT	PERFORMANCE CRITERIA
1. Review technical architecture document/s	<ol style="list-style-type: none"> 1. Technical architecture documents are reviewed and additional discussions are held with architect to ensure complete understanding if necessary 2. Technical considerations cover the overall project requirements and best technical fit against project requirements are identified and evaluated 3. Integration blueprint is updated according to best fit technical specifications
2. Undertake compatibility tests	<ol style="list-style-type: none"> 1. Components are assembled according to design specifications 2. Components are tested for functionality against design specifications 3. Non-compliance against technical specifications is identified 4. Integration blueprint is updated to reflect functionality and non-compliance changes
3. Assess risk areas	<ol style="list-style-type: none"> 1. Scope of modifications required is identified from compatibility test 2. Modifications based on outcomes of compatibility test are negotiated with suppliers 3. Integration blueprint is updated to reflect modifications to risk areas
4. Assess readiness for stress testing	<ol style="list-style-type: none"> 1. Integration activities are continued until platform is stable 2. Compliance against technical requirements is evaluated 3. Integration blueprint is updated for stress testing

UNIT

ICAITB072B Develop integration blueprint

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Technical Architecture document	Describes details of components and connectors, components being abstractions of system level computational entities and connectors being abstractions of component interrelationships. The components, and the mechanisms guiding their interoperation (interaction protocols), are recorded as separate, distinct architectural abstractions. Or, if object integration technologies are used, the technical architecture document will define a standard component interconnection and interoperation model.
Component-based integration technologies	May include: CORBA, ActiveX, JavaBeans, COM, DCOM, OpenDoc
Architectural description languages	May include: Unicon, ACME ADL,
Integration blueprint	Is a living document which evolves and grows as details of the specific technical components/levels are identified
Modifications	Can include, but are not restricted to: software patches/ upgrades, Internal/External hardware model information, Telecommunication Hardware/Software version details, custom designed components, driver/firmware revisions, board/chip revisions. Software versions and distribution release details, Extent of modification will vary from project to project and supplier to supplier
Components	Transactional processing component, file system object in Windows operating systems
Hardware architectures	May include: Intel (PC), Motorola/VMEbus, Dec Alpha, HP, Sparc, etc.
Operating systems	May include: pSOS+ (modular real-time operating system), UNIX, real-time UNIX, VRTX, LYNX-OS, SOLARIS, LINUX, DOS, Windows, Windows NT, Windows CE
Metrics & planning	Will vary depending upon whether the organisation uses a formal method for development.

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to identify and capture technical design changes important for future integration activities on a particular platform and avoid integration activities which have been previously performed. The candidate will need to consider: <ul style="list-style-type: none"> finding systematic methods to identify and select tests from component test suites to form integration test suites; defining a reusable integration infrastructure to build an integration test platform to cope with diversified component integrates
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITB059B, ICAITAD041B, ICAITT077B, ICAITT083B, ICAITAD042B, ICAITAD054B, ICAITAD048B, ICAITAD049A, ICAITAD057A, ICAITAD058A. The interdependence of units of competency for assessment will vary with the particular project or scenario

UNIT	ICAITB072B Develop integration blueprint
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Underpinning skills and knowledge

Underpinning knowledge

- A broad knowledge base incorporating current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas, for example when undertaking compatibility tests
- A broad knowledge base incorporating some theoretical concepts of current industry development and design methodologies, for example when reviewing technical architecture document/s
- Knowledge of technology suppliers and components
- A broad knowledge base incorporating current industry accepted testing procedures, for example when undertaking compatibility tests
- Broad knowledge of stress load testing, for example when assessing readiness for stress testing

Underpinning skills

- Risk assessment skills for a defined range of predictable problems, for example when scope of modifications required is identified from compatibility test
- Design and analysis skills for identifying, analysing and evaluating a range of different solutions, for example when ensuring that technical considerations cover the overall project requirements and best technical fit against project requirements is identified and evaluated
- Negotiation and influencing skills, for example when technical architecture documents are reviewed and additional discussions are held with architect to ensure complete understanding if necessary
- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when integration activities are continued until platform is stable

Resources

To demonstrate this unit of competence the candidate will require access to:

- a design specification
- a high-level diagrammatic view of the main system components

Assessment of this unit of competence could include review of documents developed by the candidate, which relate to a high-level requirements audit and a components-requirements matrix.

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

UNIT

ICAITB072B Develop integration blueprint

Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the component functionality testing and updating the integration blueprint.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.</p> <p>The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.</p> <p>Applications involve significant judgement in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.</p> <p>The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of specialised knowledge with depth in some areas; • analyse, diagnose, design and execute judgements across a broad range of technical or management functions; • demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills • generate ideas through the analysis of information and concepts at an abstract level; • demonstrate accountability for personal outputs within broad parameters; and • demonstrate accountability for group outcomes within broad parameters.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITB073B Pilot the developed system
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FIELD	Build Information Technology Solutions
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DESCRIPTION	This unit describes the competency required to test and evaluate the developed system amongst a subset of clients to gauge reaction and gather feedback. The purpose of a system pilot is to test and evaluate the readiness of the system and organisation to progress to a full implementation of the system. It also marks the commencement of knowledge/skills transfer from the development team to the system users.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITAD050A
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ELEMENT	PERFORMANCE CRITERIA
1. Prepare for pilot system	<ol style="list-style-type: none"> 1. Executive support for the pilot is confirmed and sponsor/s are reminded of responsibilities 2. Target group for pilot is confirmed 3. Training and user participants exposure to JAD is facilitated 4. Objectives, success criteria and acceptance criteria for pilot project are matched against acceptance criteria 5. Technical and organisational resources required for pilot implementation are identified and secured 6. Project plan for pilot is completed and authorisation obtained from higher authorities
2. Install pilot system	<ol style="list-style-type: none"> 1. Pilot system is installed and configured, according to project plan 2. Technical readiness of system for pilot is validated against project plan 3. Data loadup is completed and verified for accuracy by sponsor/s

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Pilot	Details of pilot will vary according to organisational requirements and nature of system. All system pilots will <ul style="list-style-type: none"> • take an iterative approach; and • involve users in the process
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UNIT	ICAITB073B Pilot the developed system
Next step/s	<p>Could include but are not restricted to:</p> <ul style="list-style-type: none"> • return to development team or supplier for modification, • proceed to next phase in master development plan, • reconsider business needs and expectations, • determining where design/build stops and implementation begins.
Organisational resources	<p>Will vary, subject to nature of pilot. Staffing resources would be expected from user community, technical operations/support, technical development, supplier, project manager and executive sponsor. Financial resources will need to be secured to fund the pilot.</p> <ul style="list-style-type: none"> • Systems developers/ IT technicians; • representative experts from relevant business areas (eg functional managers or operational staff); • representative users; and • personnel with an understanding of corporate governance (eg legal, audit and data security specialists). <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to gauge whether issues related to working with and monitoring the above group were considered and appropriate decisions about gathering feedback were made.</p>
Master Development Plan	<p>Details will vary across organisations and projects. In essence, this is the master plan covering the overall development of the system - this pilot is a phase within the master plan.</p>
Technical Support	<p>The nature of technical support will vary according to the project.</p> <p>It is anticipated that the development and/or supplier personnel will be available and provide technical knowledge and skills to facilitate the implementation of the pilot and to facilitate the knowledge transfer to first line support and users.</p>
Documentation and Reporting	<p>Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates</p>
Organisational Procedures	<p>As per project requirements. It would be expected that technical and user procedures would be defined and documented.</p>
Project Plan	<p>Written agreement which defines a number of project variables including parties and their responsibilities, project scope, project objectives, schedule, project budget etc.</p>
Client User	<p>May be a department within an organisation, a business requiring an e-commerce solution or a third party and so the relationship and ease of access will vary.</p> <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client users understanding the system and using it as it is intended to be used have been resolved.</p>
Training	<p>Training in this context refers to the candidate ensuring that training for users is available and does not mean that training needs to be delivered by the candidate</p>

UNIT	ICAITB073B Pilot the developed system
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm the ability to plan and evaluate the pilot and to transfer knowledge to users and front line support personnel.</p> <p>The candidate will need to consider:</p> <ul style="list-style-type: none"> • system functionality (does the system do what it is required to do?); • if necessary, system integration (how well do the different components work together?); • user interfaces (are menus, forms and templates understandable and usable?); • validation of inputs and outputs (does the system produce or allow the entry of erroneous data?); • system response and recovery times (how quickly does the system perform tasks; how long does it take to recover from crashes or interrupts?); and • whether the system meets the acceptance criteria. 		
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITAD050A. The interdependence of units of competency for assessment will vary with the particular project or scenario</p>		
Underpinning skills and knowledge	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning knowledge</p> <ul style="list-style-type: none"> • A broad knowledge base incorporating current industry accepted system piloting methodologies with knowledge of general features and capabilities • A broad knowledge base incorporating some theoretical concepts of current industry system development and design methodologies, for example when preparing for pilot • A broad knowledge base incorporating current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas, for example when installing pilot system • Overall project objectives and client requirements, for example when preparing for pilot • Broad general knowledge of the client business domain • Broad knowledge base incorporating theoretical concepts of three or more current industry information gathering methodologies, for example when preparing for pilot • Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement • Detailed knowledge of the system current functionality, for example when installing pilot system • Broad knowledge base of quality assurance practices </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when technical and organisational resources required for pilot implementation are identified and secured • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when training and user participants' exposure to JAD is facilitated • Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when pilot system is installed and configured, according to project plan • Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when training and user participants' exposure to JAD is facilitated • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when project plan for pilot is completed and authorisation obtained from higher authorities • Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in system piloting, for example when technical and organisational resources required for pilot implementation are identified and secured </td> </tr> </table>	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • A broad knowledge base incorporating current industry accepted system piloting methodologies with knowledge of general features and capabilities • A broad knowledge base incorporating some theoretical concepts of current industry system development and design methodologies, for example when preparing for pilot • A broad knowledge base incorporating current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas, for example when installing pilot system • Overall project objectives and client requirements, for example when preparing for pilot • Broad general knowledge of the client business domain • Broad knowledge base incorporating theoretical concepts of three or more current industry information gathering methodologies, for example when preparing for pilot • Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement • Detailed knowledge of the system current functionality, for example when installing pilot system • Broad knowledge base of quality assurance practices 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when technical and organisational resources required for pilot implementation are identified and secured • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when training and user participants' exposure to JAD is facilitated • Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when pilot system is installed and configured, according to project plan • Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when training and user participants' exposure to JAD is facilitated • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when project plan for pilot is completed and authorisation obtained from higher authorities • Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in system piloting, for example when technical and organisational resources required for pilot implementation are identified and secured
<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • A broad knowledge base incorporating current industry accepted system piloting methodologies with knowledge of general features and capabilities • A broad knowledge base incorporating some theoretical concepts of current industry system development and design methodologies, for example when preparing for pilot • A broad knowledge base incorporating current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas, for example when installing pilot system • Overall project objectives and client requirements, for example when preparing for pilot • Broad general knowledge of the client business domain • Broad knowledge base incorporating theoretical concepts of three or more current industry information gathering methodologies, for example when preparing for pilot • Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement • Detailed knowledge of the system current functionality, for example when installing pilot system • Broad knowledge base of quality assurance practices 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when technical and organisational resources required for pilot implementation are identified and secured • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when training and user participants' exposure to JAD is facilitated • Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when pilot system is installed and configured, according to project plan • Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when training and user participants' exposure to JAD is facilitated • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when project plan for pilot is completed and authorisation obtained from higher authorities • Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in system piloting, for example when technical and organisational resources required for pilot implementation are identified and secured 		

UNIT	ICAITB073B Pilot the developed system
Resources	<p>During the pilot, the candidate will need to document any changes to the design or the requirements, indicating clearly reasons for the change.</p> <p>To demonstrate this unit of competence the candidate will require access to:</p> <ul style="list-style-type: none"> • the acceptance criteria • the pilot plan <p>Assessment of this competency requires access to:</p> <ul style="list-style-type: none"> • a pilot system, • project plan, • technical materials and people to be involved in the pilot.
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the pilot implementation, configuration and data uploading aspects of this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.</p> <p>The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.</p> <p>Applications involve significant judgement in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.</p> <p>The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of specialised knowledge with depth in some areas; • analyse, diagnose, design and execute judgements across a broad range of technical or management functions; • demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills • generate ideas through the analysis of information and concepts at an abstract level; • demonstrate accountability for personal outputs within broad parameters; and • demonstrate accountability for group outcomes within broad parameters.

UNIT	ICAITB073B Pilot the developed system
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Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITB074B Monitor the system pilot
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FIELD	Build Information Technology Solutions
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DESCRIPTION	This unit describes the competency required to evaluate the performance of the developed system amongst a subset of clients
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITAD050A
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ELEMENT	PERFORMANCE CRITERIA
1. Monitor implementation of pilot system	<ol style="list-style-type: none"> 1. Organisational procedures used for the pilot are documented in clear and coherent language 2. Functionality and integrity of system is tested by client user groups and all findings documented 3. Appropriate technical support for the pilot is provided in a timely manner 4. On-going operation of pilot is reviewed according to pilot project plan
2. Evaluate pilot system	<ol style="list-style-type: none"> 1. Pilot objectives and success criteria are formally reviewed against pilot operation 2. Client user and executive feedback on pilot are reviewed against acceptance criteria 3. Areas of success and improvement are identified and prioritised 4. Impact on master development plan and schedule is assessed against pilot outcomes

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Pilot	<p>Details of pilot will vary according to organisational requirements and nature of system. All system pilots will</p> <ul style="list-style-type: none"> • take an iterative approach; and • involve users in the process.
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UNIT	ICAITB074B Monitor the system pilot
Next step/s	<p>Could include but are not restricted to:</p> <ul style="list-style-type: none"> • return to development team or supplier for modification, • proceed to next phase in master development plan, • reconsider business needs and expectations, • determining where design/build stops and implementation begins.
Organisational resources	<p>Will vary, subject to nature of pilot. Staffing resources would be expected from user community, technical operations/support, technical development, supplier, project manager and executive sponsor. Financial resources will need to be secured to fund the pilot.</p> <ul style="list-style-type: none"> • Systems developers/ IT technicians; • representative experts from relevant business areas (eg functional managers or operational staff); • representative users; and • personnel with an understanding of corporate governance (eg legal, audit and data security specialists). <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to gauge whether issues related to working with and monitoring the above group were considered and appropriate decisions about gathering feedback were made.</p>
Master Development Plan	<p>Details will vary across organisations and projects. In essence, this is the master plan covering the overall development of the system - this pilot is a phase within the master plan.</p>
Technical Support	<p>The nature of technical support will vary according to the project.</p> <p>It is anticipated that the development and/or supplier personnel will be available and provide technical knowledge and skills to facilitate the implementation of the pilot and to facilitate the knowledge transfer to first line support and users.</p>
Documentation and Reporting	<p>Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates</p>
Organisational Procedures	<p>As per project requirements. It would be expected that technical and user procedures would be defined and documented.</p>
Project Plan	<p>Written agreement which defines a number of project variables including parties and their responsibilities, project scope, project objectives, schedule, project budget etc.</p>
Client User	<p>May be a department within an organisation, a business requiring an e-commerce solution or a third party and so the relationship and ease of access will vary.</p> <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client users understanding the system and using it as it is intended to be used have been resolved.</p>
Training	<p>Training in this context refers to the candidate ensuring that training for users is available and does not mean that training needs to be delivered by the candidate</p>

UNIT

ICAITB074B Monitor the system pilot

EVIDENCE GUIDE

Critical aspects of evidence

Assessment must confirm the ability to observe and evaluate the pilot by monitoring performance and analysing performance issues from a systems and a client user perspective

The candidate will need to consider:

- system functionality (does the system do what it is required to do?);
- if necessary, system integration (how well do the different components work together?);
- user interfaces (are menus, forms and templates understandable and usable?);
- validation of inputs and outputs (does the system produce or allow the entry of erroneous data?);
- system response and recovery times (how quickly does the system perform tasks; how long does it take to recover from crashes or interrupts?); and
- whether the system meets the acceptance criteria.

Interdependent assessment of units

This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITAD050A. The interdependence of units of competency for assessment will vary with the particular project or scenario

Underpinning skills and knowledge**Underpinning knowledge**

- A broad knowledge base incorporating current industry accepted system piloting methodologies with knowledge of general features and capabilities, for example when evaluating pilot
- A broad knowledge base incorporating some theoretical concepts of current industry system development and design methodologies
- A broad knowledge base incorporating current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas
- Overall project objectives and client requirements, for example when monitoring implementation of pilot
- Broad general knowledge of the client business domain, for example when evaluating pilot
- Broad knowledge base incorporating theoretical concepts of three or more current industry information gathering methodologies
- Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement, for example when monitoring implementation of pilot
- Detailed knowledge of the system current functionality
- Broad knowledge base of quality assurance practices

Underpinning skills

- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when appropriate technical support for the pilot is provided in a timely manner
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when functionality and integrity of system is tested by client user groups and all findings documented
- Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when client user and executive feedback on pilot are reviewed against acceptance criteria
- Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts
- Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when on-going operation of pilot is reviewed according to pilot project plan
- Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in system piloting, for example when organisational procedures used for the pilot are documented in clear and coherent language

UNIT	ICAITB074B Monitor the system pilot
Resources	<p>Assessment of this competency requires access to a pilot system, project plan, technical materials and people to be involved in the pilot. Questions may be directed to peers and supervisors for obtaining information on the extent and quality of the contribution made.</p> <p>During the pilot, the candidate will need to document any changes to the design or the requirements, indicating clearly reasons for the change.</p> <p>To demonstrate this unit of competence the candidate will require access to:</p> <ul style="list-style-type: none"> • the acceptance criteria • the pilot plan
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the ongoing implementation and monitoring aspects of this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.</p> <p>The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.</p> <p>Applications involve significant judgement in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.</p> <p>The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of specialised knowledge with depth in some areas; • analyse, diagnose, design and execute judgements across a broad range of technical or management functions; • demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills • generate ideas through the analysis of information and concepts at an abstract level; • demonstrate accountability for personal outputs within broad parameters; and • demonstrate accountability for group outcomes within broad parameters.

UNIT

ICAITB074B Monitor the system pilot**Key Competencies**

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	2	2	3	2

UNIT	ICAITB075A Use a library or pre-existing components
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FIELD	Build Information Technology Solutions
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DESCRIPTION	This unit describes the competency required to identify, evaluate and incorporate reuse components
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include the Analysis and Design, Project Management, Test, Implement, the teamwork functional areas and documentation
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ELEMENT	PERFORMANCE CRITERIA
1. Estimate potential reuse units from design program specifications	<ol style="list-style-type: none"> 1. Iteration and/ or classes are reviewed to identify possible reuse units 2. Class libraries, data scripts, objects are reviewed for possible reuse against elicitation requirements 3. Domain model is reviewed against existing reuse units for relevant and viable components
2. Identify components and assess their fit	<ol style="list-style-type: none"> 1. The quality of potential components is evaluated to determine reuse value 2. The time and cost benefits of modifying reuse components are evaluated against development costs, project time and cost constraints 3. Components are modified to deliver required technical and business outcomes 4. Modifications are clearly documented against project or reuse criteria
3. Evaluate for new gaps	<ol style="list-style-type: none"> 1. Existing and modified reuse components are assessed to identify further gaps against technical and business criteria 2. Existing reuse components are evaluated against any further identified gaps for useability and time and cost saving
4. Link/ use components	<ol style="list-style-type: none"> 1. Dependencies and associated processes are identified from technical criteria through iteration 2. Components are linked to related task scripts and side or exceptions scripts 3. The reuse of components is optimised 4. Components are linked to deliver relevant and viable outcomes based on technical and business requirements

UNIT

ICAITB075A Use a library or pre-existing components

RANGE OF VARIABLES

VARIABLE

SCOPE

Reuse components	May include but are not limited to code, design patterns, specifications or requirements
Documentation	Documentation for existing components can and will vary greatly affecting certainty and time considerations
Library	The existence and/ or quality of a reuse library will vary greatly from non-existent to badly catalogued to well documented
Repository tools	Will vary according to preferred project requirements
Other variations	Domain modelling, completion of abstractions, contract specification
Application under development	Can vary from large system that will impact thousands of users in a large organisation to one used by a handful of people. Will also vary in complexity, size and operational characteristics.
Standards and procedures	Will vary from formal procedures that must be adhered to with check points and sign offs throughout development to less formal or non-existent standards.
Development methods/tools	Will vary from the traditional Systems Development life cycle with little or no formalisation to a very well structured CASE tool.
Documentation and Reporting	Audit trails, naming standards, version control
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used
Proposed Solution	Will vary from building everything to acquiring packages with possible modification. May require additional hardware and network equipment as well as software.
Quality process	Some organisations may be quality certified and have well documented standards for addressing quality while others will not.
Metrics and planning method	Will vary depending upon whether the organisation uses a formal method for development. In some sites there will be no guidelines to follow.
Object methods	May vary depending upon the development method or language used

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm sufficient knowledge of effective and efficient opportunities for reuse Assessment must confirm the ability to meet client requirements by efficiently identifying, modifying and integrating components for reuse
Interdependent assessment of units	This unit may be assessed with any of the following: ICPMM65cA, ICPMM67cA, ICAITB070B, ICAITAD058A, ICAITAD049A, ICAITAD057A. The interdependence of units of competency for assessment will vary with the particular project or scenario

UNIT	ICAITB075A Use a library or pre-existing components
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Underpinning skills and knowledge

Underpinning knowledge

- A broad knowledge base incorporating some theoretical concepts of current industry development and design methodologies
- A broad knowledge base incorporating some theoretical concepts of families, libraries content and structure
- A broad knowledge base incorporating some theoretical concepts of patterns, frameworks and idioms
- A broad knowledge base incorporating some theoretical concepts of frameworks
- A broad knowledge base incorporating some theoretical concepts of metrics collection
- A broad knowledge base of contract specifications
- A broad knowledge base incorporating some theoretical concepts of domain modelling
- A broad knowledge base incorporating some theoretical concepts of genericity specification
- A broad knowledge base incorporating some theoretical concepts of repository tools

Underpinning skills

- Domain analysis skills for identifying, analysing and evaluating a range of different solutions
- Completion of abstraction for a range of different solutions
- Refinement of inheritance hierarchies for a range of different solutions
- Indexing skills for a range of different solutions
- Class naming skills for a range of different solutions
- Abstract classes for a range of different solutions
- Research skills for identifying, analysing and evaluating broad features of current reuse issues and best practice in component reuse

Resources

This competency can be assessed in the workplace or in a simulated environment. Questions may be directed to peers and supervisors for obtaining information on the extent and quality of the contribution made.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment

Key Competencies						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITB076B Implement configuration management
FIELD	Build Information Technology Solutions
DESCRIPTION	This unit describes the competency required to implement administrative and technical procedures throughout the software and documentation life cycle
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITAD050A, ICAITB069B, ICAITB070B

ELEMENT	PERFORMANCE CRITERIA
1. Identify and clarify configuration management requirements	<ol style="list-style-type: none"> 1. Identification standards for the naming and version control of software and documentation are distributed to all relevant developers and team members 2. The tools and procedures for the required level of integration into the programming environment are identified 3. Responsibilities for configuration management within the project and for ongoing support including approval of changes are identified and responsible parties are aware of their roles 4. The point when items are subjected to configuration control is identified with all relevant developers and team members
2. Employ appropriate control mechanisms	<ol style="list-style-type: none"> 1. The method for identification and recording of change requests in line with organisational requirements is identified and maintained during development process 2. The evaluation criteria and process for approval of change requests taking into account organisational authorisation requirements are employed 3. Other management control criteria such as security and access and non-duplication of names are employed according to organisational requirements 4. Necessary audit trails and alerts for variations or non-conformance are continuously maintained during development
3. Implement monitoring mechanisms	<ol style="list-style-type: none"> 1. Mechanisms to identify the status of software throughout the software life cycle are continuously maintained 2. The development and maintenance of records and status reports required to show the history of baselines and their links to back-ups are documented 3. The level of detail required in the status reports, and who the target audiences are, meets the configuration management procedures, ISO standards and organisational requirements. 4. The configuration management is integrated into general project management processes for monitoring and control purposes

UNIT	ICAITB076B Implement configuration management
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4. Manage release of product	<ol style="list-style-type: none"> 1. The physical and functional completeness of items for the purpose of release are determined with all relevant developers and team members 2. The requirements for formal control of software products and documentation are identified and implemented 3. The policies for retention of baseline/ master copies taking into account safety and security, legislative requirements and organisational policies are maintained.
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates
Quality benchmarks	<p>Relevant quality standards include: AS 4043-1992 Software configuration management, AS 4042-1992 Software configuration management plans, AS 3925.1-1994 Software quality assurance – Plans, AS/NZS 4258:1994 Software user documentation process, AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. . ISO 9000-3, Guidelines for the Application of ISO 9001 to the development, supply and maintenance of software. International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/</p> <p>Will vary according to the type of organisation and the benchmarks will cover technical, cost savings, performance and quality. Some organisations may be quality certified and have well documented standards for addressing quality while others will not. In a simulated environment best practice workplace examples will be used.</p>
Scope	Manual, automated or fully integrated into the programming environment
Metrics and planning method	Will vary depending upon whether the organisation uses a formal method for development. In some sites there will be no guidelines to follow.
Application under development	Can vary from large system that will impact thousands of users in a large organisation to one used by a handful of people. Will also vary in complexity, size and operational characteristics.
Software life cycle	Will vary according to the software life cycle model being employed.
Software configuration tools	PVCS Version Manager, PVCS Version Manager PLUS, PVCS Configuration Builder, Visual SourceSafe, Version Stamper, Baseline +Plus, Version +Plus, ClearCase, Continuous/CM, SCCS, RCS, Visual SourceSafe, Source Integrity, TeamWare, CVS

UNIT

ICAITB076B Implement configuration management

EVIDENCE GUIDE

Critical aspects of evidence

Assessment will confirm knowledge of quality processes, audit trails and version control.

Assessment will confirm the ability to implement and maintain reliable and valid configuration management procedures for technical and administrative procedures for use during the software life cycle.

To demonstrate this unit of competence the candidate will need to:

- Track changes to all software components
- Support parallel development of different components
- Control the entire project and its evolution over time (releases and variants)
- Manage the approval of changes (promotion process)

Interdependent assessment of units

This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITAD050A, ICAITB069B, ICAITB070B The interdependence of units of competency for assessment will vary with the particular project or scenario

Underpinning skills and knowledge**Underpinning knowledge**

- Detailed knowledge of software development methodologies, for example when identifying and clarifying configuration management requirements
- Detailed knowledge of quality assurance and quality processes, for example when implementing monitoring mechanisms
- Broad knowledge of project planning methodologies and tools
- Detailed knowledge of benchmarking methodologies, for example when implementing monitoring mechanisms
- Detailed knowledge of how to formulate software size models and size estimates, for example when employing control mechanisms

Underpinning skills

- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when the point when items are subjected to configuration control is identified with all relevant developers and team members
- Plain English literacy and communication skills in relation to developing technical and business reports
- Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when responsibilities for configuration management within the project and for ongoing support including approval of changes are identified and responsible parties are aware of their roles
- Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when the physical and functional completeness of items for the purpose of release is determined with all relevant developers and team members
- Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in software development methodologies, for example when the requirements for formal control of software products and documentation are identified and implemented
- Estimating skills for use across a range of predictable project contexts in relation to either varied or highly specific functions, for example when the development and maintenance of records and status reports required to show the history of baselines and their links to back-ups are documented
- Function point analysis skills for use across a range of predictable project contexts in relation to either varied or highly specific functions, for example when the configuration management is integrated into general project management processes for monitoring and control purposes

UNIT	ICAITB076B Implement configuration management
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Resources

To demonstrate competence the candidate will require access to:

- Configuration tools
- Evaluation criteria
- A process for approval of change requests
- Templates for status reports

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to deal with configuration control points and monitoring the status of the software.

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	1	2	2	2

UNIT	ICAITB135A Create a simple mark-up language document to specification
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to design, create and save a simple mark-up language document using a mark-up language using a text editor rather than a code generator
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RELATED COMPETENCY STANDARDS	<p>The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.</p> <p>This unit is recommended as an underpinning skill for ICAITB137A Produce basic client side script for dynamic web pages</p>
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ELEMENT	PERFORMANCE CRITERIA
1. Determine document usage and structure	<ol style="list-style-type: none"> 1. Identify the uses of the document and the audience 2. Determine appropriate mark-up language based on document uses and audience 3. Design document structure based on user requirements 4. Develop document map/diagram and confirm with client
2. Create document structure with chosen mark-up language	<ol style="list-style-type: none"> 1. Create the head and title of the document in the user agreed style 2. Create the body of the document and add text and paragraphs as required 3. Add spaces between as required to make document easily readable 4. Add special symbols so that they will be displayed correctly across platforms 5. Save document using a name and text case useful to the documents purpose
3. Format document and import objects	<ol style="list-style-type: none"> 1. Change format of text, (colour, bolding, size, text spacing) using the chosen mark-up language, to meet user presentation requirements 2. Determine suitable background colour or image according to user requirements (company logos, company style guides) 3. Position elements on the pages for preferred look using chosen mark-up language 4. Indent text and create lists (ordered, unordered and nested) using chosen mark-up language 5. Insert images, optimise (GIF, JPEG, may include animated images) and format to document requirements (size, convert to browser safe colours) 6. Wrap text around images using chosen mark-up language or add space around images 7. Scale and align images for document formatting purposes

UNIT	
ICAITB135A Create a simple mark-up language document to specification	
4. Create tables	<ol style="list-style-type: none"> 1. Create a table for the page content base on document map/diagram and position on page 2. Set the width of table and format cells (span across columns, aligning contents, space in and around cells, colour) as required by document map/diagram 3. Create borders of table and any nested tables using chosen mark-up language
5. Generate links	<ol style="list-style-type: none"> 1. Create links (text and image) and anchors within document 2. Create link to an FTP site to easily transfer files 3. Divide an image into click able regions using chosen mark-up language
6. Test and save document	<ol style="list-style-type: none"> 1. Test links, colours and formatting across different platforms 2. Validate the code and remove any redundant tags and code 3. Ensure document format remains consistent across different platforms/browsers 4. Reduce display time of document for ease of use 5. Save document in appropriate folder/directory for user access

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Mark-up language	may include but are not limited to HTML, DHTML, XHTML
Document	may include online documents such as web pages, documents for CD Rom, Electronic publishing documents
Software	variables may include but are not limited to: text editors such as Word pad, Notepad; commercial software applications; Dreamweaver, Homesite, Frontpage may be used as long as the code generation is not automated by these applications
Keyboarding	Speed will vary according to different organisational requirements and different job roles within an organisation. The keyboard technique will be in line with OHS requirements for safe use of keyboards
Organisational	variables may include but are not limited to: personal use of emails and internet access, content of emails, downloading information and accessing particular sites
Operating Systems	Command line and Graphical User Interface
Disks	may include but are not limited to: diskettes, CDs, zip disks
Cultural understanding	<p>Cultural understanding requires the capacity to apply an understanding of cultures when carrying out workplace tasks, including commitment to organisational goals such as quality, safety, efficiency, teamwork, security, environmental protection, customer service and personal development, and interacting with people from widely different backgrounds and cultures in the achievement of common work goals.</p> <ul style="list-style-type: none"> • Carries out established processes • Operates in accordance with existing company and statutory requirements • Makes judgements of quality using given criteria

UNIT

ICAITB135A Create a simple mark-up language document to specification

Workplace environment

May involve a business involved in a total organisational change, a systems only change, a business improvement process, an e-commerce solution involving the total organisation or part of the organisation

Documentation and Reporting

Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach, information gathering processes may have associated templates

Standards and procedures

Will vary from formal procedures that must be adhered to with check points and sign offs with documented procedures and templates, implementation of financial control mechanisms, communication with stakeholders, dispute resolution and modification procedures, processes for determining size and cost

OH and S Standards

As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency; Occupational Health and Safety guidelines related to use of screen based equipment, computing equipment and peripherals, and ergonomic work stations; security procedures; customisation requirements

EVIDENCE GUIDE

Critical aspects of evidence

Assessment must confirm the ability to design, create and save a simple mark-up language document using a mark-up language without the automated generation of code

Interdependent assessment of units

The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and it is recommended that it be assessed in a holistic manner with the technical/ support units.

Underpinning skills and knowledge**Underpinning knowledge**

- General OH&S principles and responsibilities
- Organisational benchmarks for keyboarding and for safety purposes
- Demonstrate some relevant theoretical knowledge of SGML and the associated standards
- Demonstrate some relevant theoretical knowledge of open platforms
- Demonstrate some relevant theoretical knowledge of copyright, ethics and privacy

Underpinning skills

- Basic analysis in relation to a limited range of routine areas
- Basic design skills to apply to known solutions to a variety of predictable problems
- Problem solving skills in known areas during normal routine
- Reading and writing at a level where basic workplace documents are understood
- Communication is clear and precise

Resources

Competency can be demonstrated in a simulated environment. Peers and supervisors for obtaining information on the extent and quality of the contribution made.

Candidate will need access to more than one browser/ platform to test for consistency.

To demonstrate this unit of competence the candidate will require access to documents detailing:

- Organisational style guide/ policy
- User requirements

Assessment of this unit of competence could include review of documents developed by the candidate. Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

Consistency

Competence in this unit may be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulation must reflect workplace practices

UNIT **ICAITB135A Create a simple mark-up language document to specification**

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of options to be applied.

An individual demonstrating these competencies would be able to:

- demonstrate some relevant theoretical knowledge; apply a range of well developed skills;
- apply known solutions to a variety of predictable problems; perform processes that require a range of well developed skills where some discretion and judgement is required;
- interpret available information, using discretion and judgement;
- take responsibility for ones own outputs in work and learning;
- and take limited responsibility for the output of others.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
1	1	1	Nil	Nil	1	1

UNIT	ICAITB136A Use SQL to create database structures and manipulate data
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to use a structured query language to create and define database structures in a relational database
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some may include: ICAITB060B Identify physical database requirements, ICAITB061B Monitor physical database implementation, ICAITB062B Perform data conversion, ICAITB063B Monitor data conversion, ICAITT083B Develop and conduct client acceptance test
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ELEMENT	PERFORMANCE CRITERIA
1. Execute a SQL statement to access and retrieve data	<ol style="list-style-type: none"> 1. Use various criteria to selectively choose data for retrieval based on functionality and scope requirements 2. Broaden the select statement query to include additional information by aggregating data based on functionality and scope requirements and business requirements 3. Employ the join and outer join capabilities in a select statement to draw on information from a range of tables 4. Use arithmetic expressions with precedence and parentheses to change the way data is displayed 5. Identify the structure of tables contained in database based on functionality and scope requirements
2. Perform SQL statement to limit and sort rows retrieved by a query	<ol style="list-style-type: none"> 1. Select data and change the order of rows displayed based on functionality requirements 2. Restrict rows using the like and where clauses based on functionality and scope requirements 3. Sort rows in a range of different orders (order by, descending) based on functionality requirements
3. Perform SQL functions	<ol style="list-style-type: none"> 1. Create queries that require numeric, character and date functions 2. Perform calculations on data and modify individual data items as necessary 3. Manipulate output for groups of data using group functions as per information requirements 4. Convert column datatypes as per information requirements 5. Control transactions to ensure data currency in relation to access rights

UNIT	ICAITB136A Use SQL to create database structures and manipulate data
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4. Execute create table statement	<ol style="list-style-type: none"> 1. Create table identifying number of columns, datatypes and any constraints in line with business information requirements 2. Select unique table name following naming conventions 3. Insert data into the table ensuring values match specified column names 4. Insert rows in to table according to information requirements 5. Update or change records that match a specified criteria using the update statement 6. Modify columns (width, number of columns) by using the alter table statement inline with information requirements 7. Delete records or rows from a table as per information requirements using the delete statement 8. View data in data dictionary view 9. Delete an entire table using the drop table statement once the table and records are no longer required
5. Create and run sub-queries	<ol style="list-style-type: none"> 1. Construct single row and multiple sub-queries that provides the most efficient access to required information 2. Create a sub-query to question values based on unknown criteria 3. Build a sub-query to determine values existing in one set of data and not in another 4. Write a multiple column sub-query to retrieve required valid information
6. Create views	<ol style="list-style-type: none"> 1. Create a views with and without a check constraints depending on requirements 2. Retrieve, insert, update and delete data through a view 3. Ensure view read consistency of data at all times 4. Ensure there is no delay between readers and writers (readers do not wait for writers and vis versa) 5. Check access privileges for the view and determine whether DML operations should be denied 6. Drop a view to remove the view definition from database

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Databases	may include but are not limited to Oracle, Sybase, Microsoft SQL Server, Access connected to a SQL server, Ingres, DB2, Informix, mSQL, MySQL, SQL Server etc
SQL	may include proprietary extensions

UNIT	ICAITB136A Use SQL to create database structures and manipulate data
Information requirements	variables may include but are not limited to information identify through modelling data processes and objects, business information needs will vary according to specific business needs and type of business
IT components	Can include hardware, software and communications packages
Workplace environment	May involve a business involved in a total organisational change, a systems only change, a business improvement process, an e-commerce solution involving the total organisation or part of the organisation
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach, information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Standards and procedures	Will vary from formal procedures that must be adhered to with check points and sign offs with documented procedures and templates, implementation of financial control mechanisms, communication with stakeholders, dispute resolution and modification procedures, processes for determining size and cost
Cultural understanding	<p>Cultural understanding requires the capacity to apply an understanding of cultures when carrying out workplace tasks, including commitment to organisational goals such as quality, safety, efficiency, teamwork, security, environmental protection, customer service and personal development, and interacting with people from widely different backgrounds and cultures in the achievement of common work goals.</p> <ul style="list-style-type: none"> • Manages processes • Selects the criteria for the evaluation process

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to use a structured query language to create database structures, store, retrieve and manipulate data in a relational database	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and it is recommended that it be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	Underpinning knowledge <ul style="list-style-type: none"> • Demonstrate understanding of a broad knowledge base incorporating some theoretical concepts of data modelling structures • Demonstrate understanding of a broad knowledge base incorporating some theoretical concepts of OO modelling structures • OO data model particularly in relation to developing a prototype • Data analysis particularly in determining data types and data structures and query and report design • Run time facilities in relation to implementing live database • DBMS fundamentals in relation to overall unit of competence 	Underpinning skills <ul style="list-style-type: none"> • Analysis skills to determine data objects required, data structures, business requirements • Data modelling skills particularly during the design and development phases • Report, queries and view development using analytical and evaluation skills

UNIT	ICAITB136A Use SQL to create database structures and manipulate data
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Resources

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills

To demonstrate this unit of competence the candidate will require access to documents detailing:

- the clients requirements,
- functionality and scope requirements,
- access requirements and policy,
- security policy,
- naming standards.

In the context of accessing the client and business information listed above, the candidate should also source reports or outcomes from the appropriate business analysis process for the purpose of demonstrating competence in this unit

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

Consistency

Competence in this unit may be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the ongoing implementation and monitoring aspects of this unit.

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for ones own outputs in relation to specified quality standards;
- and take limited responsibility for the quantity and quality of the output of others.

Key Competencies						
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Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	1	2	2	2	2	3

UNIT	ICAITB137A Produce basic client side script for dynamic web pages
FIELD	Build
DESCRIPTION	This unit defines the competency required to produce client side script for dynamic webpages
RELATED COMPETENCY STANDARDS	<p>The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.</p> <p>ICAITB135A Create a simple mark-up language document to specification is recommended as an underpinning skill for this unit of competence.</p>

ELEMENT	PERFORMANCE CRITERIA
1. Construct a script using basic syntax	<ol style="list-style-type: none"> 1. Identify and develop data types, constants, operators, variables to include in web page 2. Create conditional statements to create necessary effects in web page 3. Write code to manipulate screen objects 4. Write code to perform basic mathematical and string handling operations
2. Write scripts using methods, functions and events	<ol style="list-style-type: none"> 1. Employ a range of methods to create a number of dynamic web page features (dates, time, countdown) not requiring server side extensions 2. Create scripts to implement functions 3. Utilise parameter passing and return value mechanisms 4. Use events and event handlers and write functions that respond to events
3. Create objects for dynamic web pages	<ol style="list-style-type: none"> 1. Create frames and multiple loading frames according to web page formatting requirements 2. Create scripts to manage frames (i.e. bouncing or forcing frames) 3. Create client side scripts for forms, email, postcodes etc 4. Create client side validation scripts for forms, email, postcodes etc 5. Create and load a dynamic page
4. Test scripts and debug	<ol style="list-style-type: none"> 1. Identify potential errors and rectify 2. Review for logic errors by viewing variables while script is running 3. Review error messages and debug script 4. Run script editor debugger and check on the value of variables

UNIT	ICAITB137A Produce basic client side script for dynamic web pages
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Software	variables may include but are not limited to Javascript, VB script
Visual Tools	variables may include but are not limited to Golive, Dreamweaver, Fireworks, NetObjects Fusion
Coding conventions	can include naming conventions, Commenting convention, Text formatting and indenting guidelines
Workplace environment	May involve a business involved in a total organisational change, a systems only change, a business improvement process, an e-commerce solution involving the total organisation or part of the organisation
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach, information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Cultural understanding	<p>Cultural understanding requires the capacity to apply an understanding of cultures when carrying out workplace tasks, including commitment to organisational goals such as quality, safety, efficiency, teamwork, security, environmental protection, customer service and personal development, and interacting with people from widely different backgrounds and cultures in the achievement of common work goals.</p> <ul style="list-style-type: none"> • Carries out established processes • Operates in accordance with existing company and statutory requirements • Makes judgements of quality using given criteria

EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm the ability to produce basic client server side scripts for dynamic webpages. Assessment must confirm the successful viewing of the active elements/objects a cross different platforms	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and it is recommended that it be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Demonstrate understanding of basic design principles incorporating some theoretical concepts • Demonstrate understanding of internet protocols incorporating some theoretical concepts • Demonstrate understanding of server side and client side concepts incorporating some theoretical concepts • Demonstrate understanding of different types of functions particularly when creating scripts to implement functions • Demonstrate understanding of events and event handlers particularly when creating event handlers • Demonstrate understanding of security restrictions on servers incorporating some theoretical concepts • Demonstrate understanding of SGML and the associated standards • Basic knowledge of open platforms • Demonstrate understanding of copyright, ethics and privacy incorporating some theoretical concepts 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • ICAITB135A Create a simple mark-up language document to specification • Basic design skills for the successful viewing of the active elements/objects a cross different platforms • Debugging and error handling techniques for the successful viewing of the active elements/objects a cross different platforms

UNIT

ICAITB137A Produce basic client side script for dynamic web pages

Resources	<p>Competency can be demonstrated in a simulated environment. Peers and supervisors for obtaining information on the extent and quality of the contribution made.</p> <p>Candidate will need access to more than one browser/ platform to test for consistency.</p> <p>To demonstrate this unit of competence the candidate will require access to documents detailing:</p> <ul style="list-style-type: none"> • Organisational style guide/ policy • User requirements <p>Assessment of this unit of competence could include review of documents developed by the candidate. Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit may be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the ongoing implementation and monitoring aspects of this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p> <p>Applications involve responsibility for, and limited organisation of, others.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating some theoretical concepts; • apply solutions to a defined range of unpredictable problems; • identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas; • identify, analyse and evaluate information from a variety of sources; • take responsibility for ones own outputs in relation to specified quality standards; • and take limited responsibility for the quantity and quality of the output of others.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
1	1	1	1	1	1	2

UNIT	ICAITB159A Build a security shield for a network
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to build a security shield for either a VPN, a WLAN or LAN.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include.
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ELEMENT	PERFORMANCE CRITERIA
1. Security framework is developed	<ol style="list-style-type: none"> 1. Levels of security are determined based the current and future business needs, the business strategic plan, customer expectations, the perceived value of information to competitors 2. Assets at risk are identified in accordance with enterprise security plan 3. System features are reviewed and evaluated for security risks as part of risk analysis 4. Security perimeters are identified within client/server system as required by security plan 5. Framework for secure electronic communications infrastructure (SECI) is developed for consideration 6. Hardware and software requirements are determined and prioritised according to security plan 7. Cost benefit analysis for proposed security shield is completed according to business requirements 8. Framework components are finalised 9. Related policies and procedures are developed and distributed to users as required according to business requirements
2. Security framework is implemented	<ol style="list-style-type: none"> 1. Physical security perimeter is established as required through use of secure sites and required components as required by enterprise security plan 2. System security perimeter is established as required by security plan and chosen technology 3. Application security perimeter is established as required through server configuration 4. Data security perimeter is established; through application access on the client / server system, wireless and use of VPN solutions as required 5. Users are briefed on the security shield and their responsibilities according to enterprise security plan
3. Security framework is tested and monitored	<ol style="list-style-type: none"> 1. A program of selective independent audits and penetration tests are developed and executed 2. Performance benchmarks are determined against enterprise security plan 3. Audit and test programs are implemented with results recorded, analysed and reported as required. 4. Security framework changes made based on test results, if necessary

UNIT	ICAITB159A Build a security shield for a network
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Assets	data & information, intellectual property, physical assets, people, customer service / loyalty
Security Perimeters	Physical security perimeter, system security perimeter, application security perimeter, data security perimeter
Networks	May include VPN, WLAN
Security standards	<p>May include:</p> <ul style="list-style-type: none"> ▪ HB 231:2000 Information security risk management guidelines ▪ AS/NZS 4444.1:1999 Information security management - Code of practice for information security management ▪ AS/NZS 4444.2:2000 Information security management - Specification for information security management systems ▪ AS/NZS 13594:1998, Information technology - Lower layers security ▪ IEEE 802.11 Protocol standard for secure wireless Local Area Network products.
Security protocols	<p>May include:</p> <ul style="list-style-type: none"> ▪ Secure Multipurpose Internet Mail Extensions ▪ Secure Socket Layer & Transport Layer Security ▪ IP Security Protocol ▪ (Domain Name System Security Extensions) ▪ (Data Over Cable Service Interface Specification) ▪ (Point-to-Point Network Tunnelling Protocol) ▪ (Secure Electronic Transactions) ▪ (Secure Shell)
Secure Electronic Communications Infrastructure (SECI)	Enterprise email strategy and capabilities; cross platform authentication needs; application integration security issues; message confidentiality, integrity & non-repudiation requirements; e-commerce requirements
Encryption	Built in or third party products may be used in organisations who have high risk data. RSA public key, PGP (Pretty Good Privacy), symmetric ciphers, asymmetric public-key ciphers, sniffers, PKI, SSH, DESlogin, PKZIP, Secure Socket Layer (SSL), Digital signatures
Software	Most likely to be packaged software but can be supplied from many varying vendors and can include security, audit, virus checking and encryption modules.
Firewalls	<p>May be part of router configuration and/or proxy server. Many vendor products are available such as:</p> <ul style="list-style-type: none"> • Cisco Centri • ConSeal • EMD Armor • Check Point FireWall-1 • CyberwallPLUS • SATAN

UNIT	ICAITB159A Build a security shield for a network
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Commercial and business requirements	<ul style="list-style-type: none"> Backup, storage and recovery of data, access to internal network, passwords/logons, firewalls, hacking confidentiality, integrity, availability
System	data bases, applications, servers, operating systems, gateways, application service provider and ISP
Perimeter Functions	Identification, authentication, access control, auditing, surveillance
Framework components	Trusted systems with C and B assurance levels; trusted hardware and operating systems (OSs) at selective desktops, servers, network points and mainframes; OSs capable of providing access control, I&A, and audit services; firewall technologies; multi platform directory services supporting relevant standards; deployment of PKI, CA and key management services; support for generalised security services interfaces, personnel security
Policies	Incident response procedures, network intrusion detection systems, forensic procedures, training and awareness raising policy
VPN Solutions	Complete and dynamic VPN solutions may include strong authentication, strong encryption, remote access integration, secure tunnelling, IP routing, firewalls, scalability and redundancy
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm the ability to develop, implement and maintain a network security shield for either VPN, LANs or WLANs
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT

ICAITB159A Build a security shield for a network

Underpinning skills and knowledge

Underpinning knowledge:

- Security threats including eavesdropping, data interception, data corruption, data falsification, authentication issues
- Organisational issues surrounding security
- Security perimeters and their functions
- Types of VPNs including site to site, user to site internet traffic and extranets
- The function and operation of virtual private networking (VPN) concepts including encryption, firewalls, packet tunnelling and authentication
- Common VPN issues including quality of service considerations (QOS), bandwidth, dynamic security environment
- Network protocols and operating systems
- Cryptographic check summing
- LAN and WAN solutions
- TCP/IP protocols and applications
- Auditing and penetration testing techniques
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles.
- EDI security specifications such as S/MIME and the use of XML/EDI
- Screened subnets
- Virus detection software
- Audit and intrusion detection systems
- Australian Computer Society Code Of Ethics

Underpinning skills:

- Ability to develop enterprise policies and procedures
- Ability to undertake a network security risk assessment
- The design, development and implementation of various VPN solutions
- Implementing LAN and WAN solutions
- Cost benefit analysis

UNIT	ICAITB159A Build a security shield for a network
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Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Network technical requirements • Network infrastructure including servers and security hardware and software <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate the testing and analysis aspects of this unit.</p>
Context	<p>Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.</p> <p>The self directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas; • analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations; • evaluate information using it to forecast for planning or research purposes; • take responsibility for own outputs in relation to broad quantity and quality parameters; • and take limited responsibility for the achievement of group outcomes.

Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITB160A Build and configure a server
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to build, configure and test a server
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Server specification is confirmed	<ol style="list-style-type: none"> 1. Network operating system, server application and server design are confirmed with customer 2. Product and vendor architecture and equipment specifications are identified according to customer requirements 3. Time, technology and resource constraints are identified against business needs and budget 4. Detailed task list is created identifying breakdown of the logical stages of work required
2. Server is built	<ol style="list-style-type: none"> 1. Server hardware is sourced as required by server specification and technical requirements 2. Order and delivery of hardware products is overseen if required 3. Service providers are identified and co-ordinated as required 4. Server is built in accordance with server specification
3. Server is configured and tested	<ol style="list-style-type: none"> 1. Server is configured as required by technical requirements 2. Scope and applicability of the test is defined against technical requirements 3. Test plan is developed with reference to resources and network impact 4. Test is executed according to test plan 5. Error report is analysed and changes made as required 6. Test any required changes or additions

UNIT

ICAITB160A Build and configure a server

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Server type	<ul style="list-style-type: none"> • Messaging server, • web server, • database server, • file and print servers, • management and directory servers, • internet connectivity servers, • application servers, • all in-one-systems
Service providers	May Include vendors, application systems integrator and cabling specialists.
Server Components	<ul style="list-style-type: none"> • processors, • memory, • storage solutions, • RAID, • communication, • chassis design, • power analysis, • server appliances, • hot plug peripherals, • clustering, • FRB

UNIT	ICAITB160A Build and configure a server
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E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to build, configure and test a server according to business needs and technical requirements	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> ▪ Features of a range of hardware components including: <ul style="list-style-type: none"> single and multiple processors; memory (SD and RD RAM, memory leads, bandwidth); chassis (size, thermals, EMI specifications, security, drive bays, cable management, ease of maintenance, LED / LCD panels, aesthetics) disk drives and internal / external storage devices (RAID solutions and functionality, drive formats, backup systems – DAT/DLT/AIT, storage area networks (SANs); load balancers; power (supply requirements and management, protection – backup / line conditioning / surge suppression, power budgeting); hot plug peripherals (PCI expansion cards, power supplies, hard drives, fans). ancillaries (racks, keyboard, monitor, cabinets, air flow) ▪ server design and network architecture ▪ Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • assembly of computer components • use of proprietary software • project management skills • the development and conduct of testing regimes at the system and component level • liaising with vendors and service providers

UNIT	ICAITB160A Build and configure a server
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • server components • relevant tools and equipment <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence.</p>
Context	<p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p> <p>Applications involve responsibility for, and limited organisation of, others.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating some theoretical concepts; • apply solutions to a defined range of unpredictable problems; • identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas; • identify, analyse and evaluate information from a variety of sources; • take responsibility for ones own outputs in relation to specified quality standards; • and take limited responsibility for the quantity and quality of the output of others.

UNIT

ICAITB160A Build and configure a server**Key Competencies**

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	2	3	3	3

UNIT	ICAITB161A Build a document using extensible Markup Language
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to build a valid extensible markup language document and not an extensible markup language application
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
ELEMENT	PERFORMANCE CRITERIA
1. Determine documentation standards	<ol style="list-style-type: none"> 1. Documentation standards are developed according to business needs and if necessary, are compliant with relevant extensible markup language registry specifications 2. Documentation standards are compliant with the relevant Collaboration Protocol Profile Definition 3. Documentation standards support Collaboration Protocol Agreement documents
2. Define document structure	<ol style="list-style-type: none"> 1. An external or internal Document Type Definition (DTD) is chosen depending on project requirements 2. All elements, declared, empty, with data and child sequences are declared 3. Wrapping includes the correct syntax 4. Occurrences of elements are declared 5. Elements of mixed content declared 6. Attribute types and default values are declared 7. Internal and external entities are declared 8. The DTD is validated with a XML parser to ensure no errors

UNIT	ICAITB161A Build a document using extensible markup language
3. Confirm validity	<ol style="list-style-type: none"> 1. The extensible markup language declaration statement is inserted in document 2. Create start and end tags to create elements 3. All tags are closed 4. Attributes are quoted and assigned to elements according to information requirements 5. All elements are cleanly nested 6. Proper syntax and well formed-ness of elements confirmed
4. Employ extensible markup language object model	<ol style="list-style-type: none"> 1. Elements are described as objects 2. The object roles and relationships are defined 3. Reference the document object through it's ID value 4. Through the document object processes and methods access the relevant child node objects 5. Manipulate objects within the document according to requirements 6. Combine and/or reuse objects and instances in the document 7. Persist extensible markup language DOM tree information
5. Finalise and test document	<ol style="list-style-type: none"> 1. General entities are defined for the document in DOCTYPE definition 2. Character data (CDATA) sections are added to the document structure 3. Comments are added and clearly detailed 4. Final document is viewed with a extensible markup language parser 5. Information can be inputted into the document 6. Valid information can be pulled out of document and meets the needs of the business

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Extensible markup languages

Include XML, ebXML and other emerging extensible markup languages

UNIT	ICAITB161A Build a document using extensible markup language
Editors and authoring tools	<ul style="list-style-type: none"> • Easy XML 1.0 • EXml Editor • QuickSilver 1.0 XML Suite • XML Bean Suite • XML Pro 2.0
Document Type Definition	For this unit the DTD is meant to be basic with six or so basic elements. It can be internal or external
Well formed and valid XML	Well-formed XML relies on correct syntax. Valid XML conforms to Document Type Definition (DTD) rules
Standards	<p>W3C DOM specification, Extensible Markup Language (XML) 1.0 (Second Edition), W3C XML instances, W3C XML DTDs, W3C XML DTDs, ISO SGML meta-DTDs</p> <ul style="list-style-type: none"> ▪ ISO/IEC 14662: Open-edi Reference Model ▪ ISO 11179/3 Metadata Repository ▪ ISO 10646: Character Encoding ▪ ISO 8601:2000 Date/Time/Number Data typing ▪ OASIS Registry/Repository Technical Specification ▪ RFC 2119: Keywords for use in RFC's to Indicate Requirement Levels ▪ UN/CEFACT Modelling Methodology (UMM) ▪ W3C XML v1.0 Second Edition Specification ▪ ebXML Requirements Specification Version 1.0 ▪ ebXML Technical Architecture Specification ▪ ebXML Repository and Registry Specification ▪ ebXML Transport, Routing and Packaging Specification <p>Standards are being introduced on a regular basis it is worthwhile monitoring the following organisations in relation to XML standards Organisation for the Advancement of Structured Information Standards, ISO and IEEE to web-oriented groups like IETF and W3C</p>
Document authoring tools	<ul style="list-style-type: none"> • Adobe - Framemaker plus SGML • Arbortext • Inso • Macromedia – Dreamweaver • Microsoft XML Notepad • Softquad

UNIT

ICAITB161A Build a document using extensible markup language

XML products

Internet Explorer 5, XEDI Translator, NetBiz Reporter for Cisco Networks, eXcelon Application Development Environment 2.0, eXcelon Stylus, XML Spy 3.0, ExeterXML E-Commerce Engine,

B2B XML resources

- Sequoia XML Portal Server
- ExeterXML Server
- Total-e-B2B Edition
- Total-e-Server 7.1
- XML Connect
- Xtensible Shopping Bag 1.0

Content Management Systems

- BladeRunner Web
- Content@
- DynaBase 4.0
- Epic 4.1
- POET Content Management Suite (CMS)
- Internet Publishing System (IPS)

Conversion tools

- ActiveSAX
- Alchemy XML
- XMI Toolkit 1.0

Database Systems

- ER/Studio 4.2
- SQLLog
- Virtuoso 2.01

Parsers

On-line parsers, James Clark's expat parser, Java-based Validating XML Parser, Microsoft XML Parser in C++, XML Parser written in Python, XML Parser written in JavaScript, SiRPAC, XML parser written in Perl

UNIT	
ICAITB161A Build a document using extensible markup language	
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
EVIDENCE GUIDE	
Critical aspects of evidence	Assessment must confirm the ability to produce a valid XML document
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT

ICAITB161A Build a document using extensible markup language

Underpinning skills and knowledge

Underpinning knowledge:

- SGML
- Unified Modelling Language
- Introductory knowledge of Business Process and Information Modelling
- UN/CEFACT Modelling Methodology
- Meta modelling
- XLT and XSLT
- Document Object Model
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles.
- Web technologies
- Australian Computer Society Code Of Ethics

Underpinning skills:

- HTML
- Design Skills
- Analysis skills
- Data collection and dissemination techniques

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- XML parser or IE5
- An XML authoring tool

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence

UNIT	ICAITB161A Build a document using extensible markup language
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Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for ones own outputs in relation to specified quality standards;
- and take limited responsibility for the quantity and quality of the output of others.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	1	3	3	3

UNIT	ICAITB162A Configure a Payment Gateway
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to install and test a payment gateway
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Server and e-business site is prepared	<ol style="list-style-type: none"> 1. Payment method is chosen with reference to business requirements and customer expectations 2. Web pages are configured to handle requests and integrated with the database for each transaction 3. Merchant account information is obtained from the relevant financial institution 4. Appropriate security systems are put in place to protect the database
2. Payment gateway is installed	<ol style="list-style-type: none"> 1. Payment software is tested and evaluated to ensure suitability and compatibility with organisational systems and to meet customer needs 2. Chosen payment software is installed 3. Online merchant account is established 4. Payment gateway is configured to accept the appropriate payment methods and transaction types according the business requirements
3. Payment gateway is tested	<ol style="list-style-type: none"> 1. Transaction server is checked for functionality against expected performance benchmarks 2. Gateway is tested using relevant transaction types 3. Transactions are verified by using the administrative functions of chosen payment software

UNIT	ICAITB162A Configure a Payment Gateway
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

International currency	The merchant account and payment software must be tested to ensure the configuration will cater for both local and international currencies
Payment options	May be offline, online or a combination of both. May include the use of credit cards, online cheques or digital cash, and may provide for local and or international transactions.
Operating system	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware
Servers	<p>One or more servers depending on size and functionality of website and may include:</p> <ul style="list-style-type: none"> • BEA Weblogic Servers, • Apache HTTP Server, • IBM VisualAge and WebSphere, • Microsoft-Internet-Information-Server, Microsoft-IIS, Microsoft-IIS-W, Microsoft-PWS-95, & Microsoft-PWS • Windows 2000 Server, • NetDynamics, • Lotus Domino • Netscape Enterprise Server, Netscape-FastTrack, Netscape-Commerce • Sun Micro Systems iPlanet Web Server, • iPlanet-Enterprise • Sun Micro Systems Java Web Server • Email Servers; • File & Print Servers; • FTP Servers; • Proxy Servers

UNIT	ICAITB162A Configure a Payment Gateway
Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.
Security standards	Reports meet the specific output requirements and are presented in a logical and accessible manner. May include: HB 231:2000 Information security risk management guidelines AS/NZS 4444.1:1999 Information security management - Code of practice for information security management AS/NZS 4444.2:2000 Information security management - Specification for information security management systems
Security protocols	May include: Secure Multipurpose Internet Mail Extensions Secure Socket Layer & Transport Layer Security IP Security Protocol (Domain Name System Security Extensions) (Data Over Cable Service Interface Specification) IEEE 802.11 Protocol standard for secure wireless Local Area Network products. (Point-to-Point Network Tunnelling Protocol) (Secure Electronic Transactions) (Secure Shell)
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Web development standards	Web Content Accessibility Guidelines 1.0 (WCAG) Authoring Tool Accessibility Guidelines 1.0 (ATAG) User Agent Accessibility Guidelines 1.0 (UAAG)
EVIDENCE GUIDE	
Critical aspects of evidence	Assessment must confirm the ability to install, configure and test a payment gateway
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT

ICAITB162A Configure a Payment Gateway

Underpinning skills and knowledge**Underpinning knowledge:**

- a number of payment software products
- the relative advantages and disadvantages of credit card, digital cash and online cheque systems
- encryption
- implementing client side shopping carts through active server pages (ASP) and interfacing with databases with ActiveX Data Objects (ADO)
- forwarding order data by email
- introductory knowledge of finance systems
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles.
- globally unique ID (GUID)
- batching verification
- Electronic Commerce Modelling Language
- Australian Computer Society Code Of Ethics

Underpinning skills:

- setting up a merchant ID (MID) and a terminal ID (TID).
- Scripting

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- a website
- payment software

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence

UNIT

ICAITB162A Configure a Payment Gateway

Context

Breath, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.

The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of specialised knowledge with depth in some areas;
- analyse, diagnose, design and execute judgements across a broad range of technical or management functions;
- demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills
- generate ideas through the analysis of information and concepts at an abstract level;
- demonstrate accountability for personal outputs within broad parameters; and
- demonstrate accountability for group outcomes within broad parameters.

Key Competencies

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	3	3

UNIT	ICAITB163A Create a Common Gateway Interface (CGI) script
FIELD	Build
DESCRIPTION	This unit defines the competency required to create Perl scripts and up load scripts to a server
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.

ELEMENT	PERFORMANCE CRITERIA
1. Create a CGI form	<ol style="list-style-type: none"> 1. The form elements are selected, radio buttons, selection and check boxes as required 2. The opening form tag specifies the required action attribute and specifies a protocol or method for sending the data (GET or POST) 3. The URL of your script is determined and used in the action attribute 4. Form elements are contained in the form region 5. Each input item has attributes, such as type, display characteristics, variable names and values are specified 6. Names are different from possible user supplied information
2. Create a Perl CGI script	<ol style="list-style-type: none"> 1. The path to the <code>/cgi-bin</code> directory on the server is specified and correct naming conventions used for the script 2. What permissions to set for the script is determined 3. If writing files is required, determine file permissions 4. The print command is scripted specifying content type 5. The correct syntax is used to define Perl functions 6. The correct syntax is applied to use Perl functions 7. Perl variables are named and correctly distinguished (scalar, array or an associative array)

UNIT	ICAITB163A Create a Common Gateway Interface (CGI) script
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3. Upload and test script	<ol style="list-style-type: none"> 1. Upload script in ASCII format onto server using an FTP program to the to the /cgi-bin directory 2. Permissions for CGI script are set before running script 3. The URL is added to the action attribute of the form 4. Script is tested to ensure expected functioning 5. Script retrieves required information from a SQL database 6. Script is activated by submitting form to test
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Language	<ul style="list-style-type: none"> • Languages for cgi can include: • C/C++ • PERL • Visual Basic • AppleScript • This unit describes the competency for a cgi using the scripting language PERL, THOUGH OTHER LANGUAGES CAN BE SUBSTITUTED
Server access	<ul style="list-style-type: none"> • Telnet to a Unix server or • Telnet-only access on another server • Ability to FTP documents to a server

UNIT	ICAITB163A Create a Common Gateway Interface (CGI) script
Servers	<p>One or more servers depending on size and functionality of website and may include:</p> <ul style="list-style-type: none"> • BEA Weblogic Servers, • Apache HTTP Server, • IBM VisualAge and WebSphere, • Microsoft-Internet-Information-Server, Microsoft-IIS, Microsoft-IIS-W, Microsoft-PWS-95, & Microsoft-PWS • Windows 2000 Server, • NetDynamics, • Lotus Domino • Netscape Enterprise Server, Netscape-FastTrack, Netscape-Commerce • Sun Micro Systems iPlanet Web Server, • iPlanet-Enterprise • Sun Micro Systems Java Web Server • Email Servers; • File & Print Servers; • FTP Servers; • Proxy Servers
Form elements	Text box, scrollable text box, on/off flags, single selection buttons, selection lists, submit and reset, hidden form tags
CGI packages	The AA archie gateway, The PERL CGI-lib, CGI.pm, TCL argument processor.
CGI specifications	CGI/1.1 Specification, CGI/1.2 Specification
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

UNIT	ICAITB163A Create a Common Gateway Interface (CGI) script
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File Transfer Protocol clients	<p>Variables may include, but are not limited to, a wide variety of commercial available tools such as:</p> <ul style="list-style-type: none"> • AxY FTP for Windows, Linux and Unix • Cftp for Unix • Curl for Unix supports FTP, HTTP, Telnet, etc • GFTP with GUI for Unix supports FTP, HTTP and SSH • Lftp command line FTP for Solaris, IRIX, HP-UX, Digital UNIX and Linux • Lukemftp command-line FTP supports FTP and HTTP URLs • NcFTP Client command-line FTP and HTTP URLs for Solaris, FreeBSD, AIX and Linux • MS Frontpage, • Win 95/NT File sharing, • MS Internet Explorer graphical FTP
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EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to create Perl scripts, include Perl packages and upload scripts	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Perl • Security issues • Web servers • CGI 1.1/ 1.2 specifications • Security issues surrounding CGI • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles. • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • HTML • Basic UNIX commands • Using FTP Clients

UNIT

ICAITB163A Create a Common Gateway Interface (CGI) script

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will ideally need access to:

- Webservers
- E-business website
- FTP or file transfer client software
- Server access

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence

Context

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for ones own outputs in relation to specified quality standards;
- and take limited responsibility for the quantity and quality of the output of others.

UNIT	ICAITB163A Create a Common Gateway Interface (CGI) script
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Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	1	2	3	3

UNIT	ICAITB164A Create a Data Warehouse
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to develop a data warehouse within an organisation
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Required data and sources are identified	<ol style="list-style-type: none"> 1. Required enterprise data is identified with reference to enterprise knowledge management strategy 2. Subject areas are identified with reference to business processes and required enterprise data 3. The operational data is explored and warehouse sources defined 4. Warehouse source specifications are developed with reference to existing data tables and files
2. Warehouse steps and processes are determined	<ol style="list-style-type: none"> 1. Warehouse targets are developed with reference to business processes and required enterprise data 2. Warehouse agents are identified according to system configuration 3. Steps and processes are identified and developed as required
3. Warehouse features are designed	<ol style="list-style-type: none"> 1. Warehouse user interface is designed and developed with reference to principals for user interface design 2. Warehouse security strategy is developed and implemented in accordance with enterprise security plan 3. Dimension tables and fact tables are identified with reference to required enterprise data 4. Warehouse information catalogue is developed with reference to enterprise knowledge management strategy
4. Data warehouse is tested and implemented	<ol style="list-style-type: none"> 1. Data warehouse is tested against business requirements to ensure any iterations meet business objectives 2. Changes to business processes are recommended as required to ensure compatibility with data warehouse and knowledge management strategy 3. Data warehouse is implemented as required and signed off

UNIT	ICAITB164A Create a Data Warehouse
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Warehouse sources	Relational or non-relational (table, view or file) that has connectivity to the warehouse
Warehouse Agents	Can be local or remote and are available on the Windows NT, AIX, OS/2, OS/390, OS/400, Sun Solaris as they use Open Database Connectivity (ODBC) drivers or DB2 CLI to communicate with different databases. The number of agents used depends on the existing connectivity configuration and the planned volume of data
Steps and Processes	Can be configured to run daily, weekly or as required by business needs
Program Steps	There are several types of program steps: DB2, Visual Warehouse 5.2, OLAP Server Programs, File Programs, and Replication. These steps run predefined programs and utilities.
Data	<p>variables may include but are not limited to: established files, data from mixed sources and applications</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to data were considered and appropriate choices made given the business specifications and client requirements.</p> <p>Ask questions about different types of data other than the data used, to ensure the application of knowledge and skills to other contexts.</p>
Databases	<p>may include but are not limited to</p> <ul style="list-style-type: none"> • Oracle, • Sybase, • Microsoft SQL Server, • Ingres, • DB2, • Informix
Information requirements	variables may include but are not limited to information identified through modelling data processes and objects, business information needs will vary according to specific business needs and type of business
Workplace environment	May involve a business involved in a total organisational change, a systems only change, a business improvement process, an e-business solution involving the total organisation or part of the organisation
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach, information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency

UNIT	
ICAITB164A Create a Data Warehouse	
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Standards and procedures	Will vary from formal procedures that must be adhered to with check points and sign offs with documented procedures and templates, implementation of financial control mechanisms, communication with stakeholders, dispute resolution and modification procedures, processes for determining size and cost

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to propose a data warehouse model that reflect current and future business requirements and the business knowledge management strategy
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT	ICAITB164A Create a Data Warehouse	
<p>Underpinning skills and knowledge</p>	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • business operating systems in relation to data sources • decision support systems in relation to knowledge management strategies • the function and features of data warehousing and data mining • the function and features of subject areas, warehouse sources, warehouse targets • the function and features of warehouse agents and agent sites • the function and features of steps and processes including transformer steps, program steps, SQL steps and user defined program steps • the function and features of dimension tables and fact tables • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles. • system security as it applies to data warehouses in relation to enterprise security plan • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • the use of SQL • cost benefit analysis • data gathering and analysis skills • project management • business analysis • user interface design • modelling of steps and processes • development of warehouse source specifications
<p>Resources</p>	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • a LAN with a relational database management system, • internet connectivity tools, • computers configurable as information servers, • proxy server software, • specialised internet security software, • business requirements • enterprise knowledge management strategy <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>	

UNIT	ICAITB164A Create a Data Warehouse
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Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency.

Context

Breadth, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.

The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgment in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of specialised knowledge with depth in some areas;
- analyse, diagnose, design and execute judgements across a broad range of technical or management functions;
- demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills
- generate ideas through the analysis of information and concepts at an abstract level;
- demonstrate accountability for personal outputs within broad parameters; and
- demonstrate accountability for group outcomes within broad parameters.

Key Competencies						
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Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITB165A Create dynamic pages
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to build active or dynamic web pages
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Prepare the technical environment	<ol style="list-style-type: none"> 1. Development environment and server software is available and accessible 2. Access to corporate or networked server is in accordance with organisational policy and procedures 3. A virtual directory is created and saved in the correct directory for server access
2. Create dynamic pages	<ol style="list-style-type: none"> 1. A page is created and saved with the correct extension and stored in the correct directory /folder 2. The code is added between delimiter tags 3. Ensure comments are executed as part of the code 4. Correctly break and indent a long line of code into rows for easier reading 5. HTML tags are used to format pages and business content is added as required 6. Page is saved in correct directory and the editor is minimised 7. Access file/page through http://localhost/, the local IP address, or the full URL 8. Modifications are made as required

UNIT	ICAITB165A Create dynamic pages	
3. Add functions to dynamic pages	1.	Declare and use variables and arrays according to requirements, and if necessary variable types
	2.	Variable values, strings and constants are assigned
	3.	Functions such as, date, weekday, are called and used in formulas if required
	4.	Arguments and parameters are set
	5.	Randomised statements, integers and round functions are correctly called
	6.	String functions are formatted as required
	7.	Conditionals (If..Then Statements) are incorporated as required
4. Test and sign off dynamic pages	1.	Pages are saved to correct location on server with required extension
	2.	Pages are opened through browser and tested
	3.	Formatting and dynamic function all perform as required by the business and customers
	4.	Client signs off pages as meeting business requirements

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Languages	VBScript, Jscript, Coldfusion, Perlscript
Dynamic pages	Include data driven pages, scripted applications
Servers	Internet Information Server, Personal Web Server
Development environment	For example <ul style="list-style-type: none"> • Text file editors • HTML editors • Dreamweaver • Microsoft Visual InterDev • Drumbeat

UNIT	ICAITB165A Create dynamic pages
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E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Standards	Standards are being introduced on a regular basis it is worthwhile monitoring the following organisations in relation to XML standards Organisation for the Advancement of Structured Information Standards, ISO and IEEE to web-oriented groups like IETF and W3C, IEEE Std. 2001-1999 Web Page Engineering, The Internet Commerce Standards 1.0

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to produce dynamic web pages with a large range of functions which meet the needs of the business and their customers	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	Underpinning knowledge: <ul style="list-style-type: none"> • Programming theory • Built in objects/ functions • Internet technology • Stateless programming • Website models and technologies • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles. • Electronic Commerce Modelling Language • Australian Computer Society Code Of Ethics 	Underpinning skills: <ul style="list-style-type: none"> • HTML • Basic design skills

UNIT	ICAITB165A Create dynamic pages
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Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Server access • Development environment <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence</p>
Context	<p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p> <p>Applications involve responsibility for, and limited organisation of, others.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating some theoretical concepts; • apply solutions to a defined range of unpredictable problems; • identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas; • identify, analyse and evaluate information from a variety of sources; • take responsibility for ones own outputs in relation to specified quality standards; • and take limited responsibility for the quantity and quality of the output of others.

Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	2	3	3	3

UNIT	ICAITB166A Create utility programs
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to develop relatively small utility programs in a procedural language, an application language or a scripting language, from a requirements definition
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Code each module or program segment	<ol style="list-style-type: none"> 1. Create and use variables according to requirements 2. Write working, efficient, well-structured code for each module or program segment, utilising appropriate control structures 3. Write code to incorporate media elements where required
2. Incorporate error handling code	<ol style="list-style-type: none"> 1. Identify areas where errors may occur 2. Write code to handle errors locally or to refer to a general exception-handling routine
3. Test each module or program segment	<ol style="list-style-type: none"> 1. Design test data to exhaustively test the program module or segment against business requirements 2. Verify that the program code produced produces correct output for known input, for both normal and error conditions 3. Use the debugging facilities of the language to identify and correct errors 4. Verify with the client that the program is operating correctly, delivering correct results and meets the client requirements
4. Document the program	<ol style="list-style-type: none"> 1. Incorporate internal documentation into the program or script 2. Create external documentation required for users and maintainers 3. External documentation is understood by users and maintainers

UNIT	ICAITB166A Create utility programs
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Languages	The language used may be a standard programming language (eg. C or Java), an application framework (eg Visual Basic), a markup language (XML, DHTML) or a scripting language (eg Unix, Javascript, Perl). Note that a program written in HTML would not be considered a satisfactory assessment for this unit.
Applications/ Programs	May range from complex World Wide Web sites, with media elements to small utility programs such as stand-alone file and data conversion programs
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Standards	<p>W3C DOM specification, Extensible Markup Language (XML) 1.0 (Second Edition), W3C XML instances, W3C XML DTDs, ISO SGML meta-DTDs,</p> <p>Standards are being introduced on a regular basis it is worthwhile monitoring the following organisations in relation to XML standards Organisation for the Advancement of Structured Information Standards, ISO and IEEE to web-oriented groups like IETF and W3C</p>

EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm the ability to develop relatively small utility programs in a procedural language or an application language or a scripting language, from a requirements definition
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT

ICAITB166A Create utility programs

Underpinning skills and knowledge**Underpinning knowledge:**

- Data types and formats
- Programming constructs and control structures
- Documentation standards
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles.
- Interface between the language and the operating system
- Australian Computer Society Code Of Ethics

Underpinning skills:

- Program documentation techniques
- Error detection and handling techniques
- HTML
- Documentation skills particularly targeting users

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- A development environment
- Business requirements
- Technical requirements

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence

UNIT	ICAITB166A Create utility programs
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Context

Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of options to be applied.

An individual demonstrating these competencies would be able to:

- demonstrate some relevant theoretical knowledge; apply a range of well developed skills;
- apply known solutions to a variety of predictable problems; perform processes that require a range of well developed skills where some discretion and judgement is required;
- interpret available information, using discretion and judgement;
- take responsibility for ones own outputs in work and learning;
- and take limited responsibility for the output of others.

Key Competencies						
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Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	1	1	1	3	3	3

UNIT	ICAITB167A Create code for networking
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to create utility programs for a networking environment
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Confirm requirements of utility programs in a networking environment	<ol style="list-style-type: none"> 1. Specifications are correctly interpreted 2. Program structure and logic map prepared against requirements 3. Program planning is confirmed with user
2. Declare and assign variables and develop structured code for a networking environment	<ol style="list-style-type: none"> 1. Naming conventions are correctly employed 2. Variables are declared according to scope requirements 3. Class instances or code modules are developed as specified in requirements
3. Unit test each module within the networking environment	<ol style="list-style-type: none"> 1. Testing routines are developed to verify the code produced actually fulfils the requirements 2. Memory structures are tested for boundary violations 3. Control structures terminate
4. Identify exceptions within the networking environment	<ol style="list-style-type: none"> 1. Exception coding areas are identified 2. Exception system areas are identified 3. A global approach to exception handling is prepared
5. Determine handling and propagation procedures for exceptions within the networking environment	<ol style="list-style-type: none"> 1. An exception handling code section is developed 2. Exceptions are caught as required 3. All try and catch routines with specific traces are documented
6. Use debugging and error handling techniques within the networking environment	<ol style="list-style-type: none"> 1. Debugging techniques are disabled for live running 2. Specific documentation for error handling methods is developed 3. External error handling methods remain highly cohesive and loosely coupled

UNIT	ICAITB167A Create code for networking
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Systems environment	May involve LAN or peer to peer
Existing Architecture	Will vary from systems based around networks of mid-range machines and/or peer to peer PCs. Networks can be local, intranets, VPN, wide or based on the Internet. Vendor products and network protocols
Operating systems	May include: pSOS+ (modular real-time operating system), UNIX, real-time UNIX, VRTX, LYNX-OS, SOLARIS, LINUX, DOS, Windows, Windows NT, Windows CE
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • Bridges, 3Com, Compaq, CISCO, IBM • modems, analogue, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • File & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems, <p>Generally the larger and more expensive the equipment the less likely in-house expertise will be available and the supplier will be relied on for support.</p>

UNIT

ICAITB167A Create code for networking**EVIDENCE GUIDE****Critical aspects of evidence**

Assessment must confirm the ability to create and test utility programs developed for a networking environment

Interdependent assessment of units

The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

Underpinning skills and knowledge**Underpinning knowledge of**

- Detailed knowledge development methodologies
- Broad knowledge of the client business domain, for example when declaring variables and assigning valuables and when debugging and error handling techniques are deployed
- Broad knowledge base incorporating theoretical concepts in either a procedural language or an Object Oriented language.
- Detailed knowledge of the operating system
- Broad knowledge base incorporating theoretical concepts of real-time programming
- Broad knowledge base incorporating theoretical concepts of Input/ Output drivers
- A broad knowledge base incorporating current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas
- Broad knowledge base incorporating theoretical concepts of software development configuration management processes
- Broad knowledge base incorporating theoretical concepts of size estimation

Underpinning skills in

- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when testing routines are developed to verify the code produced actually fulfils the requirement
- Algorithms skills in relation to analysis, evaluation and identification of solutions
- Project planning skills in relation to scope, time, cost, quality, communications and risk management.

UNIT	ICAITB167A Create code for networking
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Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- A network environment

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency

Context

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for ones own outputs in relation to specified quality standards;
- and take limited responsibility for the quantity and quality of the output of others.

Key Competencies						
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Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	3	2	3	3	3

UNIT	ICAITB168A Compile and run an application
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to write and run a simple application
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Write basic application	<ol style="list-style-type: none"> 1. Declare class names and specify target directory if required 2. Determine whether arguments are required in the command line and if the main method is required to return any value 3. Variables and object method calls are clearly declared 4. Write working, efficient, well-structured code for application, utilising appropriate control structures
2. Run the application	<ol style="list-style-type: none"> 1. Use a runtime environment tool to load, verify and execute the code 2. Use the debugging facilities to identify and correct errors 3. Verify with the client that the application is operating correctly, delivering correct results and meets the client requirements
3. Document the application	<ol style="list-style-type: none"> 1. Incorporate internal documentation into the application 2. Create external documentation required for users and maintainers 3. External documentation is understood by users and maintainers

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Compile time errors	Common errors include: Command not found, method name mistype, class and file naming, incorrect source file naming, class count, runtime errors
Programming tools	Java Virtual Machine, Java HotSpot virtual machine, Runtime Environment tools

UNIT	ICAITB168A Compile and run an application
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Languages	The language used may be a standard programming language Java or c++, an application framework (eg Visual Basic), or a scripting language (eg Unix, Javascript, Perl). Note that a program written in HTML would not be considered a satisfactory assessment for this unit.
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to develop and run a basic application based on a simple requirements document	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Data types and formats • Programming constructs and control structures • Documentation standards • Interface between the language and the operating system • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Program documentation techniques • Error detection and handling techniques • HTML • Documentation skills particularly targeting users

UNIT

ICAITB168A Compile and run an application

Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Development environment, a compiler, an interpreter <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency</p>
Context	<p>Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of options to be applied.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate some relevant theoretical knowledge; apply a range of well developed skills; • apply known solutions to a variety of predictable problems; perform processes that require a range of well developed skills where some discretion and judgement is required; • interpret available information, using discretion and judgement; • take responsibility for ones own outputs in work and learning; • and take limited responsibility for the output of others.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	1	1	1	3	3	3

UNIT	ICAITB169A Use development software & IT tools to build a basic website to specification
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to build a basic website that is consistent with the design and technical requirements and business expectations. The unit requires the use of appropriate development software and technical tools to achieve the outcome.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Website structure developed	<ol style="list-style-type: none"> 1. Business requirements and site purpose are identified 2. Appropriate development software and tools are selected and used based on technical requirements 3. Site structure and navigation flow are identified and developed 4. Design documentation is reviewed and design work integrated with site structure and navigation
2. Build site	<ol style="list-style-type: none"> 1. Existing information and basic content is incorporated into site based on business and customer needs 2. Design specifications are consistently applied to all aspects of the site 3. Feedback sought from business and modifications completed
3. Test site	<ol style="list-style-type: none"> 1. Developed site is audited against technical requirements and design specifications 2. Functions, processes and navigation are tested 3. Site is signed off by business as meeting their requirements

UNIT	ICAITB169A Use development software & IT tools to build a basic website to specification
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Web development standards	Web Content Accessibility Guidelines 1.0 (WCAG)
	Authoring Tool Accessibility Guidelines 1.0 (ATAG)
Software	Variables may include but are not limited to: text editors such as <ul style="list-style-type: none"> • Word pad, • Notepad; Commercial software applications; <ul style="list-style-type: none"> • Dreamweaver, • Golive, • Fireworks, • NetObjects Fusion • Frontpage
Code generation	The code generation may be automated by commercial applications though the candidate will need to be able to valid the code and fix any problems
Mark-up Language	Limited to HTML and DHTML
Hardware	Can include IT equipment of all types; <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models

UNIT	ICAITB169A Use development software & IT tools to build a basic website to specification
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E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Standards	Standards are being introduced on a regular basis it is worthwhile monitoring the following organisations in relation to XML standards Organisation for the Advancement of Structured Information Standards, ISO and IEEE to web-oriented groups like IETF and W3C, IEEE Std. 2001-1999 Web Page Engineering, The Internet Commerce Standards 1.0
Basic content	Includes: jpeg; gif, text, PDF files; it does not include streaming video, looping sound files or animation

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to develop a basic web site. Development is done in a manner that accurately reflects the business requirements. The development is audited against the business requirements and design needs prior to task completion and business sign off.		
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.		
Underpinning skills and knowledge	<table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 50%;"> Underpinning knowledge: <ul style="list-style-type: none"> • Website architecture • SGML and the associated standards • Basic design principles • Technical environment characteristics • Read and interpret design specifications • Appropriate software and tools are selected to meet the required specifications • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics </td> <td style="vertical-align: top; width: 50%;"> Underpinning skills: <ul style="list-style-type: none"> • Use appropriate development software and tools • HTML • Debugging and error handling techniques </td> </tr> </table>	Underpinning knowledge: <ul style="list-style-type: none"> • Website architecture • SGML and the associated standards • Basic design principles • Technical environment characteristics • Read and interpret design specifications • Appropriate software and tools are selected to meet the required specifications • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	Underpinning skills: <ul style="list-style-type: none"> • Use appropriate development software and tools • HTML • Debugging and error handling techniques
Underpinning knowledge: <ul style="list-style-type: none"> • Website architecture • SGML and the associated standards • Basic design principles • Technical environment characteristics • Read and interpret design specifications • Appropriate software and tools are selected to meet the required specifications • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	Underpinning skills: <ul style="list-style-type: none"> • Use appropriate development software and tools • HTML • Debugging and error handling techniques 		

UNIT	ICAITB169A Use development software & IT tools to build a basic website to specification
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Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Site development software and tools
- Business expectations brief

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency.

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of options to be applied.

An individual demonstrating these competencies would be able to:

- demonstrate some relevant theoretical knowledge; apply a range of well developed skills;
- apply known solutions to a variety of predictable problems; perform processes that require a range of well developed skills where some discretion and judgement is required;
- interpret available information, using discretion and judgement;
- take responsibility for ones own outputs in work and learning;
- and take limited responsibility for the output of others.

UNIT	ICAITB169A Use development software & IT tools to build a basic website to specification
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Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITB170A Build a database
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to build and implement a database from an established design
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Database design is confirmed	<ol style="list-style-type: none"> 1. Database scope and functionality including data redundancy are confirmed by reviewing business requirements 2. Design of data structures, queries, reports and screens are confirmed by reviewing business requirements with reference to database design 3. Access and security features of database design are reviewed by against business requirements with reference to current enterprise security plan
2. Data structures, queries, screens and reports are developed	<ol style="list-style-type: none"> 1. Data structures are built using client software in accordance with database design 2. Data is normalised as required using client software 3. Queries, screens and reports are developed using client software as required by database design
3. Access and security systems are developed	<ol style="list-style-type: none"> 1. Password and access privileges are developed with reference to enterprise security plan 2. User profiles are developed with reference to enterprise security plan 3. Other security measures are applied as required by enterprise security plan

UNIT		ICAITB170A Build a database
4. Database prototype is created and tested	<ol style="list-style-type: none"> 1. Prototype is created according to design using client software 2. Prototype is populated with suitable data 3. Conversion code is written as required where data are to be imported from existing systems 4. Test data is developed to exercise the system 5. Prototype is assessed according to client business needs and database rules 6. Logical errors in program code are identified and corrected 7. Screens and reports are modified in line with user and client feedback 8. Client signoff of prototype is obtained 	
5. The live system is implemented	<ol style="list-style-type: none"> 1. Implementation plan is developed and database management software is installed 2. Live system is created and populated with data 3. Data conversion and validation is supported 4. Operation including security and access controls are verified as correct 5. Post implementation review is conducted as required by client 6. System documentation is completed 7. User training requirements are identified in conjunction with client 	

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Security	Access privileges and passwords must reflect the business /organisational requirements in terms of roles and functions performed by different positions.
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models

UNIT	ICAITB170A Build a database
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Data	<p>Variables may include but are not limited to: established files, data from mixed sources and applications</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to data were considered and appropriate choices made given the business specifications and client requirements. Ask questions about different types of data other than the data used, to ensure the application of knowledge and skills to other contexts.</p>
Software	<p>Variables may include but are not limited to: commercial software applications and organisational specific software</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to the client database software and current and/or future applications software requirements were considered and appropriate choices (most effective, efficient and compatible with the business strategy) made.</p> <p>The final database software choice will meet business rules and be compatible with the business strategy, performance considerations and operating environment.</p>
Tools	<p>Variables may include but are not limited to: vendor specific database development tools. Tools include any item or tool used to develop databases.</p> <p>The most appropriate development tool was employed in the most efficient manner.</p>
DBMS	<p>Can include distributed or centralised, online, partitioned geographically or thematically distributed.</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to the design of the client database and subsequent choice of software and current and/or future applications software requirements were considered and appropriate choices (most effective, efficient and compatible with the business strategy) made.</p> <p>The final database will meet specified business rules, agreed budget and timeframe. The database will perform efficiently in the runtime environment (the environment required to operate the designed solution, not the development environment)</p>
Databases	<p>May include but are not limited to</p> <ul style="list-style-type: none"> • Oracle, • Sybase, • Microsoft SQL Server, • Ingres, • DB2, • Informix
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.</p> <p>Reports meet the specific output requirements and are presented in a logical and accessible manner.</p>

UNIT	ICAITB170A Build a database
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EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to build and implement a well-structured database that represents the client’s business reality and provides the user with a productive business tool	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • The function and features of databases • Run time facilities in relation to implementing live database and operation of prototype • OO data model particularly in relation to developing a prototype • Object model design concepts particularly in relation to developing data structures, queries, screens and reports • Logical data model particularly in relation to developing a prototype • Physical design concepts particularly in relation to developing a prototype • OH&S principles and responsibilities in regard to the health and safety of oneself and others • DBMS fundamentals in relation to overall unit of competence particularly during the design phase • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Techniques to elicit information from users particularly during the prototype phases • SQL programming skills particularly during the development phases • Data modelling skills particularly during the design and development phases • Analysis skills • Communicating with clients • Preparation of reports and technical documentation • Data conversion and validation particularly during implementation • Installation and use of proprietary software • Encryption and authentication as they apply to database security features

UNIT	ICAITB170A Build a database
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Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • database software • database design documentation • business requirements and strategy <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence.</p>
Context	<p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>An individual performing at this standard will display self-directed application of knowledge and skills, with substantial depth in database design and development where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>The Candidate will demonstrate participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations (organising others is less important to this unit of competence). A depth of knowledge and skills (rather than breadth of knowledge) is important for this unit of competence.</p>

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITB171A Develop cascading style sheets (CSS)
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to add a style to a mark up language in order to publish a Web document without adding more HTML Tags.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Prepare mark up pages	<ol style="list-style-type: none"> 1. HTML that the CSS will be applied to is identified 2. HTML code is validated and redundant tags removed 3. Business content is entered in the HTML page 4. The required style of the HTML pages are determined based on business needs
2. Apply styles to HTML elements	<ol style="list-style-type: none"> 1. Chosen style attributes are applied to HTML selectors /elements 2. Property and values are applied to selectors (for example to define colour, font size) according to design specifications 3. Multiple style declarations for single selectors are correctly separated
3. Attach CSS to HTML documents	<ol style="list-style-type: none"> 1. The basic, document wide style sheet for the document is applied using the style sheet element. 2. Document sheet is applied to an individual element using the style attribute 3. External style sheet is linked to HTML pages using the link element 4. Multiple media attributes specify the media/ medium (for example aural, Braille) to which the sheets are applied 5. Style sheet is imported using the CSS @ import notation 6. A range of CSS enhanced browsers are used to check the consistency of style to ensure design meets business and client expectations

UNIT		ICAITB171A Develop Cascading Style Sheets (CSS)
4. Apply CSS inheritance rules to documents	<ol style="list-style-type: none"> 1. CSS inheritance rules are developed from 'parents' to be applied generally to 'children' documents using the tree like structure 2. CSS inheritance rules are applied generally 3. Specific changes are made to a general rule to over ride inheritance 4. Common tasks, such as fonts, links and pseudo class are applied to documents to ensure consistency with design requirements 5. Accessibility guidelines are applied as general rules to pages 	
5. Validate presentation style	<ol style="list-style-type: none"> 1. Page style is previewed in a number of browsers to ensure business and customer expectations are meet 2. Aesthetic acceptability of the style is approved as meeting business requirements 3. Ensure accessibility guidelines are able to be meet through applied style 4. CSS presentation is signed off by business 	

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Software	<p>A very wide variety of CSS software is available such as:</p> <p>Western Civilisation CSS editor,</p> <p>Style Master 1.9 Pro,</p> <p>Style Assistant,</p> <p>Top Style,</p> <p>Bluefish,</p> <p>Cascade,</p> <p>CSS Mill,</p> <p>CSSize,</p> <p>Dream Weaver,</p> <p>602 Pro Suite,</p> <p>Ace HTML 4,</p> <p>W2CSS</p>
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UNIT	
ICAITB171A Develop cascading style sheets (CSS)	
Markup Language	HTML and DHTML
Web development standards	<p>Web Content Accessibility Guidelines 1.0 (WCAG)</p> <p>Authoring Tool Accessibility Guidelines 1.0 (ATAG)</p> <p>User Agent Accessibility Guidelines 1.0 (UAAG)</p>
Hardware	<p>Can include IT equipment of all types;</p> <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Standards /specifications	Cascading Style Sheets 1 Specification
Properties and values	Font Properties, Colour and Background properties, Text and Box Properties, Classification Properties and Units
EVIDENCE GUIDE	
Critical aspects of evidence	Assessment must confirm the ability to develop an appropriate presentation style for a HTML document using embedded or linked CSS. Presentation conforms to web accessibility guidelines and meets the business needs and is signed off.
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT	ICAITB171A Develop cascading style sheets (CSS)	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Website architecture • Using a mark up language • Basic design principles • Appropriate software and tools are selected to meet the required specifications • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • HTML • Select and use a CSS enhanced browser
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • A Computer • Application for creating CSS • CSS enhanced browser • Aesthetic presentation brief, if appropriate • HTML documents to have CSS applied to <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>	
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence</p>	
Context	<p>Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of options to be applied.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate some relevant theoretical knowledge; apply a range of well developed skills; • apply known solutions to a variety of predictable problems; perform processes that require a range of well developed skills where some discretion and judgement is required; • interpret available information, using discretion and judgement; • take responsibility for ones own outputs in work and learning; • and take limited responsibility for the output of others. 	

UNIT

ICAITB171A Develop cascading style sheets (CSS)

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	3	2	1	1	2	2

UNIT	ICAITB172A Install Asynchronous Transfer Mode (ATM) Local Area Network (LAN)
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to build an ATM LAN
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. ATM network typology is identified	<ol style="list-style-type: none"> 1. Current and future client user networking requirements are identified from technical requirements 2. Appropriate structure is designed to meet client requirements such as video, audio or data applications with varying Quality of Service (QOS) requirements 3. Network addressing system with subnet and host ids are designed for access to an ATM network 4. Resource requirements are identified in accordance with ATM network design
2. ATM network is installed and configured	<ol style="list-style-type: none"> 1. Network protocol applications are installed using pre-determined configurations as required by technical requirements 2. ATM switches are installed and configured according to network requirements 3. Hosts and workstations are configured for ATM access as required
3. ATM network is tested	<ol style="list-style-type: none"> 1. Operation of services and communication between applications is tested making use of appropriate facilities and predetermined tests 2. Adjustments are made as required to predetermined configuration to meet functionality requirements

UNIT	ICAITB172A Install Asynchronous Transfer Mode (ATM) Local Area Network (LAN)
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Internetworking Protocol Suites	TCP/IP, IPX, DECnet, AppleTalk, IPV6
Cable	twisted pair, coax and fibre optics
Uses of ATM	<ul style="list-style-type: none"> • As a high speed LAN backbone for a VLAN; • as a high speed desktop LAN technology for multimedia; and • as an integrated LAN-WAN network.
ATM Types	Native ATM API, Classical IP and ARP can be used depending on the internetworking protocols / applications being used.
Network configuration	LAN or WAN, incorporating a range of servers, workstations, ethernet hubs,
Resource Requirements	<ul style="list-style-type: none"> • ATM switches, • cable, • routers, • hubs, • switches, • switched Ethernet links
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
ATM switch design	shared backplane, high speed memory, matrix

UNIT

ICAITB172A Install Asynchronous Transfer Mode (ATM) Local Area Network (LAN)

EVIDENCE GUIDE

Critical aspects of evidence

Assessment must confirm the ability to build an ATM LAN that provides the required services and communication standards

Interdependent assessment of units

The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

Underpinning skills and knowledge**Underpinning knowledge:**

- LAN and WAN network typologies
- routers
- Ethernet hubs
- bandwidth
- B-ISDN protocol reference model
- ATM cells and the Adaptation Layer concept
- DSCs
- ATM architecture and layers
- NICs
- ATM switch designs (shared backplane, high speed memory, matrix)
- ATM switch functions (frame switching, cell switching, LAN emulation client support)
- Virtual paths and channels
- Internetworking protocol suites such as TCP/IP, IPX, DECnet, AppleTalk, IPV6
- Components of a LAN emulation service: LECS; LES and BUS
- The MPOA model, including MPOA servers and MPOA clients in relation to connectivity across different subnets
- MAC addresses and network layer protocols
- Australian Computer Society Code Of Ethics

Underpinning skills:

- Implementing LAN emulation client (LEC) software for installing ATM networks over legacy networks.
- Installation of Ethernet-ATM switches (EAS)
- Basic cabling

UNIT	ICAITB172A Install Asynchronous Transfer Mode (ATM) Local Area Network (LAN)
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • a LAN network • ATM switches <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence.</p>
Context	<p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p> <p>Applications involve responsibility for, and limited organisation of, others.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating some theoretical concepts; • apply solutions to a defined range of unpredictable problems; • identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas; • identify, analyse and evaluate information from a variety of sources; • take responsibility for ones own outputs in relation to specified quality standards; • and take limited responsibility for the quantity and quality of the output of others.

UNIT	ICAITB172A Install Asynchronous Transfer Mode (ATM) Local Area Network (LAN)
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Key Competencies						
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Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITB173A Install intelligent hub
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to select install and test a network hub
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Hub specification is determined	<ol style="list-style-type: none"> 1. Current and future network capacity is determined according to current and future business requirements 2. Number and type of hubs is determined with reference to current and future network requirements 3. Network typology is determined 4. Network management and security requirements are determined
2. Appropriate hardware is selected	<ol style="list-style-type: none"> 1. Hub/s with appropriate features are selected according to required specification 2. Workstations, PCs, Servers, Routers and other network devices are chosen according to network requirements
3. Hub and supporting peripherals are installed	<ol style="list-style-type: none"> 1. Hub and peripherals are assembled in accordance with manufacturers requirements 2. If more than one hub is required, hubs are connected and disengaged 3. Use cable to connect the In/Out ports (or other ports depending the hubs) to connect hubs 4. Connect power to each hub and switch on 5. A valid network connection is established with network device/s 6. Terminal emulation software is configured to operate within the new environment if required

UNIT	ICAITB173A Install intelligent hub
4. Hub and network is tested	<ol style="list-style-type: none"> 1. Hub and network devices are tested in accordance with manufacturers requirements and/or enterprise guidelines 2. Ensure network does not break into isolated sections or fail 3. Adjustments to network made depending on test results

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Hub Capacity	Redundancy, LAN topology support, port switching capabilities, segment switching capabilities, migration capabilities, reliability, expandability
Hubs	<p>The following vendors produce hubs</p> <ul style="list-style-type: none"> • Intel • CISCO • 3Com • System 3000 Ethernet
Network topography	Network topography is restricted to WLANs, VPN, LANs or to LANs within WANs
Bandwidth	Variable bandwidths within single networks
Security Needs	'Closed' and 'open' user groups, capacity to disable ports after security breach
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.</p> <p>Reports meet the specific output requirements and are presented in a logical and accessible manner.</p>
Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

UNIT	ICAITB173A Install intelligent hub
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EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to install hub/s without the network splitting or failing.	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • differences between standard hubs and switching hubs • structured wiring • common network cable types and connectors • four main types of smart hubs • common network typologies • advantages and disadvantages of hubs • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • hub functional analysis • cabling • configuring a workstation within a network environment
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • hub/s • network devices, PCs <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>	
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency.</p>	

UNIT

ICAITB173A Install intelligent hub

Context

Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of options to be applied.

An individual demonstrating these competencies would be able to:

- demonstrate some relevant theoretical knowledge; apply a range of well developed skills;
- apply known solutions to a variety of predictable problems; perform processes that require a range of well developed skills where some discretion and judgement is required;
- interpret available information, using discretion and judgement;
- take responsibility for ones own outputs in work and learning;
- and take limited responsibility for the output of others.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITB174A Install network bridges/ switches
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to install, configure and test network bridges/ switches
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Bridges/ switches are identified	<ol style="list-style-type: none"> 1. Relevant data is gathered to identify network architecture and customer requirements 2. The type and number of bridges/ switches to be installed is identified and validated by client with reference to network architecture and customer requirements 3. Integration plan for new processes, protocols and equipment is developed from business requirements 4. Relevant hardware and software is selected with reference to vendor architecture and equipment specifications / limitations
2. Bridges/ switches are installed and configured	<ol style="list-style-type: none"> 1. Bridges/ switches are installed according to vendor guidelines, network architecture and customer requirements 2. Bridges/ switches are configured according to vendor guidelines, network architecture and customer requirements 3. Bridge/ switch configuration is documented according to customer requirements
3. Bridges/ switches are tested	<ol style="list-style-type: none"> 1. Test plan is developed and network impact assessed 2. Tests are prepared, scheduled and executed as required 3. Errors are tracked, interpreted and reported 4. Changes are made as required 5. Final bridge configuration is documented as required

UNIT	ICAITB174A Install network bridges/ switches
RANGE OF VARIABLES	
VARIABLE	SCOPE
Bridging algorithms	transparent bridging, source route bridging
Bridge Purchasing Considerations	<ul style="list-style-type: none"> • Flexibility of base configuration, • Hardware upgrade costs, • Software upgrade costs, • WLAN, VPN, LAN architectures supported, r • Emote access support for WAN bridges, • Management capabilities, • Performance (frames per second or transmission speeds supported), • Degree of configuration required, • User interface, • Wiring supported, • Security features, • Data compression,
Network types	Ethernet, Token Ring, Fibre Distributed Data Interface (FDDI),WLAN, VPN, WAN and combinations of each type
Bridge typologies	Cascade, backbone, star, campus network
Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.
Operating systems	Reports meet the specific output requirements and are presented in a logical and accessible manner. Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts

UNIT	ICAITB174A Install network bridges/ switches
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Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
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EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to install, configure and test network bridges and or switches	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • OSI data model in relation to the operation of bridges • The function and features of NIC addresses • Network design in relation to physical constraints and role of bridges to overcome them in terms of traffic isolation and network utilisation • The operation of a relevant network operating system • The function and features of bridges including filtering and forwarding, bridge tables, bridge learning, spanning tree algorithm (STA) • The advantages and disadvantages of bridges in relation to network architecture and customer requirements • The features and functions of checksums • The function and features of transparent bridging • The function and features of source route bridging • The function and features of source route transparent bridging (SRT) • The function and features of parallel source route bridges • The function and features of translation bridging • The role of WAN bridges (half-bridges) • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Installing and configuring simple computer components • Ability to record testing results • Ability to critically analyse details • Ability to understand specification sheets • Ability to organise and asses importance and relevancy of product information • Ability to analyse and synthesis information • Ability to diagnose performance deviations

UNIT	ICAITB174A Install network bridges/ switches
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Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • network devices, PCs <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence.</p>
Context	<p>Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of options to be applied.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate some relevant theoretical knowledge; apply a range of well developed skills; • apply known solutions to a variety of predictable problems; perform processes that require a range of well developed skills where some discretion and judgement is required; • interpret available information, using discretion and judgement; • take responsibility for ones own outputs in work and learning; • and take limited responsibility for the output of others.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	3	2	3	3

UNIT	ICAITB175A Select and install a router
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to select and install the best fit router to meet the technical requirements
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Router specification is determined	<ol style="list-style-type: none"> 1. Throughput requirements of router are determined with reference to current and future network requirements 2. Current and future network capacity is determined taking into account current and future business needs 3. Network typology is identified from technical requirements 4. Media access requirements are determined with reference to current and future user requirements 5. Data link layer technologies are determined with reference to current and future user requirements 6. Network management and security requirements are determined with reference to current and future user requirements
2. Appropriate router is selected and installed	<ol style="list-style-type: none"> 1. Router with appropriate features is selected according to technical requirements 2. Cable, WAP, connectors and other peripherals are chosen according to network requirements and router specification 3. Router is installed, configured and tested using predetermined configuration and tests 4. Predetermined router configuration is adapted depending on outcome of test

UNIT	ICAITB175A Select and install a router
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Router Network typologies	Simple internet gateway, multiple LAN, WLAN, VPN, hybrid LAN/WAN
Router protocols	Router protocols: <ul style="list-style-type: none"> • Hot Standby Router Protocol (HSRP) • Cisco Discovery Protocol (CDP) • (Enhanced) Interior Gateway Routing Protocol • Routing Information Protocol • NetWare Link State Protocol • Open Shortest-Path First Interior Gateway Protocol • Exterior Gateway Protocol • Transmission of IP Datagrams Over X.25 • Point to Point Protocol (PPP)
Routers	May include static and dynamic routers: <ul style="list-style-type: none"> • Cisco 1000 to the 7000 Series Routers • Linksys Etherfast router • Cisco uBR7200 Universal Broadband Routers • 3Com OfficeConnect Remote 810 ADSL • 3Com SuperStack 400 • CISCO 760 Series ISDN • Netopia Routers • D-Link Routers • Motorola Vanguard series • Intel express Series
Protocols	Novell Protocol suite; Internetwork Packet Exchange (IPX), Sequence Packet Exchange, (SPX), NetBIOS Emulator, Netware Core Protocol TCP/IP; Internet Control Message Protocol (ICMP) see router protocols above, Net BT AppleTalk Protocol – Phase 2 (1989) WAN Protocols; Synchronous Data Link Control (SDLC); Binary Synchronous Control (BSC) High-Level Data Link Control (HDLC), Advanced Data Communications Protocol (ADCP), High Level Data Link Control (HDLC)

UNIT	ICAITB175A Select and install a router
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E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to ICAITB175A Select and install a router using predetermined configuration and tests. Basic adaptation of configuration made need to be undertaken depending on test results	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Basic command modes • Introductory knowledge of the following: <ul style="list-style-type: none"> • Router functions • Router based network architectures • Broadcast traffic and bandwidth • Redundant paths • Intelligent packet forwarding • Routing table protocols • Routing algorithms and protocols • Dynamic routing • Router firewalls • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Installing peripherals such as printers

UNIT	ICAITB175A Select and install a router
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Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Router specifications • Technical requirements for a network <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence</p>
Context	<p>Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of options to be applied.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate some relevant theoretical knowledge; apply a range of well developed skills; • apply known solutions to a variety of predictable problems; perform processes that require a range of well developed skills where some discretion and judgement is required; • interpret available information, using discretion and judgement; • take responsibility for ones own outputs in work and learning; • and take limited responsibility for the output of others.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	1	1	1	2	2	2

UNIT	ICAITB176A Install and configure router
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to install and configure a router
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include
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ELEMENT	PERFORMANCE CRITERIA
1. Router is installed and configured	<ol style="list-style-type: none"> 1. Router and peripherals are assembled in accordance with manufacturers requirements and enterprise guidelines 2. Router is configured as per manufacturers instructions and technical requirements taking into account interoperability requirements with network components 3. Individual workstations are reconfigured to operate within the new environment if required
2. Router and network is tested	<ol style="list-style-type: none"> 1. Router and peripherals are tested in accordance with manufacturers instructions and technical requirements 2. Network hardware and router are tested to ensure full functionality and interoperability 3. Additional network hardware is reconfigured as required 4. Adjustments to network made depending on test results

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Router Network typologies

Simple internet gateway, multiple LAN, WLAN, VPN, hybrid LAN/WAN

Routing Tables

Varying distance between routers, packet size, available line speed, network protocols

UNIT

ICAITB176A Install and configure router

Router protocols

Router protocols:

- Hot Standby Router Protocol (HSRP)
- Border Gateway Protocol (BGP)
- (Enhanced) Interior Gateway Routing Protocol
- Routing Information Protocol
- NetWare Link State Protocol
- Open Shortest-Path First Interior Gateway Protocol
- Exterior Gateway Protocol
- Transmission of IP Datagrams Over X.25
- Point to Point Protocol (PPP) authentication

Routers

May include static and dynamic routers:

- Cisco 1000 to the 7000 Series Routers
- Linksys Etherfast router
- Cisco uBR7200 Universal Broadband Routers
- 3Com OfficeConnect Remote 810 ADSL
- 3Com SuperStack 400
- CISCO 760 Series ISDN
- Netopia Routers
- D-Link Routers
- Motorola Vanguard series
- Intel express Series

Protocols

Novell Protocol suite; Internetwork Packet Exchange (IPX), Sequence Packet Exchange, (SPX), NetBIOS Emulator, Netware Core Protocol

TCP/IP; Internet Control Message Protocol (ICMP) see router protocols above, Net BT

Dynamic Host Configuration Protocol (DHCP)

AppleTalk Protocol – Phase 2 (1989)

WAN Protocols; Synchronous Data Link Control (SDLC); Binary Synchronous Control (BSC) High-Level Data Link Control (HDLC), Advanced Data Communications Protocol (ADCP), High Level Data Link Control (HDLC)

UNIT	ICAITB176A Install and configure router
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Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience. Reports meet the specific output requirements and are presented in a logical and accessible manner.
Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to install and configure a router for optimum performance and operation of the LAN, WLAN, VPN, WAN	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	Underpinning knowledge: <ul style="list-style-type: none"> • Router functions • Router based network architectures • Broadcast traffic and bandwidth • Redundant paths • Intelligent packet forwarding • Routing table protocols • Routing algorithms and protocols • Dynamic routing • Router firewalls • Australian Computer Society Code Of Ethics 	Underpinning skills: <ul style="list-style-type: none"> • Configuring router protocols • Configuring network peripherals • Select and install a router • Network testing

UNIT	ICAITB176A Install and configure router
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • A network environment • A router • Documentation on the network topography <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency.</p>
Context	<p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p> <p>Applications involve responsibility for, and limited organisation of, others.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating some theoretical concepts; • apply solutions to a defined range of unpredictable problems; • identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas; • identify, analyse and evaluate information from a variety of sources; • take responsibility for ones own outputs in relation to specified quality standards; • and take limited responsibility for the quantity and quality of the output of others.

UNIT

ICAITB176A Install and configure router

Key Competencies

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Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	2

UNIT	ICAITB177A Build Java applets
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to compile and run an applet which executes in Java-enabled browsers
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Create a Java source file	<ol style="list-style-type: none"> 1. With a text editor create and name a file 2. A subclass of the <code>java.applet Applet</code> class is created 3. Applet subclass implement at least one of the following methods: <code>init</code>, <code>start</code>, and <code>paint</code> 4. Classes and variables and methods of the classes are defined 5. <code>Init</code> method contains the code that normally appears in a constructor 6. The <code>paint</code> and <code>update</code> methods are implemented to draw the applet's representation within a browser page 7. Event-handling methods are incorporated 8. User-defined values of parameters and default values are defined and included 9. A pre-made user interface (UI) component that has the right behaviour is used 10. Images and sounds relative to a base URL are specified
2. Compile the source file	<ol style="list-style-type: none"> 1. A Java compiler is used to compile the file 2. If syntax error is issued check code for misspelling 3. Program is verified as syntactically correct, errors fixed and re compiled 4. Basic correctness of file confirmed to ensure that all variables have been initialised 5. Compiler creates a class file the class is interpreted correctly

UNIT	ICAITB177A Build Java applets
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|--------------------------|---|
| <p>3. Run the Applet</p> | <ol style="list-style-type: none"> 1. With a text editor create and name a HTML file and add a <APPLET> tag 2. The applet class file must be, relative to the HTML document that contains the <APPLET> tag 3. The URL of the HTML page to your Java-enabled browser is specified 4. The HTML file is loaded into an application that can run Java applets 5. The loaded applet initialises itself and overrides the <code>start</code> method (except in direct response to user actions) 6. The apple's execution is started 7. The apple's execution is stopped and suspends the applet's execution when the user isn't viewing the applet's page 8. The <code>destroy</code> method is available for applets that need to release additional resources as required |
|--------------------------|---|

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Classes	Classes can be either local to the browser, provided as part of the Java environment, or custom classes that you supply
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach, information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency; Occupational Health and Safety guidelines related to use of screen based equipment, computing equipment and peripherals, and ergonomic work stations; security procedures; customisation requirements
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
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UNIT	ICAITB177A Build Java applets
Keyboarding	Speed will vary according to different organisational requirements and different job roles within an organisation. The keyboard technique will be in line with OHS requirements for safe use of keyboards
Java tools	<ul style="list-style-type: none"> • ALE - Adaptable Layout Environment, • alma 0.28, • AnyTool, • AutoRad, • Bean Scripting Framework, • BEanACTION, • Codemesh, • DocWiz: The JavaDoc Documentation Tool, • EPP, an Extensible Pre-Processor kit, • Grace - Generating Graphical Editors, • Java Runner, • Metamata Development Environment, • Java 2 SDK, • Netscape Directory SDK for Java: Source Code, • WingSoft, • Utility+, • JBuilder 3.5, • Visual Age 3.0, • Visual J++, • Zero G Software,
Quality benchmarks	<p>There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE, the Software Engineering Institute (SEI), and the ISO standards.</p> <p>Relevant quality standards include: AS 4043-1992 Software configuration management, AS 4042-1992 Software configuration management plans, AS 3925.1-1994 Software quality assurance – Plans, AS/NZS 4258:1994 Software user documentation process, AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. International and Australian Standards are updated and changed on a regular basis, it is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p>

UNIT	ICAITB177A Build Java applets
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EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to compile and run an applet which executes in Java-enabled browsers and for users to customise the applet's operation		
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.		
Underpinning skills and knowledge	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> Underpinning knowledge: <ul style="list-style-type: none"> • Browser security restrictions • OO programming concepts • System properties • API (application programming interface) • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> Underpinning skills: <ul style="list-style-type: none"> • HTML • Keyboarding • OO Design </td> </tr> </table>	Underpinning knowledge: <ul style="list-style-type: none"> • Browser security restrictions • OO programming concepts • System properties • API (application programming interface) • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	Underpinning skills: <ul style="list-style-type: none"> • HTML • Keyboarding • OO Design
Underpinning knowledge: <ul style="list-style-type: none"> • Browser security restrictions • OO programming concepts • System properties • API (application programming interface) • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	Underpinning skills: <ul style="list-style-type: none"> • HTML • Keyboarding • OO Design 		
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • A Java development environment • A Java compiler and interpreter <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>		
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence.</p>		

UNIT	ICAITB177A Build Java applets
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Context

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for ones own outputs in relation to specified quality standards;
- and take limited responsibility for the quantity and quality of the output of others.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	1	3	3	3

UNIT	ICAITB178A Build a Graphical User Interface (GUI)
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to set up and lay out a GUI
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Identify GUI components	<ol style="list-style-type: none"> 1. Identified classes are extended and properties inherited 2. Containers are placed and filled with the required GUI components 3. Position and size of components within containers are determined by layout requirements 4. Panels are created according to design requirements
2. Identify the GUI requirements	<ol style="list-style-type: none"> 1. Identify whether GUI will be a free floating frame or dialog 2. Identify the required size and position of the GUI in relation to the screen size 3. Lay out and design of GUI is consistent, dynamic and meets business expectations 4. Layout of GUI contains nested containers and menus
3. Incorporate event handling	<ol style="list-style-type: none"> 1. Define events and create handling elements 2. Identify user actions that cause events and write code to handle 3. Determine interfaces appropriate for different events based on customer / business needs
4. Test GUI	<ol style="list-style-type: none"> 1. Test known events to ensure event handling methods are effective 2. Test GUI for overall functionality according to business requirement 3. Iterate GUI if test results do not meet business requirements

UNIT	ICAITB178A Build a Graphical User Interface (GUI)
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Classes	Classes can be either local to the browser, provided as part of the Java environment, or custom classes that you supply
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach, information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency; Occupational Health and Safety guidelines related to use of screen based equipment, computing equipment and peripherals, and ergonomic work stations; security procedures; customisation requirements
Keyboarding	Speed will vary according to different organisational requirements and different job roles within an organisation. The keyboard technique will be in line with OHS requirements for safe use of keyboards
Quality benchmarks	<p>There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE, the Software Engineering Institute (SEI), and the ISO standards.</p> <p>Relevant quality standards include: AS 4043-1992 Software configuration management, AS 4042-1992 Software configuration management plans, AS 3925.1-1994 Software quality assurance – Plans, AS/NZS 4258:1994 Software user documentation process, AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. International and Australian Standards are updated and changed on a regular basis, it is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p>
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

UNIT	ICAITB178A Build a Graphical User Interface (GUI)
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Java tools

- ALE - Adaptable Layout Environment,
- alma 0.28,
- AnyTool,
- AutoRad,
- Bean Scripting Framework,
- BEanACTION,
- Codemesh,
- DocWiz: The JavaDoc Documentation Tool,
- EPP, an Extensible Pre-Processor kit,
- Grace - Generating Graphical Editors,
- Java Runner,
- Metamata Development Environment,
- Java 2 SDK,
- Netscape Directory SDK for Java: Source Code,
- WingSoft,
- Utility+,
- JBuilder 3.5,
- Visual Age 3.0,
- Visual J++,
- Zero G Software,

EVIDENCE GUIDE	
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Critical aspects of evidence

Assessment must confirm the ability to design and build a GUI

Interdependent assessment of units

The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT	ICAITB178A Build a Graphical User Interface (GUI)
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Underpinning skills and knowledge

Underpinning knowledge:

- Browser security restrictions
- OO programming concepts
- System properties
- API (application programming interface)
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles
- Australian Computer Society Code Of Ethics

Underpinning skills:

- HTML
- Keyboarding
- OO Design

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- A Java development environment

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence

UNIT	ICAITB178A Build a Graphical User Interface (GUI)
-------------	--

Context

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for ones own outputs in relation to specified quality standards;
- and take limited responsibility for the quantity and quality of the output of others.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	1	3	3	3

UNIT	ICAITB179A Build decks using wireless markup language (WML)
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to create WML files
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Create a WML files	<ol style="list-style-type: none"> 1. The prologue is defined and the location of the Document Type Definition (DTD) is determined based on requirements 2. Case sensitive tags are created and correctly closed 3. Document content is contained in the WML tags according to business content requirements 4. Each card element has an id and a title 5. Cards element can contain text, markup language, links, input-fields, tasks, images for example 6. The first card contains a <do> element
2. Determine navigation	<ol style="list-style-type: none"> 1. Structure of content is determine based on business needs and user requirements 2. Links between sets of cards are identified 3. The <anchor> tag's task is specified or the <a> tag with no variables 4. Establish card/s for user input or for the selection of more than one item 5. The card is set up to display the field set function 6. The <go> and <prev> tasks selects the correct card in the deck 7. The <refresh> task refreshes specified card variables and if shown on screen refreshes screen 8. The <noop> tasks that override deck-level elements are incorporated as required

UNIT	ICAITB179A Build decks using wireless markup language (WML)
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<p>3. Set variables and validate WML files</p>	<ol style="list-style-type: none"> 1. Create case sensitive variables 2. Variables are specified with the Setvar Command 3. Variables are set through an input element 4. WML files are validated by typing and submitting the URL of the WML file or the an WML validator 5. The tested WML files meets the needs of the business client
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

WAP tools	Nokia WAP Toolkit, Waporizer, AVIDRapidTools (ART), V3 Mobile Gateway, TeleMessage, FolloWAP - iFollow
Hardware	Mobile phones, -mode, Palm and Windows CE devices, PDA for example
Standards/ specifications	<p>WAP Specification 1.1</p> <p>WAP Architecture Specification - WAP-100, Wireless Application Protocol Architecture Specification</p> <p>WAP Specification Suite</p> <p>WAP-190, Wireless Application Environment Specification</p> <p>WAP-191, Wireless Markup Language Specification</p> <p>WAP-192, Binary XML Content Format Specification</p> <p>WAP-193, WMLScript Language Specification</p> <p>WAP-194, WMLScript Standard Libraries Specification</p> <p>WAP-120, WAP Caching Model Specification</p> <p>WAP-175, WAP Cache Operation Specification</p> <p>WAP-174, User Agent Profiling Specification</p> <p>The above are just some of the industry wide WAP specifications, the complete range and new additions can be found at http://www.wapforum.org/what/technical.htm</p>
Standards	<p>W3C DOM specification, Extensible Markup Language (XML) 1.0 (Second Edition), W3C XML instances, W3C XML DTDs, W3C XML DTDs, ISO SGML meta-DTDs,</p> <p>Standards are being introduced on a regular basis it is worthwhile monitoring the following organisations in relation to XML standards Organisation for the Advancement of Structured Information Standards, ISO and IEEE to web-oriented groups like IETF and W3C</p>

UNIT	ICAITB179A Build decks using wireless markup language (WML)
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Parsers	On-line parsers, James Clark's expat parser, Java-based Validating XML Parser, Microsoft XML Parser in C++, XML Parser written in Python, XML Parser written in JavaScript, SiRPAC, Simple RDF Parser and Compiler

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to create WML files that meet the business clients need	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • WAP and application communication protocols • Internet standards and TCP/IP • XML 1.0 Standard • WMLScript specification • WMLScript • XML applications • The five layer protocol stack of: <ul style="list-style-type: none"> • Wireless Application Environment • Wireless Session Protocol • Wireless Transaction Protocol • Wireless Transport Layer Security • Wireless Datagram Protocol • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • WWW, HTML and the basics of building Web pages • JavaScript • XML

UNIT	ICAITB179A Build decks using wireless markup language (WML)
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • XML parser • WML validator <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p> <p>Applications involve responsibility for, and limited organisation of, others.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating some theoretical concepts; • apply solutions to a defined range of unpredictable problems; • identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas; • identify, analyse and evaluate information from a variety of sources; • take responsibility for ones own outputs in relation to specified quality standards; • and take limited responsibility for the quantity and quality of the output of others.

UNIT

ICAITB179A Build decks using wireless markup language (WML)**Key Competencies**

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	2	3	3	3

UNIT	ICAITB180A Integrate a database with a website
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to ensure database connectivity with website
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Database(s) is prepared	<ol style="list-style-type: none"> 1. Site data needs are identified from technical requirements 2. Existing database(s) are reviewed to ensure site data needs can be met 3. Additions / adjustments to database are made as required
2. Database logins are created	<ol style="list-style-type: none"> 1. Site operators and site visitors are identified against business needs 2. Database permission sets, authentication and authorisation parameters are determined for each class of user 3. Login names are created using relevant web server utility 4. Login names are added to web server using relevant server utility
3. Data source names are created	<ol style="list-style-type: none"> 1. Server utility is used to create data source names (DSN) as required by website architecture 2. DSN, database login name and passwords are confirmed against business requirements 3. Server utility is used to create a database connection string to connect the site to the database 4. Site configuration files are amended to store site connection string
4. Database connectivity tested	<ol style="list-style-type: none"> 1. Required information can be readily retrieved from website 2. Database integrity is maintained according to security benchmarks 3. Access permissions function correctly

UNIT	ICAITB180A Integrate a database with a website
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Databases	May include but are not limited to Oracle, Sybase, Microsoft SQL Server, Access connected to a SQL server, Ingres, DB2, Informix, mSQL, MySQL, SQL Server etc
Security	Access privileges and passwords must reflect the business /organisational requirements in terms of roles and functions performed by different positions.
Site Server Utilities	May include but not limited to Apache / MS IIS, SQL Server Enterprise Manager,
Servers	One or more servers depending on size and functionality of website and may include: <ul style="list-style-type: none"> • BEA Weblogic Servers, • Apache HTTP Server, • IBM VisualAge and WebSphere, • Microsoft-Internet-Information-Server, Microsoft-IIS, Microsoft-IIS-W, Microsoft-PWS-95, & Microsoft-PWS • Windows 2000 Server, • NetDynamics, • Lotus Domino • Netscape Enterprise Server, Netscape-FastTrack, Netscape-Commerce • Sun Micro Systems iPlanet Web Server, • iPlanet-Enterprise • Sun Micro Systems Java Web Server • Email Servers; • File & Print Servers; • FTP Servers; • Proxy Servers
Site functionality	Volumes (hits, page views, transactions, searches), arrival rates, response times by class, user session time, number of concurrent users,

UNIT	
UNIT	ICAITB180A Integrate a database with a website
Languages	CGI languages include C, C++, Java, Perl, ASP, Vbscript, Javascript
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Connectivity tools	Cold Fusion™ Professional 1.5, Sapphire/Web 2.0, and NetDynamics 1.0, Apple WebObjects Enterprise,

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to successfully ensure database to web site connectivity without compromising security and privacy				
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.				
Underpinning skills and knowledge	<table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 50%;">Underpinning knowledge:</th> <th style="width: 50%;">Underpinning skills:</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • Data analysis particularly in determining data types and data structures and query and report design • CGI • the function and features of primary files and transaction logs • the function and features of Open Database Connection (ODC) • the function and features of website foundations • the function and purpose of data source names (DSN) • Australian Computer Society Code Of Ethics </td> <td> <ul style="list-style-type: none"> • Analysis skills to determine data objects required, data structures, business requirements • registering a data source name (DSN) • the use of website administration software and site server utilities • how to build a database using a commercially available database product including: MS SQL server 7.0, to Oracle, Sybase • HTML </td> </tr> </tbody> </table>	Underpinning knowledge:	Underpinning skills:	<ul style="list-style-type: none"> • Data analysis particularly in determining data types and data structures and query and report design • CGI • the function and features of primary files and transaction logs • the function and features of Open Database Connection (ODC) • the function and features of website foundations • the function and purpose of data source names (DSN) • Australian Computer Society Code Of Ethics 	<ul style="list-style-type: none"> • Analysis skills to determine data objects required, data structures, business requirements • registering a data source name (DSN) • the use of website administration software and site server utilities • how to build a database using a commercially available database product including: MS SQL server 7.0, to Oracle, Sybase • HTML
Underpinning knowledge:	Underpinning skills:				
<ul style="list-style-type: none"> • Data analysis particularly in determining data types and data structures and query and report design • CGI • the function and features of primary files and transaction logs • the function and features of Open Database Connection (ODC) • the function and features of website foundations • the function and purpose of data source names (DSN) • Australian Computer Society Code Of Ethics 	<ul style="list-style-type: none"> • Analysis skills to determine data objects required, data structures, business requirements • registering a data source name (DSN) • the use of website administration software and site server utilities • how to build a database using a commercially available database product including: MS SQL server 7.0, to Oracle, Sybase • HTML 				

UNIT	ICAITB180A Integrate a database with a website
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Web servers • E-business website • Requirements documentation • Business planning documentation <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence.</p>
Context	<p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p> <p>Applications involve responsibility for, and limited organisation of, others.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating some theoretical concepts; • apply solutions to a defined range of unpredictable problems; • identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas; • identify, analyse and evaluate information from a variety of sources; • take responsibility for ones own outputs in relation to specified quality standards; • and take limited responsibility for the quantity and quality of the output of others.

UNIT

ICAITB180A Integrate a database with a website**Key Competencies**

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITB181A Write and document program modules
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FIELD	Build
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DESCRIPTION	This unit describes the technical skills required to develop and document modules
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Analysis and Design, Project Management, Test, Implement, the teamwork functional areas and documentation
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ELEMENT	PERFORMANCE CRITERIA
1. Code each program module	<ol style="list-style-type: none"> 1. Requirements documentation is obtained and reviewed 2. Code is created that conforms to development standards and the requirements 3. Code is compiled or run to ensure all syntax errors are corrected 4. Any limits, exceptions and other aspects built into the program modules are successfully tested against software specifications
2. Review each program module	<ol style="list-style-type: none"> 1. References for module tables, files, business functions are revised according to software specifications 2. Feedback/input is gained from user if applicable 3. Changes to code are made and tested against requirements
3. Document the program	<ol style="list-style-type: none"> 1. Incorporate internal documentation into the program 2. Create external documentation required for users and maintainers 3. External documentation is understood by users and maintainers

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Languages

The language used may be a standard programming language (eg. C or Java), an application framework (eg Visual Basic), a markup language (XML, DHTML) or a scripting language (eg Unix, Javascript, Perl). Note that a program written in HTML would not be considered a satisfactory assessment for this unit.

UNIT		ICAITB181A Write and document program modules
Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience. Reports meet the specific output requirements and are presented in a logical and accessible manner.	
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency	
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models	
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts	
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.	
Compilers	Borland C++ Compiler 5.5, Bloodshed Dev-C++, Cygwin Project (C/C++), Intel C/C++ compiler, GNU C/C++ compiler, AlphaWorks ADK for Win 3.1, Bluette, GNU Compiler Java Edition, Jikes, JDK,	
Standards	<ul style="list-style-type: none"> • AS 4006-1992 Software test documentation may be relevant to this unit. • AS/NZS 14143.1:1999 Information technology - Software measurement - Functional size measurement - Definition of concepts. • AS/NZS 15026:1999 Information technology - System and software integrity levels. • AS 4006-1992 Software test documentation, IEEE Standard for Software Unit Testing. • AS 4043-1992 Software configuration management, • AS 4042-1992 Software configuration management plans, • AS 3925.1-1994 Software quality assurance – Plans, • AS/NZS 4258:1994 Software user documentation process, • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, • AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. <p>International and Australian Standards are updated and changed on a regular basis, it is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p>	

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm sufficient knowledge of interpreting software specifications. Assessment must confirm the ability to meet client requirements by combining an industry recognised program language the software specifications and quality standards. Competence in this unit is based on the fact that the delivered unit operates according to specification
Interdependent assessment of units	This unit may be assessed with any of the following: ICAIT077B, ICAIT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITAD054B, ICAITAD048B, ICAITAD049A, ICAITAD057A, ICAITAD058A. The interdependence of units of competency for assessment will vary with the particular project or scenario

UNIT	ICAITB181A Write and document program modules
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Underpinning skills and knowledge

Underpinning knowledge of

- Detailed knowledge development methodologies
- OO technology and concepts
- Programming theory
- Broad knowledge base incorporating theoretical concepts of real-time programming
- Broad knowledge base incorporating theoretical concepts of Input/ Output drivers
- Broad knowledge base incorporating theoretical concepts of software development configuration management processes
- Broad knowledge base incorporating theoretical concepts of size estimation
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles

Underpinning skills in

- Program documentation techniques
- Error detection and handling techniques
- Algorithms skills in relation to analysis, evaluation and identification of solutions

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- A development environment
- Technical requirements
- Compiler

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence

UNIT

ICAITB181A Write and document program modules

Context

Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of options to be applied.

An individual demonstrating these competencies would be able to:

- demonstrate some relevant theoretical knowledge; apply a range of well developed skills;
- apply known solutions to a variety of predictable problems; perform processes that require a range of well developed skills where some discretion and judgement is required;
- interpret available information, using discretion and judgement;
- take responsibility for ones own outputs in work and learning;
- and take limited responsibility for the output of others.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	2	3	3	3

UNIT	ICAITB182A Write and compile code based on requirements
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FIELD	Build
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DESCRIPTION	This unit describes the competency required to produce program code against requirements
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Analysis and Design, Project Management, Test, Implement, the teamwork functional areas and documentation
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ELEMENT	PERFORMANCE CRITERIA
ELEMENT	PERFORMANCE CRITERIA
1. Declare and assign variables	<ol style="list-style-type: none"> 1. Naming conventions are correctly employed 2. Variables are declared according to requirements 3. Dynamic variables are garbage collected after use
2. Code modules	<ol style="list-style-type: none"> 1. Class instances or code modules are developed as specified 2. Modules meets cohesion and coupling standards 3. Dynamic arrays, tables and memory structures are developed
3. Unit test each module.	<ol style="list-style-type: none"> 1. Testing routines are developed to verify the code produced actually fulfils the requirement 2. Memory structures eg. Arrays, are tested for boundary violations 3. Control structures or loops are terminated
4. Determine exception handling procedures	<ol style="list-style-type: none"> 1. The coding areas where exceptions may occur are determined 2. Exception handling routines implemented 3. All exceptions are caught
5. Use debugging and error handling techniques	<ol style="list-style-type: none"> 1. Debugging techniques and error handling facilities are utilised 2. External (eg. Use of Database) error handling methods remain highly cohesive and loosely coupled 3. Code is compiled and tested and iterated, if necessary

UNIT	ICAITB182A Write and compile code based on requirements
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6. Document the program code	<ol style="list-style-type: none"> 1. Incorporate internal documentation into the program 2. Create external documentation required for users and maintainers 3. External documentation is understood by users and maintainers
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Languages	The language used will be a programming language such as C, Java, C++, Perl, Delphi
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Standards	<ul style="list-style-type: none"> • AS 4006-1992 Software test documentation may be relevant to this unit. • AS/NZS 14143.1:1999 Information technology - Software measurement - Functional size measurement - Definition of concepts. • AS/NZS 15026:1999 Information technology - System and software integrity levels. • AS 4006-1992 Software test documentation, IEEE Standard for Software Unit Testing. • AS 4043-1992 Software configuration management, • AS 4042-1992 Software configuration management plans, • AS 3925.1-1994 Software quality assurance – Plans, • AS/NZS 4258:1994 Software user documentation process, • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, • AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. <p>International and Australian Standards are updated and changed on a regular basis, it is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p>
Revision	Depending on the budgetary constraints, revision may be repeated a number of times

UNIT	ICAITB182A Write and compile code based on requirements
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Procedures	Procedures are those prescribed during the project development phase and are based on client organisational requirements and project development requirements
Compilers	Borland C++ Compiler 5.5, Bloodshed Dev-C++, Cygwin Project (C/C++), Intel C/C++ compiler, GNU C/C++ compiler, AlphaWorks ADK for Win 3.1, Bluette, GNU Compiler Java Edition, Jikes, JDK,
Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience. Reports meet the specific output requirements and are presented in a logical and accessible manner.
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used
Quality process	Some organisations may be quality certified and have well document standards for addressing quality while others will not.
Metrics and planning method	Will vary depending upon whether the organisation uses a formal method for development. In some sites there will be no guidelines to follow

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to write code against the requirements., the code will be verifiable against the actual running of the program to meet the requirements
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITT077B, ICAITT083B, ICAITAD041B, ICAITAD042B, ICAITB059B, ICAITAD054B, ICAITAD048B, ICAITAD049A, ICAITAD057A, ICAITAD058A. The interdependence of units of competency for assessment will vary with the particular project or scenario

UNIT	ICAITB182A Write and compile code based on requirements
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Underpinning skills and knowledge

Underpinning knowledge of

- Detailed knowledge development methodologies
- OO technology and concepts
- OO programming theory
- Implementation of objects and classes
- Broad knowledge base incorporating theoretical concepts of real-time programming
- Broad knowledge base incorporating theoretical concepts of Input/ Output drivers
- Broad knowledge base incorporating theoretical concepts of software development configuration management processes
- Broad knowledge base incorporating theoretical concepts of size estimation
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles

Underpinning skills in

- Program documentation techniques
- Error detection and handling techniques
- Algorithms skills in relation to analysis, evaluation and identification of solutions

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- A development environment
- Technical requirements
- Compiler

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence

UNIT

ICAITB182A Write and compile code based on requirements**Context**

Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of options to be applied.

An individual demonstrating these competencies would be able to:

- demonstrate some relevant theoretical knowledge; apply a range of well developed skills;
- apply known solutions to a variety of predictable problems; perform processes that require a range of well developed skills where some discretion and judgement is required;
- interpret available information, using discretion and judgement;
- take responsibility for ones own outputs in work and learning;
- and take limited responsibility for the output of others.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	2	3	3	3

UNIT	ICAITB210A Analyse information and assign meta-tags
FIELD	Build
DESCRIPTION	This unit defines the competency required to analyse material and assign meta-tags to ensure the accurate and consistent retrieval of information by clients.
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
ELEMENT	PERFORMANCE CRITERIA
1. Identify requirements for meta-tags	<ol style="list-style-type: none"> 1. Scope and likely uses of material are identified from previous business and stakeholder requirements process 2. Appropriate type and structure of meta-tags are determined taking into account identified client needs, requirements and expectations 3. Any special client requirements or expectations are identified and incorporated
2. Analyse material	<ol style="list-style-type: none"> 1. Analysis and description tools, standards, precedents and techniques are appropriate given the nature of the material 2. Analysis of subject content of the material reflects the expected client usage requirements 3. Significant information is clearly distinguished from minor information 4. Concepts derived from analysis of material are appropriate to the business requirements and intended use
3. Create meta-tags	<ol style="list-style-type: none"> 1. Meta-tags represent concepts appropriately, depending on the overall purpose and intended use of the material 2. Meta-tags conform to general conventions and any business rules 3. Where required, reference structure of descriptors is developed to display relationships to assist clients 4. Where appropriate, meta-tags are enhanced to meet identified client needs
4. Test and monitor meta-tagging practices and procedures	<ol style="list-style-type: none"> 1. Meta-tagging of material is tested and changes made if necessary 2. Meta-tagging practices and procedures are reviewed regularly to ensure client needs are being met and in response to industry developments, and appropriate action is taken to improve practices 3. Where required, meta-tags are checked regularly for internal consistency and compliance with established structure, rules and authorities

UNIT	ICAITB210A Analyse information and assign meta-tags
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Data	<p>Variables may include but are not limited to: established files, data from mixed sources and applications</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to data were considered and appropriate choices made given the business specifications and client requirements.</p> <p>Ask questions about different types of data other than the data used, to ensure the application of knowledge and skills to other contexts.</p>
Databases	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> • Oracle, • Sybase, • Microsoft SQL Server, • Ingres, • DB2, • Informix
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience. Reports meet the specific output requirements and are presented in a logical and accessible manner.</p>
E-commerce models	<p>Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models</p>
E-Business	<p>Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts</p>
Knowledge Economy	<p>Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.</p>
Information requirements	<p>Variables may include but are not limited to information identified through modelling data processes and objects, business information needs will vary according to specific business needs and type of business</p>
Workplace environment	<p>May involve a business involved in a total organisational change, a systems only change, a business improvement process, an e-business solution involving the total organisation or part of the organisation</p>

UNIT	ICAITB210A Analyse information and assign meta-tags
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Legislation, codes	Copyright Act and amendments Archives Act Equal Opportunity Privacy Legislation
Software	Tagmaster, Meta Builder 2,

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to analyse information and then assign clear meta-tags for easy retrieval of information	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Data modelling in relation to developing the conceptual data model • business operating systems in relation to data sources • decision support systems in relation to knowledge management strategies • The function and features of databases • OH&S principles and responsibilities in regard to the health and safety of oneself and others • DBMS fundamentals in relation to overall unit of competence • Meta standards (e.g. Dublin Core, Simple HTML Ontology Extensions) • Document indexing and working with search engines • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • ACS Code of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Communicating with clients • Modelling of data processes • HTML • Analysis skills

UNIT	ICAITB210A Analyse information and assign meta-tags
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Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • A range of information and materials • Business requirements <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence.</p>
Context	<p>Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination. The self-directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions.</p> <p>Group or team co-ordination may be involved. The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.</p>

Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITB212A Implement quality assurance process for web sites
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FIELD	Build
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DESCRIPTION	This unit defines the competency required to develop and conduct a planned and systematic pattern of actions required to provide adequate confidence that the web site fulfils customer's expectations.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Establish standards	<ol style="list-style-type: none"> 1. Appropriate regulatory, accessibility and / or industry compliance standards, such as privacy legislation or ISO standards, are identified 2. Measurable performance standards are developed for all documents 3. Performance measures are quantified, documented and disseminated. Common performance measures include timeliness, structural quality, content accuracy and consistency, response time and latency and server response time. 4. Standards are developed for as wide a number of browsers as is appropriate 5. Establish navigability standards such as jump through facility and accurate page headings and site maps. 6. Establish site concurrent usage standards 7. Establish a centralised, distributed or combined Quality Assurance methodology. 8. Establish guidelines for updating and loading new content onto the web site. 9. Document and disseminate all performance standards benchmarks

UNIT	ICAITB212A Implement quality assurance process for web sites
2. Apply standards and track performance	<ol style="list-style-type: none"> 1. Implement regular testing of site against performance standards benchmarks using a wide variety of browsers. 2. All updates and new content are tested against performance standards benchmarks prior to being loaded 3. Spell check, CSS check, HTML validating and link checking software is applied. 4. Results are documented and disseminated. 5. Feedback is provided to web authors, users and administrators on a routine and regular basis.
3. Develop and apply continuous improvement process	<ol style="list-style-type: none"> 1. Performance standards feedback is provided to developers, maintainers and or administrators. 2. Below average or unacceptable performance standards are identified and appropriate people informed in order to improve performance 3. Provide channels for interaction, feedback and suggestions from all site users, administrators, developers and maintainers 4. Responses to interaction, feedback and suggestion providers is conducted 5. Procedures to identify feedback and suggestions to be developed are applied and acted upon. 6. Conduct regular benchmark reviews based on improved performance and disseminate revised benchmarks
4. Document quality assurance practices	<ol style="list-style-type: none"> 1. Document quality assurance procedures and processes 2. Document quality assurance results 3. Document changes to procedures, processes and results

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Web Site Requirements

A live web site is available. The range of customers and on line processes is documented and disseminated prior to assessment.

Software Requirements

The software used to develop and operate the Web Site is available, including plug ins. Automatic testing software is available. A range of commercially available software can be used and might include the following:

Lynx-Me, W3C HTML validator, Link Alarm, Cyber Spider, HTML Power Tools, Doctor HTML, CSS Check.

UNIT	ICAITB212A Implement quality assurance process for web sites
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Documentation Requirements	User manuals and installation instructions are available. User analysis can also be made available to assist in checking performance against user expectations. Regulatory, accessibility and industry standards documentation is available
Hardware	Can include IT equipment of all types: <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers
Operating system	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the competence to identify, establish and implement appropriate quality assurance standards to the web site. A continuous improvement process must also be developed and implemented. Standards should be quantitative and applied universally wherever possible. Quality assurance standards should be well documented and disseminated.
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT	ICAITB212A Implement quality assurance process for web sites	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Website architecture and website security • Work Load Metrics and Technical Performance Measurement • Business process design and customer and business liaison • Website accessibility and equity legislation • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Website development • Website analysis • Technical test design • Test implementation • Test evaluation • Evaluation feedback • Evaluation analysis
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Webservers • E-business website • Analysis software • Automatic testing software • Appropriate regulatory, industry compliance and accessibility standards <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>	
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency in identifying, developing, implementing and documenting an appropriate quality regime that incorporates a continuous improvement process.</p>	

UNIT	ICAITB212A Implement quality assurance process for web sites
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Context

Breadth, depth and complexity involving analysis, documentation and design across a broad range of technical and/or managerial functions including identifying the technical and human computer interface requirements which drive design. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, evaluation, technical or leadership/guidance and communications functions related to products, services, operations, processes and procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

An individual demonstrating these competencies would be able to:

- Demonstrate understanding of specialised knowledge with depth in some areas;
- Analyse, diagnose, design and execute judgements across a broad range of technical or management functions;
- Demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills;
- Generate ideas through the analysis of information and concepts at an abstract level;
- Demonstrate accountability for personal outputs within broad parameters; and
- Demonstrate accountability for group outcomes within broad parameters.

Key Competencies						
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Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	2	3

5. Test IT Solutions

ICAITT077C	Develop detailed test plan	5-2
ICAITT078B	Perform unit test.....	5-7
ICAITT079B	Perform integration test.....	5-12
ICAITT080B	Perform specific unit test for OO Class.....	5-17
ICAITT081B	Perform systems test	5-22
ICAITT082C	Manage the testing process.....	5-27
ICAITT083B	Develop and conduct client acceptance test	5-32
ICAITT084B	Perform stress and loading test of integrated platform	5-37
ICAITT183A	Confirm accessibility of web site design	5-42
ICAITT184A	Ensure site usability	5-46
ICAITT185A	Validate basic website performance	5-51
ICAITT186A	Conduct operational acceptance tests of web sites	5-55

UNIT	ICAITT077C Develop detailed test plan
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FIELD	Test
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DESCRIPTION	This unit describes the collating of documentation of conditions and expected results sufficient to test the system thoroughly
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include ICAITAD041A, ICAITB001A, ICAITT083A, ICAITAD042A, ICAITB069A, ICAITAD052A, ICPMM61cA, ICAITAD056A, ICAITAD050A
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ELEMENT	PERFORMANCE CRITERIA
1. Prepare test environment and gather tools	<ol style="list-style-type: none"> 1. Structure of servers and user accounts are determined 2. Critical areas to test are determined eg. screen and printer drivers, file locations for server/client identified 3. Accessibility of unit documentation is ensured, i.e. Design docs, source code listing, requirements etc, are on hand 4. User representatives or approval authorities are notified of scheduled test, if required 5. Operations staff are notified of scheduled test
2. Prepare test data	<ol style="list-style-type: none"> 1. Test schedules are gathered 2. Schedules are correlated with related functionality 3. Testing schedule is checked for being properly vetted and validated 4. Test drivers / stubs are prepared for test harness 5. Test plan is registered, and log entries are initiated
3. Complete test plan	<ol style="list-style-type: none"> 1. Any ancillary equipment (hardware/software etc.) is scheduled and available 2. Test plan is walked through according to project requirements 3. All relevant parties are confirmed for attendance 4. All documentation and checklists are completed

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Test and acceptance processes

Will vary according size, type and scope of the project,

- **AS 4006-1992** Software test documentation may be relevant to this unit.
- **AS/NZS 14143.1:1999** Information technology - Software measurement - Functional size measurement - Definition of concepts.
- **AS/NZS 15026:1999** Information technology - System and software integrity levels.
- **AS 4006-1992** Software test documentation.

International and Australian Standards are updated and changed on a regular basis, it is therefore important to check the Standards Australia website on a regular basis for new standards <http://www.standards.com.au/>

UNIT	ICAITT077C Develop detailed test plan
Test plan	<p>Test plans will generally contain information on:</p> <ul style="list-style-type: none"> • Test Items • Tested Features • Features Not Tested (per cycle) • Testing Strategy and Approach • Syntax • Description of Functionality – Functional testing • Interface testing • Acceptance testing • Arguments for tests • Expected Output • Specific Exclusions • Dependencies • Test Case Success/Failure Criteria • Pass/Fail Criteria for the Complete Test Cycle • Entrance Criteria/Exit Criteria • Test Suspension Criteria and Resumption Requirements • Test Deliverables/Status Communications Vehicles • Testing Tasks • Hardware and Software Requirements • Error management and configuration management • Staffing and Training Needs/Assignments • Test Schedules • Risks, Assumptions and Contingencies • Approvals <p>The candidate must be able to understand the functionality being tested and the conditions under which these tests are to be performed</p>
Software metrics	Size of each development work package, milestones is a variable determined by the sponsor, project manager, development team
Quality benchmarks	<p>There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE, the Software Engineering Institute (SEI), and the ISO standards.</p> <p>Relevant quality standards include:</p> <ul style="list-style-type: none"> • AS 4043-1992 Software configuration management, • AS 4042-1992 Software configuration management plans, • AS 3925.1-1994 Software quality assurance – Plans, • AS/NZS 4258:1994 Software user documentation process, • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, • AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. <p>International and Australian Standards are updated and changed on a regular basis, it is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p> <p>Quality benchmarks will vary according to the type of organisation and the benchmarks will cover technical areas, cost savings, performance and quality.</p>
Software life cycle	<p>Will vary according to the software life cycle model being employed.</p> <ul style="list-style-type: none"> • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes. • AS/NZS 15271:1999 Guide for AS/NZS ISO/IEC 12207 ([Information technology -] Software life cycle processes)
Type of computer application	May include but not limited to; Operating systems, communications software, utility programs, compilers, database handlers

UNIT	ICAITT077C Develop detailed test plan
Workplace Environment	May involve work in the client's environment
Testing Method	The method of testing (bottom up versus top down) will have an impact on the running sequence of the tests. It should also be mentioned that Top Down testing will allow the user representatives to become involved at an earlier stage in the testing process
Client standards	Users should check that the test plan covers all conditions considered important to the business; Information systems personnel should check for completeness in testing the program specifications
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach, information gathering processes may have associated templates
Test tools	<p>There are many testing and test management tools available, the following list covers a number of industry tools currently available:</p> <ul style="list-style-type: none"> • Code/ unit/ class testing • AssertMate; • BoundsChecker; • C-Cover; • CodeReview; • CodeWizard; • DeepCover; • FailSafe; • Hindsight; • Insure++; • JCAST; • Logiscope; • JavaPureCheck; • Stress load testing: • Automated Test Facilities; • e-Load; • E-TEST Suite; • e-MONITOR • Astra SiteManager; • Astra SiteTest; • AutoTester Web; • LoadRunner; • JavaLoad; • Applications testing • DataShark • Cyrano Suite; • Datatect • preVue-C/S
Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used
Quality process	Some organisations may be quality certified and have well documented standards, others will not.

UNIT	ICAITT077C Develop detailed test plan
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EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm sufficient knowledge of interpreting software specifications. Assessment must confirm the ability to consistently and accurately develop a comprehensive test plan	
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITAD041A, ICAITB001A, ICAITT083A, ICAITAD042A, ICAITB069A, ICAITAD052A, ICPMM61cA, ICAITAD056A, ICAITAD050A. The interdependence of units of competency for assessment will vary with the particular project or scenario.	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Detailed knowledge of three different operating systems • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Detailed knowledge of System/Application being tested • Broad knowledge of testing techniques with detailed knowledge of features and processes in some areas • Broad knowledge of automated test tools with detail knowledge of features and processes in some areas 	<p>Underpinning Skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when critical areas to test are determined eg. access control, pathing • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when all documentation and checklists are completed • Application usage skills in relation to analysis, evaluation and presentation of information, • Questioning and active listening skills, for example when user representatives or approval authorities are notified of scheduled test, if required • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when test plan is walked through according to project requirements • Research skills for identifying, analysing and evaluating broad features of system testing and best practice in system testing, for example when critical areas to test are determined eg. use of application skills

UNIT	ICAITT077C Develop detailed test plan
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EVIDENCE GUIDE

Resources	<p>All testing should be carried out on the same platform as the completed system. As such, any scheduled testing should be on the production platform. The production environment is required as part of any test preparation.</p> <p>Assessment of this competency requires access to project documentation such as:</p> <ul style="list-style-type: none"> • System Engineering Management Plan • Test and Evaluation Program Plan • Project Plan <p>To demonstrate this unit of competence the test plan will need to document:</p> <ul style="list-style-type: none"> • test conditions/cases to be applied, • the data to be processed, • the automated testing coverage • the expected results and • the activities, dependencies and effort required to conduct the System Test <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to prepare the test data and to complete walk through aspects of this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.</p> <p>The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.</p> <p>Applications involve significant judgement in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.</p> <p>The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.</p>

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	2	3

UNIT	ICAITT078B Perform unit test
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FIELD	Test
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DESCRIPTION	This unit describes the steps involved to ensure that units of the system are proved adequately before integration testing
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITB069A, ICAITAD052A, ICPMM61cA, ICAITAD050A
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ELEMENT	PERFORMANCE CRITERIA
1. Prepare for unit test	<ol style="list-style-type: none"> 1. Test environment is prepared taking into account: data, program libraries, network/communications and other equipment, operating system and other support software 2. Test scripts (online test) or test run (batch test) are prepared for running 3. Expected results are reviewed against acceptance criteria (walkthrough) 4. Completion of modification logs confirmed, if module pre-exists (i.e. enhancement) 5. Drivers/stubs are set up for each unit to be tested 6. Static test of each unit is performed
2. Conduct unit test	<ol style="list-style-type: none"> 1. Each test script is run and results are documented. Details of failures are entered into the defect log if/when they occur 2. Requirements are compared to the test results on the completion of each unit, and result sheets are completed 3. Memory leakage is specifically addressed for each code unit, and streams and files are explicitly closed on completion
3. Analyse and classify results	<ol style="list-style-type: none"> 1. Results are summarised and classified and critical or urgent areas of concern are highlighted 2. Results are compared against requirement and design specification 3. Operations are notified of test completion 4. Attendees' details/comments are logged and signatures are gained 5. Feedback meeting is scheduled if necessary

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Test and acceptance processes

- Will vary according size, type and scope of the project,
- AS 4006-1992 Software test documentation may be relevant to this unit.
 - AS/NZS 14143.1:1999 Information technology - Software measurement - Functional size measurement - Definition of concepts.
 - AS/NZS 15026:1999 Information technology - System and software integrity levels.
 - AS 4006-1992 Software test documentation, IEEE Standard for Software Unit Testing.

International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: <http://www.standards.com.au/>

UNIT	ICAITT078B Perform unit test
Testing strategies	Specification-oriented, implementation-oriented, and error-oriented
Size of Program/ functional unit	May be limited to one program or entire system
Quality benchmarks	<p>There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE, the Software Engineering Institute (SEI), and the ISO standards.</p> <p>Relevant quality standards include:</p> <ul style="list-style-type: none"> • AS 4043-1992 Software configuration management, • AS 4042-1992 Software configuration management plans, • AS 3925.1-1994 Software quality assurance – Plans, • AS/NZS 4258:1994 Software user documentation process, • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, • AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. <p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/</p>
Software life cycle	<p>Will vary according to the software life cycle model being employed.</p> <ul style="list-style-type: none"> • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes. • AS/NZS 15271:1999 Guide for AS/NZS ISO/IEC 12207 ([Information technology -] Software life cycle processes)
Test Criteria	Dependent on the type of test, i.e. Functional, Efficiency, Cohesion etc.
Client standards	Users should check that the test plan covers all conditions considered important to the business; Information systems personnel should check for completeness in testing the program specifications
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates
Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare
Programming languages	C, C++, Java, JavaScript, Visual Basic, FORTRAN, SQL
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency

UNIT	ICAITT078B Perform unit test
<p>Test tools</p>	<p>There are many testing and test management tools available. The following list covers a number of industry tools currently available:</p> <p>Code/ unit/ class testing:</p> <ul style="list-style-type: none"> • AssertMate; • BoundsChecker; • C-Cover; • CodeReview; • CodeWizard; • DeepCover; • FailSafe; • Hindsight; • Insure++; • JCAST; • Logiscope; • JavaPureCheck; <p>Stress load testing:</p> <ul style="list-style-type: none"> • Automated Test Facilities; • e-Load; • E-TEST Suite; • e-MONITOR • Astra SiteManager; • Astra SiteTest; • AutoTester Web; • LoadRunner; • JavaLoad; <p>Applications testing</p> <ul style="list-style-type: none"> • DataShark • Cyrano Suite; • Datatect • preVue-C/S <p>Computer-Aided Software Test (CAST) tools</p> <ul style="list-style-type: none"> • Static Analysis Tools, • Execution Framework Tools, • Capture/Playback Tools, • Coverage Tools
EVIDENCE GUIDE	
<p>Critical aspects of evidence</p>	<p>Assessment must confirm sufficient knowledge of the unit functionality being tested. Assessment must confirm the ability to meet client requirements by successfully testing all nominated components and documenting results</p>
<p>Interdependent assessment of units</p>	<p>This unit may be assessed with any of the following: ICAITB069A, ICAITAD052B, ICPMM61cA, ICAITAD050A. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>

UNIT	ICAITT078B Perform unit test	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Detailed knowledge of three different programming languages • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Detailed knowledge of underlying test data • Detailed knowledge of Input /Output requirements • Broad knowledge of testing techniques with detailed knowledge of features and processes in some areas 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when memory leakage is specifically addressed for each code unit, and streams and files are explicitly closed on completion • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when attendees' details/comments are logged and signatures are gained • Programming skills in two or three languages, for example when test scripts (online test) or test run (batch test) are prepared for running, and when each test script is run and results are documented. Details of failures are entered into the defect log if/when they occur • Questioning and active listening skills, for example when attendees' details/comments are logged and signatures are gained
Resources	<p>To demonstrate competency the candidate will require access to:</p> <ul style="list-style-type: none"> • the test plan • the requirements • design documents used in the analysis of the test. <p>Top Down testing may mean that user representatives should be present at a unit testing session if predicates and pathways are being tested.</p> <p>All developed code must be unit tested. Unit Testing must be completed and signed off by the tester – not the trainer or assessor</p> <p>Assessment of this unit of competence could include review of documents developed by the candidate that clearly identify test results and modification logs.</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>	
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the documentation and monitoring aspects of this unit.</p>	
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p>	

UNIT	ICAITT078B Perform unit test
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Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	1	2	1	2	2	3

UNIT	ICAITT079B Perform integration test
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FIELD	Test
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DESCRIPTION	This unit describes the steps involved to ensure that the units components of the system operate together to the expected standard.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITB069A, ICAITAD052A, ICPMM61cA, ICAITAD050
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ELEMENT	PERFORMANCE CRITERIA
1. Prepare for test	<ol style="list-style-type: none"> 1. Test environment is prepared taking into account: data, program libraries, network/communications and other equipment, operating system and other support software 2. Test scripts (online test) or test run (batch test) are prepared for running 3. Expected results are reviewed against acceptance criteria (walkthrough) 4. Completion of modification logs is confirmed, if module pre-exists (i.e. enhancement) 5. Static tests of each point of integration are performed and correctness of arguments, positional parameters and return values in each integration suite are verified 6. Results of any earlier units components testing are reviewed and any critical issues to take into account are identified
2. Conduct test	<ol style="list-style-type: none"> 1. Each test script is run and results are documented. Details are entered into the defect log when/if failure occurs 2. Memory leakage, global name space pollution, static variables are specifically addressed for each integration unit 3. Integration standards (if any) are adopted 4. Requirements are compared to the test results on completion of each integration units component and result sheets are completed
3. Analyse and classify results	<ol style="list-style-type: none"> 1. Results are summarised and classified and critical or urgent areas of concern are highlighted 2. Results are compared against requirement and design specification 3. Operations are notified of test completion 4. Attendees' details/comments are logged and signatures are gained 5. Feedback meeting is scheduled if necessary

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Software life cycle

Will vary according to the software life cycle model being employed.

- AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes.
- AS/NZS 15271:1999 Guide for AS/NZS ISO/IEC 12207 ([Information technology -] Software life cycle processes)

UNIT	ICAITT079B Perform integration test
Test and acceptance processes	<p>Will vary according size, type and scope of the project,</p> <ul style="list-style-type: none"> • AS 4006-1992 Software test documentation may be relevant to this unit. • AS/NZS 14143.1:1999 Information technology - Software measurement - Functional size measurement - Definition of concepts. • AS/NZS 15026:1999 Information technology - System and software integrity levels. • AS 4006-1992 Software test documentation, IEEE Standard for Software Unit Testing.
Quality benchmarks	<p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/</p> <p>There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE, the Software Engineering Institute (SEI), and the ISO standards.</p> <p>Relevant quality standards include:</p> <ul style="list-style-type: none"> • AS 4043-1992 Software configuration management, • AS 4042-1992 Software configuration management plans, • AS 3925.1-1994 Software quality assurance – Plans, • AS/NZS 4258:1994 Software user documentation process, • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, • AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools.
Test Criteria	<p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/</p> <p>Dependent on the type of test, i.e. Functional, Efficiency, Cohesion etc.</p>
Client standards	<p>Users should check that the test plan covers all conditions considered important to the business; Information systems personnel should check for completeness in testing the program specifications</p>
Documentation and Reporting	<p>Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates</p>
OH and S Standards	<p>As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency</p>
Operating systems	<p>Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare</p>

UNIT	ICAITT079B Perform integration test
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Test tools

There are many testing and test management tools available. The following list covers a number of industry tools currently available:

Code/ unit/ class testing

- AssertMate;
- BoundsChecker;
- C-Cover;
- CodeReview;
- CodeWizard;
- DeepCover;
- FailSafe;
- Hindsight;
- Insure++;
- JCAST;
- Logiscope;
- JavaPureCheck;

Stress load testing:

- Automated Test Facilities;
- e-Load;
- E-TEST Suite;
- e-MONITOR
- Astra SiteManager;
- Astra SiteTest;
- AutoTester Web;
- LoadRunner;
- JavaLoad;

Applications testing

- DataShark
- Cyrano Suite;
- Datatect
- preVue-C/S

Programming languages

C, C++, Java, JavaScript, Visual Basic, FORTRAN, SQL

EVIDENCE GUIDE	
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Critical aspects of evidence

Assessment must confirm sufficient knowledge of the integration requirements for the units of the particular system

Assessment must confirm the ability to determine whether the units of the system operate according to requirements specifications.

The candidate will need to ensure that:

- Components have been compiled, linked, and loaded together.
- The components have successfully passed the integration tests at the interface between each component.

It should be noted that the quality of code is not being assessed, but the competence of testing the components.

UNIT	ICAITT079B Perform integration test	
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITB069A, ICAITAD052A, ICPMM61cA, ICAITAD050A. The interdependence of units of competency for assessment will vary with the particular project or scenario.	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Detailed knowledge of three different programming languages • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Detailed knowledge of System/Application being tested • Broad knowledge of testing techniques with detailed knowledge of features and processes in some areas • Broad knowledge of automated test tools with detailed knowledge of features and processes in some areas • Detailed knowledge of underlying test data • Detailed knowledge of Input/Output requirements 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when static tests of each point of integration are performed and correctness of arguments, positional parameters and return values in each integration suite are verified • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when attendees' details/comments are logged and signatures are gained • Data Analysis skills in relation to analysis, evaluation and presentation of information, for example when static tests of each point of integration are performed and correctness of arguments, positional parameters and return values in each integration suite are verified, and when each test script is run and results are documented, and when memory leakage, global name space pollution, static variables are specifically addressed for each integration unit • Questioning and active listening skills, for example when attendees' details/comments are logged and signatures are gained • Research skills for identifying, analysing and evaluating broad features of system testing and best practice in system testing; high order problem solving skills, for example when results of any earlier unit testing are reviewed and any critical issues to take into account are identified • Programming skills in two or three languages, for example when static tests of each point of integration are performed and correctness of arguments, positional parameters and return values in each integration suite are verified, and when each test script is run and results are documented
Resources	<p>To demonstrate competence the candidate will require access to:</p> <ul style="list-style-type: none"> • Acceptance criteria • Test plan • Integration standards • The requirements and design documents used in the analysis of the test. <p>Top Down testing may mean that user representatives should be present at a unit testing session if predicates and pathways are being tested.</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>	
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the documentation and analysis of test results against requirements.</p>	

UNIT	ICAITT079B Perform integration test
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Context **Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.**

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	2	2	3

UNIT	ICAITT080B Perform specific unit test for OO Class
FIELD	Test
DESCRIPTION	This unit describes the competency required to ensure that the system is proved adequate before hand-over to the Client User.
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include : ICAITB069A, ICAITAD052A, ICPMM61cA, ICAITAD050A, ICAITAD049A, ICAITAD057A, ICAITAD058A, ICAITB010A
ELEMENT	PERFORMANCE CRITERIA
1. Prepare for test	<ol style="list-style-type: none"> 1. Test environment is prepared taking into account: data, program libraries, network/communications and other equipment, operating system and other support software 2. Expected results are reviewed against acceptance criteria (walkthrough) 3. If module pre-exists (i.e. enhancement), completion of modification logs is confirmed 4. Static test of each point of integration is performed, and correctness of arguments, positional parameters and return values in each integration suite is verified 5. Driver or manager program is built to exercise class behaviour (member functions) 6. Objects containing lower level class instances are tested separately, i.e. declaration of class within the class to be tested 7. Presence of scripts to test dynamic binding on all relevant functions is ensured, if inheritance has been used to generate object 8. Presence of scripts to validate all relevant functions is ensured, if function overloading has been implemented 9. Data is prepared to test all paths, not just predicated path 10. Data is prepared to test all member functions 11. Documented examples for all public functions are ensured, if a class is being added to a library
2. Conduct test	<ol style="list-style-type: none"> 1. Each test script is run and results are documented. When a failure occurs, details are entered into the defect log. 2. Memory leakage, global name space pollution, static variables are specifically addressed for each object 3. Side effects are identified side and are logged, if constructors/destructors are not explicitly declared 4. Adoption of organisation's OO standards (if any) is ensured 5. Requirements are compared to the test results on completion of each class test, and result sheets are completed
3. Analyse and classify results	<ol style="list-style-type: none"> 1. Results are summarised and classified, and critical or urgent areas of concern are highlighted 2. Results are compared against requirement and design specification 3. Operations are notified of test completion 4. Attendees' details/comments are logged and signatures are gained 5. Feedback meeting is scheduled if necessary

UNIT

ICAITT080B Perform specific unit test for OO Class

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Class	<p>The use of the term class in the unit title relates to a set of objects which share a common structure and behaviour.</p> <p>The use of class in the performance criteria relates to a class that is a specialisation (a "subclass") of another</p>
Test and acceptance processes	<p>Will vary according size, type and scope of the project,</p> <ul style="list-style-type: none"> • AS 4006-1992 Software test documentation may be relevant to this unit. • AS/NZS 14143.1:1999 Information technology - Software measurement - Functional size measurement - Definition of concepts. • AS/NZS 15026:1999 Information technology - System and software integrity levels. • AS 4006-1992 Software test documentation, IEEE Standard for Software Unit Testing.
Quality benchmarks	<p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/</p> <p>There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE, the Software Engineering Institute (SEI), and the ISO standards.</p> <p>Relevant quality standards include:</p> <ul style="list-style-type: none"> • AS 4043-1992 Software configuration management, • AS 4042-1992 Software configuration management plans, • AS 3925.1-1994 Software quality assurance – Plans, • AS/NZS 4258:1994 Software user documentation process, • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, • AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. <p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/</p>
Software life cycle	<p>Will vary according to the software life cycle model being employed.</p> <ul style="list-style-type: none"> • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes. • AS/NZS 15271:1999 Guide for AS/NZS ISO/IEC 12207 ([Information technology -] Software life cycle processes)
Test Criteria	<p>Dependent on the type of test, i.e. Functional, Efficiency, Cohesion etc.</p>
Client standards	<p>Users should check that the test plan covers all conditions considered important to the business; Information systems personnel should check for completeness in testing the program specifications</p>
Documentation and Reporting	<p>Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates</p>
OH and S Standards	<p>As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency</p>

UNIT	ICAITT080B Perform specific unit test for OO Class
<p>Test tools</p> <p>Operating systems</p> <p>Programming languages</p>	<p>There are many testing and test management tools available. The following list covers a number of industry tools currently available:</p> <ul style="list-style-type: none"> • Code/ unit/ class testing <ul style="list-style-type: none"> ◦ AssertMate; ◦ BoundsChecker; ◦ C-Cover; ◦ CodeReview; ◦ CodeWizard; ◦ DeepCover; ◦ FailSafe; ◦ Hindsight; ◦ Insure++; ◦ JCAST; ◦ Logiscope; ◦ JavaPureCheck; • Stress load testing: <ul style="list-style-type: none"> ◦ Automated Test Facilities; ◦ e-Load; ◦ E-TEST Suite; ◦ e-MONITOR ◦ Astra SiteManager; ◦ Astra SiteTest; ◦ AutoTester Web; ◦ LoadRunner; ◦ JavaLoad; • Applications testing <ul style="list-style-type: none"> ◦ DataShark ◦ Cyrano Suite; ◦ Datatect ◦ preVue-C/S <p>Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare</p> <p>C, C++, Java, JavaScript, Visual Basic, FORTRAN, SQL</p>
EVIDENCE GUIDE	
<p>Critical aspects of evidence</p> <p>Interdependent assessment of units</p>	<p>Assessment must confirm sufficient knowledge of OO methodology to carry out test. Assessment must confirm the ability to meet client requirements by successfully validating the test object</p> <p>Each class should be tested in isolation, as a service providing object.</p> <p>The candidate should be able to construct a suitable driver program to exercise member functions.</p> <p>It should be noted that the quality of code is not being assessed, but the competence of testing the units and classes ability to perform the stated requirement.</p> <p>This unit may be assessed with any of the following: ICAITB069A, ICAITAD052A, ICPMM61cA, ICAITAD050A, ICAITAD049A, ICAITAD057A, ICAITAD058A, ICAITB010A. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>

UNIT	ICAITT080B Perform specific unit test for OO Class
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Underpinning skills and knowledge

Underpinning knowledge

- Detailed knowledge of different OO Programming Languages
- Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations
- Broad knowledge of automated test tools with detailed knowledge of features and processes in some areas
- Detailed knowledge of underlying test data
- Detailed knowledge of Input/Output requirements

Underpinning skills

- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when memory leakage, global name space pollution, static variables are specifically addressed for each object
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when attendees' details/comments are logged and signatures are gained
- OO Programming, for example when objects containing lower level class instances are tested separately, i.e. declaration of class within the class to be tested, and when presence of scripts to test dynamic binding on all relevant functions is ensured, if inheritance has been used to generate object
- Questioning and active listening skills, for example when attendees' details/comments are logged and signatures are gained

Resources

- To demonstrate this unit of competence the candidate will require access to documents detailing:
- The technical requirements
 - Acceptance criteria
 - Test plan
 - The technical design requirements

Each unit and class should deliver its related requirement, so it is necessary that the requirements and design documents both exist and are used in the analysis of the test.

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the documentation and monitoring aspects of this unit.

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

UNIT

ICAITT080B Perform specific unit test for OO Class**Key Competencies**

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	2	3	2

UNIT	ICAITT081B Perform systems test
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FIELD	Test
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DESCRIPTION	This unit describes the steps involved to ensure that the system is tested and proved adequate before hand-over to the Client/User for final acceptance testing.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITAD041A, ICAITAD042A, ICAITAD056A, ICAITB104A, ICAITB105A, ICAITB111A, ICAITT084A and other testing units
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ELEMENT	PERFORMANCE CRITERIA
1. Prepare for test	<ol style="list-style-type: none"> 1. Test environment is prepared taking into account: data, program libraries, network/communications and other equipment, operating system and other support software 2. Recognise and separate the system into runnable modules mirroring live scenarios, i.e. End of Day, Interactive query scenarios of various loads 3. Logs and result sheets are gathered and prepared 4. Operations are notified of scheduled test 5. Test scripts (online test) or test run (batch test) are prepared for running 6. Expected results are reviewed against acceptance criteria (walkthrough) and system requirements documentation
2. Conduct test	<ol style="list-style-type: none"> 1. Run test scripts and document the results, log defaults and complete result sheets etc 2. Any required benchmarks or comparisons are performed in readiness for acceptance testing 3. Organisation/industry standards (if any) are adopted 4. Actual results are compared to the expected results on completion of each system unit, and result sheets are completed
3. Analyse and classify results	<ol style="list-style-type: none"> 1. Results are summarised and classified, highlighting critical or urgent areas of concern 2. Results are compared against requirement and design specification 3. Operations are notified of test completion 4. Attendees' details/comments are logged and signatures are gained 5. Feedback meeting is scheduled if necessary

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Software life cycle

Will vary according to the software life cycle model being employed.

- AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes.
- AS/NZS 15271:1999 Guide for AS/NZS ISO/IEC 12207 ([Information technology -] Software life cycle processes)

UNIT	ICAITT081B Perform systems test
Test and acceptance processes	<p>Will vary according size, type and scope of the project,</p> <ul style="list-style-type: none"> • AS 4006-1992 Software test documentation may be relevant to this unit. • AS/NZS 14143.1:1999 Information technology - Software measurement - Functional size measurement - Definition of concepts. • AS/NZS 15026:1999 Information technology - System and software integrity levels. • AS 4006-1992 Software test documentation. <p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/</p>
Test plan	<p>Test plans will generally contain information on:</p> <ul style="list-style-type: none"> Test Items Tested Features Features Not Tested (per cycle) Testing Strategy and Approach Syntax Description of Functionality – Functional testing Interface testing Acceptance testing Arguments for tests Expected Output Specific Exclusions Dependencies Test Case Success/Failure Criteria Pass/Fail Criteria for the Complete Test Cycle Entrance Criteria/Exit Criteria Test Suspension Criteria and Resumption Requirements Test Deliverables/Status Communications Vehicles Testing Tasks Hardware and Software Requirements Error management and configuration management Staffing and Training Needs/Assignments Test Schedules Risks, Assumptions and Contingencies Approvals <p>The candidate must be able to understand the functionality being tested and the conditions under which these tests are to be performed</p>
Software metrics	<p>Size of each development work package and milestones are a variable determined by the sponsor, project manager, development team</p>
Quality benchmarks	<p>There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE, the Software Engineering Institute (SEI), and the ISO standards.</p> <p>Relevant quality standards include:</p> <ul style="list-style-type: none"> • AS 4043-1992 Software configuration management, • AS 4042-1992 Software configuration management plans, • AS 3925.1-1994 Software quality assurance – Plans, • AS/NZS 4258:1994 Software user documentation process, • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, • AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. <p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/</p>
Testing Method	<p>The method of testing (bottom up versus top down) will have an impact on the running sequence of the tests. It should also be mentioned that Top Down testing will allow the user representatives to become involved at an earlier stage in the testing process</p>

UNIT	ICAITT081B Perform systems test
Client standards	Users should check that the test plan covers all conditions considered important to the business; Information systems personnel should check for completeness in testing the program specifications
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare
Test tools	There are many testing and test management tools available. The following list covers a number of industry tools currently available: <ul style="list-style-type: none"> Code/ unit/ class testing <ul style="list-style-type: none"> • AssertMate; • BoundsChecker; • C-Cover; • CodeReview; • CodeWizard; • DeepCover; • FailSafe; • Hindsight; • Insure++; • JCAST; • Logiscope; • JavaPureCheck; Stress load testing: <ul style="list-style-type: none"> • Automated Test Facilities; • e-Load; • E-TEST Suite; • e-MONITOR • Astra SiteManager; • Astra SiteTest; • AutoTester Web; • LoadRunner; • JavaLoad; Applications testing <ul style="list-style-type: none"> • DataShark • Cyrano Suite; • Datatect • preVue-C/S
Programming languages	C, C++, Java, JavaScript, Visual Basic, FORTRAN, SQL

UNIT	ICAITT081B Perform systems test
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of all the components and runnable modules that make up a total system.</p> <p>Assessment must confirm the ability to test the operation and consistency of the total system according to the system requirements</p> <p>The candidate will have clearly identified the results of the systems tests. The system test should clearly confirm that:</p> <ul style="list-style-type: none"> • The functionality, delivered by the development team, is as specified by the business in the Business Design Specification Document and the Requirements Documentation. • The software is of high quality; the software will replace/support the intended business functions and achieves the standards required by the company for the development of new systems. • The software delivered interfaces correctly with existing systems. <p>If the system test does not confirm the above, then the candidate will have documented how the system has not met the test criteria.</p>		
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITAD041B, ICAITAD042B, ICAITAD056B, ICAITB104A, ICAITB105A, ICAITB111A, ICAITT084B and other testing units. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>		
Underpinning skills and knowledge	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> <p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad general knowledge of system requirements with detailed knowledge of particular system requirements and features • Broad knowledge of automated test tools with detailed knowledge of features and processes in some areas • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Organisation/Corporate rules knowledge required for preparing test • Detailed knowledge of underlying test data • Detailed knowledge of Input/ Output requirements </td> <td style="width: 50%; padding: 5px;"> <p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when ability to recognise and separate the system into runnable modules mirroring live scenarios is demonstrated, i.e. End of Day, Interactive query scenarios of various loads • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when attendees' details/comments are logged and signatures are gained • Analysis/Programming skills in relation to testing the operation and consistency of the total system, for example when test scripts (online test) or test run (batch test) are prepared for running • Questioning and active listening skills, for example when attendees' details/comments are logged and signatures are gained </td> </tr> </table>	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad general knowledge of system requirements with detailed knowledge of particular system requirements and features • Broad knowledge of automated test tools with detailed knowledge of features and processes in some areas • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Organisation/Corporate rules knowledge required for preparing test • Detailed knowledge of underlying test data • Detailed knowledge of Input/ Output requirements 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when ability to recognise and separate the system into runnable modules mirroring live scenarios is demonstrated, i.e. End of Day, Interactive query scenarios of various loads • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when attendees' details/comments are logged and signatures are gained • Analysis/Programming skills in relation to testing the operation and consistency of the total system, for example when test scripts (online test) or test run (batch test) are prepared for running • Questioning and active listening skills, for example when attendees' details/comments are logged and signatures are gained
<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad general knowledge of system requirements with detailed knowledge of particular system requirements and features • Broad knowledge of automated test tools with detailed knowledge of features and processes in some areas • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Organisation/Corporate rules knowledge required for preparing test • Detailed knowledge of underlying test data • Detailed knowledge of Input/ Output requirements 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when ability to recognise and separate the system into runnable modules mirroring live scenarios is demonstrated, i.e. End of Day, Interactive query scenarios of various loads • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when attendees' details/comments are logged and signatures are gained • Analysis/Programming skills in relation to testing the operation and consistency of the total system, for example when test scripts (online test) or test run (batch test) are prepared for running • Questioning and active listening skills, for example when attendees' details/comments are logged and signatures are gained 		

UNIT	ICAITT081B Perform systems test
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EVIDENCE GUIDE

Resources	<p>All testing should be carried out on the same platform as the completed system. Any scheduled testing should be on the production platform. The production environment is required as part of any test preparation.</p> <p>The systems test is a fully functional exercising of the system to be implemented. As such, all resources necessary to execute the entire system will be required.</p> <p>To demonstrate competence the candidate will need access to:</p> <ul style="list-style-type: none"> • The system test plan • The requirements and design documents • The test plan • All human resources assigned and in place. • All test hardware and environments in place, and free for system test use.
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the documentation and the highlighting of critical or urgent areas of concern.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.</p> <p>The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.</p> <p>Applications involve significant judgement in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.</p> <p>The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.</p>

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	3	3

UNIT	ICAITT082C Manage the testing process
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FIELD	Test
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DESCRIPTION	This unit describes the steps involved so that all parties have confidence in the system
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include ICAITAD041A, ICAITAD042A, ICAITAD056A, ICAITT084A and other testing units
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ELEMENT	PERFORMANCE CRITERIA
1. Develop test schedule	<ol style="list-style-type: none"> 1. Correct sequence of tests is ensured against walk through 2. Defect corrections are documented according to test procedures and project standards or with supplier 3. Results documentation is completed to the standard required for the project 4. End of the system test is determined according to when the required level of confidence is achieved
2. Complete test procedures	<ol style="list-style-type: none"> 1. Programs are copied into the production library/server after sign-off 2. Alterations to client environment are implemented 3. Programs are booked out of the test environment to be copied into an “acceptance” library/server when approved for production
3. Review the completeness and accuracy of the system	<ol style="list-style-type: none"> 1. The suitability of the system: fulfilment of objectives and suitability to all parties is reviewed 2. The procedures and documentation used in the system test are reviewed, for use again when implementing subsequent phases 3. Completion date and warranty issues of defects found are negotiated, if not considered serious enough to delay implementation

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Test and acceptance processes

In the case of a software development environment;

- AS 4006-1992 Software test documentation may be relevant to this unit.
- AS/NZS 14143.1:1999 Information technology - Software measurement - Functional size measurement - Definition of concepts.
- AS/NZS 15026:1999 Information technology - System and software integrity levels.
- AS 4006-1992 Software test documentation.

International and Australian Standards are updated and changed on a regular basis, it is therefore important to check the Standards Australia website on a regular basis for new standards <http://www.standards.com.au/>

UNIT	ICAITT082C Manage the testing process
Test plan	<p>Test plans will generally contain information on:</p> <ul style="list-style-type: none"> • Test Items • Tested Features • Features Not Tested (per cycle) • Testing Strategy and Approach • Syntax • Description of Functionality – Functional testing • Interface testing • Acceptance testing • Arguments for tests • Expected Output • Specific Exclusions • Dependencies • Test Case Success/Failure Criteria • Pass/Fail Criteria for the Complete Test Cycle • Entrance Criteria/Exit Criteria • Test Suspension Criteria and Resumption Requirements • Test Deliverables/Status Communications Vehicles • Testing Tasks • Hardware and Software Requirements • Error management and configuration management • Staffing and Training Needs/Assignments • Test Schedules • Risks, Assumptions and Contingencies • Approvals
Software metrics	<p>The candidate must be able to understand the functionality being tested and the conditions under which these tests are to be performed</p> <p>Size of each development work package, milestones is a variable determined by the sponsor, project manager, development team</p>
Quality benchmarks	<p>There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE, the Software Engineering Institute (SEI), and the ISO standards.</p> <p>In the case of a network environment</p> <ul style="list-style-type: none"> • IEEE 802.11: The New Wireless LAN Standard • IEEE 802.11 Basic Architectural Model <p>Relevant quality standards include:</p> <ul style="list-style-type: none"> • AS 4043-1992 Software configuration management, • AS 4042-1992 Software configuration management plans, • AS 3925.1-1994 Software quality assurance – Plans, • AS/NZS 4258:1994 Software user documentation process, • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, • AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools.
Software life cycle	<p>International and Australian Standards are updated and changed on a regular basis, it is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p> <p>Will vary according to the software life cycle model being employed.</p> <ul style="list-style-type: none"> • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes. • AS/NZS 15271:1999 Guide for AS/NZS ISO/IEC 12207 ([Information technology -] Software life cycle processes)

UNIT	ICAITT082C Manage the testing process
Testing Method	The method of testing (bottom up versus top down) will have an impact on the running sequence of the tests. It should also be mentioned that Top Down testing will allow the user representatives to become involved at an earlier stage in the testing process
Client standards	Users should check that the test plan covers all conditions considered important to the business; Information systems personnel should check for completeness in testing the program specifications
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach, information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare
Test tools	<p>There are many testing and test management tools available, the following list covers a number of industry tools currently available:</p> <ul style="list-style-type: none"> • Code/ unit/ class testing <ul style="list-style-type: none"> ◦ AssertMate; ◦ BoundsChecker; ◦ C-Cover; ◦ CodeReview; ◦ CodeWizard; ◦ DeepCover; ◦ FailSafe; ◦ Hindsight; ◦ Insure++; ◦ JCAST; ◦ Logiscope; ◦ JavaPureCheck; • Stress load testing: <ul style="list-style-type: none"> ◦ Automated Test Facilities; ◦ e-Load; ◦ E-TEST Suite; ◦ e-MONITOR ◦ Astra SiteManager; ◦ Astra SiteTest; ◦ AutoTester Web; ◦ LoadRunner; ◦ JavaLoad; • Applications testing <ul style="list-style-type: none"> ◦ DataShark ◦ Cyrano Suite; ◦ Datatect ◦ preVue-C/S

UNIT	ICAITT082C Manage the testing process
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of entire system requirements, both development and implementation.</p> <p>Assessment must confirm ability to successfully review and accept or reject a pre implemented system.</p> <p>The candidate will have clearly identified the results of the systems tests. The system test should clearly confirm that:</p> <ul style="list-style-type: none"> • The functionality, delivered by the development team, is as specified by the business in the Business Design Specification Document and the Requirements Documentation. • The software is of high quality; the software will replace/support the intended business functions and achieves the standards required by the company for the development of new systems. • The software delivered interfaces correctly with existing systems. <p>If the system test does not confirm the above, then the candidate will have documented how the system has not met the test criteria.</p>		
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITAD041A, ICAITAD042A, ICAITAD056A, ICAITT084A and other Testing units. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>		
Underpinning skills and knowledge	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Detailed knowledge of System/Application being tested • Broad knowledge of testing techniques with detail knowledge of features and processes in some areas • Broad knowledge of automated test tools with detail knowledge of features and processes in some areas • Broad general knowledge of system requirements with detailed knowledge of the particular system requirements and features • Detailed knowledge of organisation/Company procedures, for example when reviewing the completeness and accuracy of the system </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning Skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when programs are booked out of the test environment either to development for error correction or to be copied into an “acceptance” library when approved for production • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when the procedures and documentation used in the system test are reviewed, for use again when implementing subsequent phases • Application usage skills in relation to analysis, evaluation and presentation of information, for example when programs are booked out of the test environment to be copied into an “acceptance” library/server when approved for production • Questioning and active listening skills, for example when the suitability of the system: fulfilment of objectives and suitability to all parties is reviewed • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when results documentation is completed to the standard required for the project • Research skills for identifying, analysing and evaluating broad features of system testing and best practice in system testing, for example when end of the system test is determined according to when the required level of confidence is achieved • Negotiation skills in relation to other team members and applied to a defined range of predictable problems, for example when completion date and warranty issues of defects found are negotiated, if not considered serious enough to delay implementation </td> </tr> </table>	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Detailed knowledge of System/Application being tested • Broad knowledge of testing techniques with detail knowledge of features and processes in some areas • Broad knowledge of automated test tools with detail knowledge of features and processes in some areas • Broad general knowledge of system requirements with detailed knowledge of the particular system requirements and features • Detailed knowledge of organisation/Company procedures, for example when reviewing the completeness and accuracy of the system 	<p>Underpinning Skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when programs are booked out of the test environment either to development for error correction or to be copied into an “acceptance” library when approved for production • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when the procedures and documentation used in the system test are reviewed, for use again when implementing subsequent phases • Application usage skills in relation to analysis, evaluation and presentation of information, for example when programs are booked out of the test environment to be copied into an “acceptance” library/server when approved for production • Questioning and active listening skills, for example when the suitability of the system: fulfilment of objectives and suitability to all parties is reviewed • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when results documentation is completed to the standard required for the project • Research skills for identifying, analysing and evaluating broad features of system testing and best practice in system testing, for example when end of the system test is determined according to when the required level of confidence is achieved • Negotiation skills in relation to other team members and applied to a defined range of predictable problems, for example when completion date and warranty issues of defects found are negotiated, if not considered serious enough to delay implementation
<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Detailed knowledge of System/Application being tested • Broad knowledge of testing techniques with detail knowledge of features and processes in some areas • Broad knowledge of automated test tools with detail knowledge of features and processes in some areas • Broad general knowledge of system requirements with detailed knowledge of the particular system requirements and features • Detailed knowledge of organisation/Company procedures, for example when reviewing the completeness and accuracy of the system 	<p>Underpinning Skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when programs are booked out of the test environment either to development for error correction or to be copied into an “acceptance” library when approved for production • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when the procedures and documentation used in the system test are reviewed, for use again when implementing subsequent phases • Application usage skills in relation to analysis, evaluation and presentation of information, for example when programs are booked out of the test environment to be copied into an “acceptance” library/server when approved for production • Questioning and active listening skills, for example when the suitability of the system: fulfilment of objectives and suitability to all parties is reviewed • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when results documentation is completed to the standard required for the project • Research skills for identifying, analysing and evaluating broad features of system testing and best practice in system testing, for example when end of the system test is determined according to when the required level of confidence is achieved • Negotiation skills in relation to other team members and applied to a defined range of predictable problems, for example when completion date and warranty issues of defects found are negotiated, if not considered serious enough to delay implementation 		

UNIT	ICAITT082C Manage the testing process
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EVIDENCE GUIDE

Resources	<p>All testing should be carried out on the same platform as the completed system. As such, any scheduled testing should be on the production platform. The production environment are required as part of any test preparation.</p> <p>The system test is a fully functional exercising of the system to be implemented, as such, all resources necessary to execute the entire system will be required.</p> <p>The candidate will need:</p> <ul style="list-style-type: none"> • All human resources assigned and in place. • Requirements and design documentation • Test plan • All test hardware and environments in place, and free for system test use.
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the scheduling and documentation aspects of this unit.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and /or management functions including development of new criteria or applications or knowledge or procedures.</p> <p>The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.</p> <p>Applications involve significant judgement in planning, design, technical or leadership/ guidance functions related to products, services, operations or procedures.</p> <p>The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.</p>

Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	3	2

UNIT	ICAITT083B Develop and conduct client acceptance test
FIELD	Test
DESCRIPTION	This unit describes the test processes necessary to ensure that clients will accept the system and development needs to be commenced during the systems requirements phase.
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITAD041A, ICAITAD042A, ICAITAD056A, ICAITB001A, ICAITT077A, ICPMM82eA, ICAITAD048B

ELEMENT	PERFORMANCE CRITERIA
1. Identify acceptance criteria and develop test plan	<ol style="list-style-type: none"> 1. Mandatory system objectives and optional criteria/conditions for acceptance of system are reviewed through system requirements documentation and project plans 2. Information compilation and distribution to involved parties is managed according to project procedures 3. Test plan based on mandatory criteria/ conditions, system objectives and requirements is reviewed and validated 4. Test plan is clearly and coherently communicated to client and client prepared for acceptance test 5. Operations are notified of scheduled acceptance test
2. Perform functional testing on software modules	<ol style="list-style-type: none"> 1. Test environment is prepared for client use 2. Testing is carried out according to test plan and documentation 3. Client is guided to execute each test cycle 4. Document any errors, difficulties or communicated problems
3. Validate test results against expected results	<ol style="list-style-type: none"> 1. All discrepancies and corrections are recorded and investigated according to project procedures and timeframe 2. Test phases are confirmed with client to ensure client understanding of test sequences 3. System performance is monitored as required 4. Code changes and any required tuning or modifications are rescheduled
4. Sign off and acceptance obtained	<ol style="list-style-type: none"> 1. Successful test is confirmed with client 2. Client concerns over system operation are identified and are documented, possible solutions are identified, and appropriate development staff are notified 3. Client acceptance and sign off is obtained 4. Any rescheduled maintenance is agreed to and is formalised by all parties

UNIT	ICAITT083B Develop and conduct client acceptance test
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Test and acceptance processes	<p>Will vary according size, type and scope of the project,</p> <ul style="list-style-type: none"> • AS 4006-1992 Software test documentation may be relevant to this unit. • AS/NZS 14143.1:1999 Information technology - Software measurement - Functional size measurement - Definition of concepts. • AS/NZS 15026:1999 Information technology - System and software integrity levels. • AS 4006-1992 Software test documentation. <p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/</p>
Test plan	<p>Test plans will generally contain information on:</p> <ul style="list-style-type: none"> Test Items Tested Features Features Not Tested (per cycle) Testing Strategy and Approach Syntax Description of Functionality – Functional testing Interface testing Acceptance testing Arguments for tests Expected Output Specific Exclusions Dependencies Test Case Success/Failure Criteria Pass/Fail Criteria for the Complete Test Cycle Entrance Criteria/Exit Criteria Test Suspension Criteria and Resumption Requirements Test Deliverables/Status Communications Vehicles Testing Tasks Hardware and Software Requirements Error management and configuration management Staffing and Training Needs/Assignments Test Schedules Risks, Assumptions and Contingencies Approvals <p>The candidate must be able to understand the functionality being tested and the conditions under which these tests are to be performed</p>
Software metrics	<p>Size of each development work package, milestones is a variable determined by the sponsor, project manager, development team</p>
Quality benchmarks	<p>There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE, the Software Engineering Institute (SEI), and the ISO standards.</p> <p>Relevant quality standards include:</p> <ul style="list-style-type: none"> • AS 4043-1992 Software configuration management, • AS 4042-1992 Software configuration management plans, • AS 3925.1-1994 Software quality assurance – Plans, • AS/NZS 4258:1994 Software user documentation process, • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, • AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. <p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/</p>

UNIT	ICAITT083B Develop and conduct client acceptance test
Software life cycle	<p>Will vary according to the software life cycle model being employed.</p> <ul style="list-style-type: none"> • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes. • AS/NZS 15271:1999 Guide for AS/NZS ISO/IEC 12207 ([Information technology -] Software life cycle processes)
Testing Method	<p>The method of testing (bottom up versus top down) will have an impact on the running sequence of the tests. It should also be mentioned that Top Down testing will allow the user representatives to become involved at an earlier stage in the testing process</p>
Client standards	<p>Users should check that the test plan covers all conditions that are important to the business; Information systems personnel need to check for completeness in testing the program specifications</p>
Documentation and Reporting	<p>Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates</p>
OH and S Standards	<p>As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency</p>
Acceptance criteria	<p>Typically formulated on a project by project basis. Includes but not restricted to business rules and requirements, performance, operational considerations, compliance with user functional specifications</p>
Test environment	<p>Typically a stand-alone, mock environment (that duplicates the production environment) involving key system components where rigorous testing can be performed without affecting the business. Technical components of test environment will vary from project to project. For this reason, functional changes should not be made within the acceptance test. The test is either accepted or rejected. If rejected, changes are made within the development environment then another test is rescheduled</p>
Operating systems	<p>Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare</p>
Test tools	<p>There are many testing and test management tools available. The following list covers a number of industry tools currently available:</p> <ul style="list-style-type: none"> • Code/ unit/ class testing <ul style="list-style-type: none"> ◦ AssertMate; ◦ BoundsChecker; ◦ C-Cover; ◦ CodeReview; ◦ CodeWizard; ◦ DeepCover; ◦ FailSafe; ◦ Hindsight; ◦ Insure++; ◦ JCAST; ◦ Logiscope; ◦ JavaPureCheck; • Stress load testing: <ul style="list-style-type: none"> ◦ Automated Test Facilities; ◦ e-Load; ◦ E-TEST Suite; ◦ e-MONITOR ◦ Astra SiteManager; ◦ Astra SiteTest; ◦ AutoTester Web; ◦ LoadRunner; ◦ JavaLoad; • Applications testing <ul style="list-style-type: none"> ◦ DataShark ◦ Cyrano Suite; ◦ Datatect ◦ preVue-C/S

UNIT	ICAITT083B Develop and conduct client acceptance test	
EVIDENCE GUIDE		
Critical aspects of evidence	<p>Assessment must confirm ability to review test plan documentation and ensure all client acceptance requirements will be explicitly and accurately tested to predetermined standards of consistent performance.</p> <p>The candidate will need to ensure that:</p> <ul style="list-style-type: none"> • The system operates in the manner expected. • Any supporting material such as procedures, forms etc. are accurate and suitable for the purpose intended. • There are no gaps in functionality. • Individual elements and the overall system provide the desired result or functionality. • Unit and suite user documentation is available and accurate. • The user accepted code is copied correctly to the live area. Version numbers are correct and the code is operational 	
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITAD041B, ICAITAD042B, ICAITAD056B, ICAITB001A, ICAITT077B, ICPMM82eA, ICAITAD048B. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Detailed knowledge of System/Application being tested • Broad knowledge of testing techniques with detailed knowledge of features and processes in some areas • Broad knowledge of automated test tools with detailed knowledge of features and processes in some areas • Detailed knowledge of client user requirements, for example when identifying acceptance criteria and testing plan developed. Detailed knowledge of business rules and standards, for example when identifying acceptance criteria and testing plan developed 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when client concerns over system operation are identified and are documented, possible solutions are identified, and appropriate development staff are notified • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when test plan is clearly and coherently communicated to client and client prepared for acceptance test • Data Analysis skills in relation to analysis, evaluation and presentation of information, for example when mandatory system objectives and optional criteria/conditions for acceptance of system are reviewed through system requirements documentation and project plans • Questioning and active listening skills, for example when test phases are confirmed with client to ensure client understanding of test sequences • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when successful test is confirmed with client. • Negotiation skills in relation to other team members and applied to a defined range of predictable problems. Analytical skills, for example when any rescheduled maintenance is agreed to and is formalised by all parties

UNIT	ICAITT083B Develop and conduct client acceptance test
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EVIDENCE GUIDE

Resources	<p>To demonstrate this unit of competence the candidate will require access to documents detailing:</p> <ul style="list-style-type: none"> Business requirements Project documentation including templates, standards, specifications, client user and technical manuals Test plan Acceptance criteria. <p>The candidate will need access to:</p> <ul style="list-style-type: none"> Technical components of system, including software, hardware, network Staffing resources including development, operations, client user representatives (in a simulation, the trainer /assessor may take on some of these roles) <p>Peers and supervisors for obtaining information on the extent and quality of the contribution made. Client user acceptance is a phase within the overall development life cycle of a system. Client acceptance testing usually occurs during the implementation phase, but planning and preparation should begin in the design phase, and run concurrently (design/code/implementation)</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the documentation and communication and feedback with clients.</p>
Context	<p>Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.</p> <p>This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.</p> <p>Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.</p> <p>The self directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas; analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations; evaluate information using it to forecast for planning or research purposes; take responsibility for own outputs in relation to broad quantity and quality parameters; and take limited responsibility for the achievement of group outcomes.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	1	3	2

UNIT	ICAITT084B Perform stress and loading test of integrated platform
FIELD	Test
DESCRIPTION	This unit describes the methods to plan and perform strenuous volume testing on the implementation platform
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITS111B, ICAITS118B, ICAITAD042B, ICAITI089B

ELEMENT	PERFORMANCE CRITERIA
1. Create test plan	<ol style="list-style-type: none"> 1. Scope, objectives and specific tests are determined in order to place load on the system. Expected results and performance impact are determined. 2. Standards for acceptance/compliance are determined with client 3. Clear responsibilities and contact points with third party suppliers for support are determined 4. Testing resources and tools are ascertained from a range of available sources 5. Base system loads or level of activity against which the test will be measured are identified 6. Processes/steps in test, including automated testing are identified 7. Test plan is documented and is distributed to higher authorities
2. Undertake test	<ol style="list-style-type: none"> 1. Test plan is implemented according to test plan sequencing 2. Each technology component is confirmed to operate correctly within integrated platform 3. Integrated platform is confirmed to operate to project and industry standards 4. Documentation of testing outcomes is undertaken to project standards
3. Diagnose and resolve faults	<ol style="list-style-type: none"> 1. Faults are identified and documented according to project standards 2. Problem resolution processes are managed according to project procedures 3. Compliance standards with suppliers are enforced, as required
4. Update documentation	<ol style="list-style-type: none"> 1. If test is successful, appropriate project and system documentation is updated to record test 2. If test unsuccessful, appropriate project and system documentation is updated to record test and findings are presented to development staff for their attention

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Test and acceptance processes

- Will vary according size, type and scope of the project,
- AS 4006-1992 Software test documentation may be relevant to this unit.
 - AS/NZS 14143.1:1999 Information technology - Software measurement - Functional size measurement - Definition of concepts.
 - AS/NZS 15026:1999 Information technology - System and software integrity levels.
 - AS 4006-1992 Software test documentation.

International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: <http://www.standards.com.au/>

UNIT	ICAITT084B Perform stress and loading test of integrated platform
Test plan	<p>Test plans will generally contain information on:</p> <ul style="list-style-type: none"> Test Items Tested Features Features Not Tested (per cycle) Testing Strategy and Approach Syntax Description of Functionality – Functional testing Interface testing Acceptance testing Arguments for tests Expected Output Specific Exclusions Dependencies Test Case Success/Failure Criteria Pass/Fail Criteria for the Complete Test Cycle Entrance Criteria/Exit Criteria Test Suspension Criteria and Resumption Requirements Test Deliverables/Status Communications Vehicles Testing Tasks Hardware and Software Requirements Error management and configuration management Staffing and Training Needs/Assignments Test Schedules Risks, Assumptions and Contingencies Approvals <p>The candidate must be able to understand the functionality being tested and the conditions under which these tests are to be performed</p>
Software metrics	<p>Size of each development work package, milestones is a variable determined by the sponsor, project manager, development team</p>
Quality benchmarks	<p>There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE, the Software Engineering Institute (SEI), and the ISO standards.</p> <p>Relevant quality standards include:</p> <ul style="list-style-type: none"> • AS 4043-1992 Software configuration management, • AS 4042-1992 Software configuration management plans, • AS 3925.1-1994 Software quality assurance – Plans, • AS/NZS 4258:1994 Software user documentation process, • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes, • AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools. <p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards: http://www.standards.com.au/</p>
Software life cycle	<p>Will vary according to the software life cycle model being employed.</p> <ul style="list-style-type: none"> • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes. • AS/NZS 15271:1999 Guide for AS/NZS ISO/IEC 12207 ([Information technology -] Software life cycle processes)
Client standards	<p>Users should check that the test plan covers all conditions considered important to the business; Information systems personnel should check for completeness in testing the program specifications</p>
Testing Method	<p>The method of testing (bottom up versus top down) will have an impact on the running sequence of the tests. It should also be mentioned that Top Down testing will allow the user representatives to become involved at an earlier stage in the testing process</p>
Documentation and Reporting	<p>Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates</p>
OH and S Standards	<p>As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency</p>
Technology component	<p>Will vary according to project, but includes internal and external hardware, software, drivers, off the shelf components, custom built components, networking components</p>

UNIT	ICAITT084B Perform stress and loading test of integrated platform
Faults	Will vary from simple to highly technical and complex, the latter requiring extensive discussions/negotiations with third parties to resolve. The fault may require assistance from the specialised staff within corporate manufacturing/development plant/s.
Test tools	<p>There are many testing and test management tools available. The following list covers a number of industry tools currently available:</p> <ul style="list-style-type: none"> • Code/ unit/ class testing <ul style="list-style-type: none"> ◦ AssertMate; ◦ BoundsChecker; ◦ C-Cover; ◦ CodeReview; ◦ CodeWizard; ◦ DeepCover; ◦ FailSafe; ◦ Hindsight; ◦ Insure++; ◦ JCAST; ◦ Logiscope; ◦ JavaPureCheck; • Stress load testing: <ul style="list-style-type: none"> ◦ Automated Test Facilities; ◦ e-Load; ◦ E-TEST Suite; ◦ e-MONITOR ◦ Astra SiteManager; ◦ Astra SiteTest; ◦ AutoTester Web; ◦ LoadRunner; ◦ JavaLoad; • Applications testing <ul style="list-style-type: none"> ◦ DataShark ◦ Cyrano Suite; ◦ Datatect ◦ preVue-C/S
Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare
Programming languages	C, C++, Java, JavaScript, Visual Basic, FORTRAN, SQL
Products	Test tools may work with the following products: NetDynamics, Web Objects, Microsoft ASP, and Cold Fusion, UNIX and Win32 compilers and the Microsoft Developer Studio IDE, Oracle applications, ActiveX, DirectX, Win32, Internet, OLE/COM and ODBC

UNIT	ICAITT084B Perform stress and loading test of integrated platform
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm the ability to comprehensively test the system’s ability to cope with expected high levels of data volume while meeting the predetermined performance standards.</p> <p>Assessment must confirm the ability to identify problems and identify fault resolution strategies that may occur during stress testing</p> <p>The candidate will need to ensure that:</p> <ul style="list-style-type: none"> • The system operates in the manner expected under expected conditions • Any supporting material such as procedures, forms etc. are accurate and suitable for the purpose intended. • Stated conditions reflect the upper limits expected by client • There are no unacceptable reductions in service • Individual elements and the overall system provide the desired result or functionality. • Documentation is available and accurate. 		
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITB104A, ICAITB105A, ICAITS111B, ICAITS118B, ICAITAD042B, ICAITI089A. The interdependence of units of competency for assessment will vary with the particular project or scenario.</p>		
Underpinning skills and knowledge	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Detailed knowledge of program design on performance • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Detailed knowledge of System/Application requirements and performance • Broad knowledge of testing techniques with detailed knowledge of features and processes in some areas • Broad knowledge of automated test tools with detailed knowledge of features and processes in some areas </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a broad range of unpredictable problems involving analysis, diagnosis, evaluation and the development of new criteria, knowledge or procedures, for example when problem resolution processes are managed according to project procedures • Detailed knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Estimating skills for use across a range of unpredictable project contexts in relation to either varied or highly specific functions, for example when scope, objectives and specific tests are determined in order to place load on the system. Expected results and performance impact are determined • Leadership skills in relation to guidance for achieving outcomes and transferring and collecting information and gaining consensus on concepts, for example when standards for acceptance/compliance are determined with client, and when clear responsibilities and contact points with third party suppliers for support are determined • Negotiation and influencing skills in relation to team members and applied to a undefined range of unpredictable problems, for example when clear responsibilities and contact points with third party suppliers for support are determined </td> </tr> </table>	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Detailed knowledge of program design on performance • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Detailed knowledge of System/Application requirements and performance • Broad knowledge of testing techniques with detailed knowledge of features and processes in some areas • Broad knowledge of automated test tools with detailed knowledge of features and processes in some areas 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a broad range of unpredictable problems involving analysis, diagnosis, evaluation and the development of new criteria, knowledge or procedures, for example when problem resolution processes are managed according to project procedures • Detailed knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Estimating skills for use across a range of unpredictable project contexts in relation to either varied or highly specific functions, for example when scope, objectives and specific tests are determined in order to place load on the system. Expected results and performance impact are determined • Leadership skills in relation to guidance for achieving outcomes and transferring and collecting information and gaining consensus on concepts, for example when standards for acceptance/compliance are determined with client, and when clear responsibilities and contact points with third party suppliers for support are determined • Negotiation and influencing skills in relation to team members and applied to a undefined range of unpredictable problems, for example when clear responsibilities and contact points with third party suppliers for support are determined
<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Detailed knowledge of program design on performance • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Detailed knowledge of System/Application requirements and performance • Broad knowledge of testing techniques with detailed knowledge of features and processes in some areas • Broad knowledge of automated test tools with detailed knowledge of features and processes in some areas 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a broad range of unpredictable problems involving analysis, diagnosis, evaluation and the development of new criteria, knowledge or procedures, for example when problem resolution processes are managed according to project procedures • Detailed knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Estimating skills for use across a range of unpredictable project contexts in relation to either varied or highly specific functions, for example when scope, objectives and specific tests are determined in order to place load on the system. Expected results and performance impact are determined • Leadership skills in relation to guidance for achieving outcomes and transferring and collecting information and gaining consensus on concepts, for example when standards for acceptance/compliance are determined with client, and when clear responsibilities and contact points with third party suppliers for support are determined • Negotiation and influencing skills in relation to team members and applied to a undefined range of unpredictable problems, for example when clear responsibilities and contact points with third party suppliers for support are determined 		

EVIDENCE GUIDE

Resources	<p>To demonstrate this unit of competence the candidate will require access to documents detailing:</p> <ul style="list-style-type: none"> • Business requirements • Project documentation including templates, standards, specifications, client user and technical manuals • Business rules and expected loads • Base tools. <p>The candidate will need access to:</p> <ul style="list-style-type: none"> • Technical components of system, including software, hardware, network • Staffing resources including development, operations, client user representatives (in a simulation, the trainer /assessor may take on some of these roles) <p>Stress load testing usually occurs during the implementation phase, but planning and preparation should begin in the design phase, and run concurrently (design/code/implementation)</p>
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UNIT	ICAITT084B Perform stress and loading test of integrated platform
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Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the documentation aspects of this unit.

Context

Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills. The questioning of team members will provide valuable input to the assessment.

This competency can be assessed in the workplace or in a simulated environment. The purpose of this unit of competence is to define the standard of performance to be achieved in the workplace.

Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.

The self directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.

Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas;
- analyse and plan approaches to technical problems or management requirements; transfer and apply theoretical concepts and/or technical or creative skills to a range of situations;
- evaluate information using it to forecast for planning or research purposes;
- take responsibility for own outputs in relation to broad quantity and quality parameters; and
- take limited responsibility for the achievement of group outcomes.

Key Competencies						
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Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	2	3	3	3

UNIT	ICAITT183A Confirm accessibility of web site design
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FIELD	Test
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DESCRIPTION	This unit defines the competency required to ensure that the web site is accessible to users with disabilities
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Identify accessibility standards	<ol style="list-style-type: none"> 1. Specific user groups with particular accessibility requirements are identified 2. General legislated accessibility standards and requirements are identified 3. Specific and general standards and requirements are consolidated into an accessibility checklist.
2. Test accessibility	<ol style="list-style-type: none"> 1. Appropriate automatic testing tools and software are prepared 2. Automatic testing tools are run and changes made and documented 3. A text equivalent for every non-text element is present in web site 4. All information conveyed with colour is also available without colour 5. Changes in the natural language of a document's text are identified (i.e. captions, abbreviations or acronyms, etc). 6. Documents can be read without style sheets 7. All priorities identified in the Web Accessibility Initiative (WAI) Accessibility Guidelines are met and completed 8. Site is test with different user agents to ensure site transforms successfully and maintains accessibility
3. Test pages	<ol style="list-style-type: none"> 1. Pages are not dependant on colour and can operate in monochrome environment 2. Pages are logical and accessible in a text only environment 3. Pages operate correctly on text to speech browsers 4. Accessibility of website is signed off as meeting WAI standards

UNIT	ICAITT183A Confirm accessibility of web site design
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Web development standards	<p>Web Content Accessibility Guidelines 1.0 (WCAG)</p> <p>Authoring Tool Accessibility Guidelines 1.0 (ATAG)</p> <p>User Agent Accessibility Guidelines 1.0 (UAAG)</p>
User agents	<ul style="list-style-type: none"> • desktop graphical browsers, • text browsers, • voice browsers, • mobile phones, • multimedia players, and plug-ins • assisting technologies, such as screen readers and screen magnifiers
Non-text elements	<ul style="list-style-type: none"> • images, graphical representations of text (including symbols), • image map regions, • animations (e.g., animated GIFs), • applets and programmatic objects, • ascii art, • frames, • scripts, • images used as list bullets, • spacers, • graphical buttons, • sounds (played with or without user interaction), • stand-alone audio files, • audio tracks of video, and video
Accessibility testing tools	<ul style="list-style-type: none"> • Bobby • Opera • PwWebSpeak • Lynx • General Magic's Web-On-Call
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.</p> <p>Reports meet the specific output requirements and are presented in a logical and accessible manner.</p> <p>Relevant legislated accessibility standards, business accessibility policy and special requirements are available.</p>
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote Sites • Servers

UNIT	ICAITT183A Confirm accessibility of web site design
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Operating System	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to identify accessibility requirements, design a valid accessibility test, facilitate the test process and document results. The proposed solution must meet legal, special customer and business expectations and the current and future needs of the business.		
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.		
Underpinning skills and knowledge	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> Underpinning knowledge: <ul style="list-style-type: none"> • Web site architecture • Website security • Work load metrics • Technical performance measurement • Business process design • Customer and business liaison • Government, advocacy group and special needs group liaison • Web site accessibility, security and equity legislation • Copy write and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles. • Electronic Commerce Modelling Language • Australian Computer Society Code Of Ethics </td> <td style="width: 50%; vertical-align: top;"> Underpinning skills: <ul style="list-style-type: none"> • Web site development • Web site analysis • Technical test design • Test implementation • Test evaluation • Evaluation feedback • Evaluation analysis • Special needs group identification and selection </td> </tr> </table>	Underpinning knowledge: <ul style="list-style-type: none"> • Web site architecture • Website security • Work load metrics • Technical performance measurement • Business process design • Customer and business liaison • Government, advocacy group and special needs group liaison • Web site accessibility, security and equity legislation • Copy write and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles. • Electronic Commerce Modelling Language • Australian Computer Society Code Of Ethics 	Underpinning skills: <ul style="list-style-type: none"> • Web site development • Web site analysis • Technical test design • Test implementation • Test evaluation • Evaluation feedback • Evaluation analysis • Special needs group identification and selection
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Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Live website • Requirements documentation • Customer Relationship Model • Automatic accessibility measuring tools <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>		

UNIT	ICAITT183A Confirm accessibility of web site design
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Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate different stages in preparing, facilitating and documenting test results

Context

Breadth, depth and complexity involving analysis, documentation and design across a broad range of technical and/or managerial functions including identifying the technical and human computer interface requirements which drive design. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, evaluation, technical or leadership/guidance and communications functions related to products, services, operations, processes and procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

An individual demonstrating these competencies would be able to:

- Demonstrate understanding of specialised knowledge with depth in some areas;
- Analyse, diagnose, design and execute judgements across a broad range of technical or management functions;
- Demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills;
- Generate ideas through the analysis of information and concepts at an abstract level;
- Demonstrate accountability for personal outputs within broad parameters; and
- Demonstrate accountability for group outcomes within broad parameters.

Key Competencies						
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Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	2	3	2	2	2

UNIT	ICAITT184A Ensure site usability
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FIELD	Test
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DESCRIPTION	This unit defines the competency required to determine that clients can use sites once a connection has been established.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Design a user test	<ol style="list-style-type: none"> 1. Usability test methodology such as customer based evaluation, expert evaluation and focus groups is established 2. All business critical functions to be tested are identified 3. The full range of users, including internal and external customers, are identified 4. User expectations are confirmed through any market analysis documentation, business intelligence or customer feedback 5. Performance expectations of the business are established from the business requirements documentation or other elicitation process 6. Performance measurement and success criteria to measure actual performance against user and business expectations is established 7. Site is ready and available for testing

UNIT	
ICAITT184A Ensure site usability	
2. Conduct user test	<ol style="list-style-type: none"> 1. Users and business intuitively understand the site purpose and interactive process methodology 2. Process performance indicators and benchmarks are documented and disseminated to sample group 3. A full representative range of users and user preferred technologies to test all functions are assembled based on the current and directions of the business 4. Maximum customer satisfaction is ensured through ease of navigation. 5. Page location within the site is clearly visible enabling navigation from random page access points with easy links to other pages, site maps and indexes. 6. All items are clearly named for ease of recognition and navigation. Links are descriptive and unambiguous 7. Download size and speed is appropriate to customer needs and technology 8. Search engine key words correspond to customer key word usage 9. Customer and legal accessibility, privacy and equity requirements/ expectations are met 10. All Plug in software is accessible from the site
3. Evaluate user test	<ol style="list-style-type: none"> 1. Performance results are collected and measured against performance indicators and benchmarks based on business and customer expectations 2. Performance shortfalls are identified and acceptable performance solutions developed according to business requirements 3. Evaluation feedback is provided to users and the business
4. Document results	<ol style="list-style-type: none"> 1. Solutions to problems identified during the testing phase are discussed with developers and refined 2. Proposed solutions meet business requirements and customer expectations 3. Final solution is documented and distributed to business stakeholders and developers

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Web Site Requirements

A web site developed to the point of usability testing is available. Range of customers and on line processes is determined and disseminated prior to assessment.

Intuitive

Refers to low numbers of cursor movements and click rates, with users able to move quickly to the area they intended

UNIT	ICAITT184A Ensure site usability
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Software Requirements	The software used to develop and operate the Web Site is available, including plug ins.
Hardware	Can include IT equipment of all types: <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers
Operating system	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware
Navigation	Navigation should be easily used, provide different ways of searching and provide feedback to users
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to design a valid usability test, facilitate the test process and document the results. The proposed solutions must meet customer and business expectations and the current and future needs of the business.
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT	ICAITT184A Ensure site usability	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Website architecture • Website security • Work Load Metrics • Technical Performance Measurement • Business process design • Customer and business liaison • Website privacy, accessibility and equity legislation • Electronic Commerce Modelling Language • Australian Computer Society Code Of Ethics • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Website development • Website analysis • Technical test design • Test implementation • Test evaluation • Evaluation feedback • Evaluation analysis
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Webservers • E-business website • Site server • Site servers software • Analysis software • Requirements documentation • Customer Relationship Model <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>	
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts.</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate different stages in preparing, facilitating and documenting test results.</p>	

UNIT	ICAITT184A Ensure site usability
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Context

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for ones own outputs in relation to specified quality standards;
- and take limited responsibility for the quantity and quality of the output of others.

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	3	2	3	2

UNIT	ICAITT185A Validate basic website performance
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FIELD	Test
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DESCRIPTION	This unit defines the competency required to design and implement procedures that measure the performance of the website and compare them to the initial design specifications.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Define performance criteria	<ol style="list-style-type: none"> 1. Website specifications are reviewed to determine performance functions to be validated 2. Performance functions to be validated are documented 3. Measurement methodology allocated to each performance function to be validated (eg the time a task takes, error rates and subjective satisfaction) 4. Each metric has an appropriate methodology applied and documented 5. Performance benchmarks are prepared and agreed upon with the business (site owner) and, if possible, potential users
2. Validate performance	<ol style="list-style-type: none"> 1. Each performance function is tested and results documented according to documentation standards 2. Results of performance function testing are compared to benchmarks 3. Performance functions are signed off as meeting benchmarks and or deficiencies documented 4. Functions which do not meet appropriate performance benchmarks are redesigned and developed in order to meet performance benchmarks
3. Sign off performance	<ol style="list-style-type: none"> 1. The newly validated performance standards are documented as the sites new performance characteristics and established, if necessary, as the benchmark for further redesign and updating. 2. If required, the metric selection, methodology and function test methodology are documented for later use in ongoing performance redesign or site enhancement. 3. Web site performance is signed off as meeting business requirements

UNIT	ICAITT185A Validate basic website performance
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Documentation requirements	A copy of the web site technical requirements/ design specifications is available in order to determine the appropriate functions to be tested, the measurement methodology of each function and the standards benchmark for each function.
Firewalls	Hardware appliances, proxy servers, individual PC solution, also: varying functionality including network address translation (NAT) / IP Masquerading, routing to specific machines
Web development standards	Web Content Accessibility Guidelines 1.0 (WCAG) Authoring Tool Accessibility Guidelines 1.0 (ATAG) User Agent Accessibility Guidelines 1.0 (UAAG)
Software	Variables may include but are not limited to: text editors such as <ul style="list-style-type: none"> • Word pad, • Notepad; Commercial software applications: <ul style="list-style-type: none"> • Dreamweaver, • Golive, • Fireworks, • NetObjects Fusion • Frontpage
Hardware	Can include IT equipment of all types; <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers
Operating system	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm the ability to identify the critical functions to be tested, develop appropriate metrics for each function and assign benchmarked performance standards. Consequently each performance function must be tested and compared against the appropriate benchmarks in order to validate site performance against technical requirements. Results should be clearly documented to establish the performance benchmarks for subsequent site development.
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UNIT	ICAITT185A Validate basic website performance	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Website architecture • Technical environment characteristics and read and interpret design specifications • Benchmark selection and development • Queuing systems, workload metrics and user request classes • SGML and the associated standards • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Technical test design • Test implementation • Test evaluation • Documenting benchmarking standards
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • E-business website • Analysis software • Site design and technical requirements documentation • Site development software and tools <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>	
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate stages in defining functions to be tested, determining benchmarks to be achieved, testing performance functions, comparing results to benchmarks and documenting results.</p>	
Context	<p>Breadth, depth and complexity involving analysis, documentation and design across a broad range of technical and/or managerial functions including identifying the technical and human computer interface requirements which drive design. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.</p> <p>Applications involve significant judgement in planning, design, evaluation, technical or leadership/guidance and communications functions related to products, services, operations, processes and procedures.</p> <p>The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • Demonstrate understanding of specialised knowledge with depth in some areas; • Analyse, diagnose, design and execute judgements across a broad range of technical or management functions; • Demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills; • Generate ideas through the analysis of information and concepts at an abstract level; • Demonstrate accountability for personal outputs within broad parameters; and • Demonstrate accountability for group outcomes within broad parameters. 	

UNIT	ICAITT185A Validate basic website performance
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Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	3	3

UNIT	ICAITT186A Conduct operational acceptance tests of web sites
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FIELD	Test
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DESCRIPTION	This unit defines the competency required to provide high level assurance that web sites can be effectively and efficiently provisioned and deployed live in a systematic manner.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Prepare test	<ol style="list-style-type: none"> 1. Testing framework and schedule is established and documented 2. Processes and functions to be tested are determined and quantitative and or qualitative performance benchmarks are assigned to each process and function. 3. Page templates, style guides and expected traffic loads are benchmarked and documented 4. Test methodology is determined and documented, may include unattended testing, background testing, distributed testing, performance testing, random testing and error recovery methodologies. 5. Testing panel is assembled and briefed on the conduct of the test. 6. User / installation manuals are developed according to target audience understanding and needs
2. Individual page testing	<ol style="list-style-type: none"> 1. Pages are tested against style guides and templates 2. Pages are tested for structural and content consistency 3. Automatic testing software, such as spell check, links, HTML validator and CSS check, are applied 4. Page gross statistics are confirmed results of all tests are documented

UNIT	ICAITT186A Conduct operational acceptance tests of web sites
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3. Page relationship testing	<ol style="list-style-type: none"> 1. Installation and examples listed in manual / instructions are tested 2. Navigability is tested using a variety of browsers 3. Ease of use and functionality is tested against user requirements 4. All software interface points are tested against business and technical requirements 5. Site security and privacy is tested against business security and privacy requirements 6. Response time is tested against business requirements 7. Load simulation using single and multiple independent browsers is conducted 8. Site ability to handle concurrent access is tested 9. Applicable privacy, accessibility and acceptable usage policy standards are tested 10. Automatic testing software, such as HTML validators and links testers, are applied 11. Results from sample users and data from automated test is collated and clearly documented
4. Test evaluation	<ol style="list-style-type: none"> 1. All results are consolidated and compared to benchmarks 2. Results that fail to meet benchmarks are identified and site iteration is conducted 3. Test results are recorded and documented as the site performance baseline against which further development or updating can be measured 4. Evaluation feedback provided to developers, testers, business and if applicable users. 5. Site is signed off by tester as ready to go live.

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Web Site Requirements	A web site developed to the point of going live is available. The range of customers and on line processes is determined and disseminated prior to assessment.
Software Requirements	The software used to develop and operate the Web Site is available, including plug ins. Automatic testing software is available. A range of commercially available software can be used and might include the following: Lynx-Me, W3C HTML validator, Link Alarm, Cyber Spider, HTML Power Tools, Doctor HTML, CSS Check.
Documentation Requirements	User manuals and installation instructions are available. User analysis can also be made available to assist in checking performance against user expectations.
Hardware	Can include IT equipment of all types: <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers

UNIT	ICAITT186A Conduct operational acceptance tests of web sites
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Operating system	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm the ability to prepare an operational acceptance test that measures both the independent and integrated structural, content and technical components of the site.</p> <p>Measurement should focus on quantitative results as much as possible and be able to be accurately evaluated against pre-determined benchmarks.</p>	
Interdependent assessment of units	<p>The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.</p>	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Website architecture • Website security • Work Load Metrics • Technical Performance Measurement • Business process design • Customer and business liaison • Website accessibility and equity legislation • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Website development • Website analysis • Technical test design • Test implementation • Test evaluation • Evaluation feedback • Evaluation analysis

UNIT	ICAITT186A Conduct operational acceptance tests of web sites
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Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Webservers • E-business website • Site server • Site servers software • Analysis software • Requirements documentation • Customer Relationship Model • Manuals and instructions for the site • Automatic testing software <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency in preparing, facilitating and documenting the results of the test.</p>
Context	<p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p> <p>Applications involve responsibility for, and limited organisation of, others.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating some theoretical concepts; • apply solutions to a defined range of unpredictable problems; • identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas; • identify, analyse and evaluate information from a variety of sources; • take responsibility for ones own outputs in relation to specified quality standards; • and take limited responsibility for the quantity and quality of the output of others.

Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	3	3

6. Implement IT Solutions

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UNIT	ICAITI085B Review site for implementation
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FIELD	Implement IT Solutions
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DESCRIPTION	This unit describes the competency required to identify environmental pre-requisites prior to installation commencing.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include: ICAITI086B, ICAITI087B, ICAITI088B, ICAITI090B
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ELEMENT	PERFORMANCE CRITERIA
1. Plan work area	<ol style="list-style-type: none"> 1. Technical and environmental system requirements for equipment to be installed are obtained and site requirements are documented including OH&S site specific requirements 2. Requirements associated with equipment are considered against installation requirements 3. On-site inspection/audit is conducted against site specifications 4. Preliminary recommendations for site are formulated and impact on installation schedule assessed 5. Changes to site to meet requirements are recommended and submitted to senior management for approval
2. Evaluate the environment	<ol style="list-style-type: none"> 1. Support staff are organised to facilitate a successful installation 2. Cabling and other environmental equipment are installed to required technical and industry standards 3. The installation of hardware is managed to ensure relevant OHS standards for hardware installation are adhered to 4. All hardware/software is reviewed and tested to ensure that the system meets client business requirements and system objectives
3. Document recommendations	<ol style="list-style-type: none"> 1. A report documenting findings and issues relating to site requirements and preparation is prepared 2. Final recommendations are submitted to senior management for approval

UNIT	ICAITI085B Review site for implementation
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Environmental specifications

Usually obtained from manufacturer/supplier and specifies detailed technical information for the particular item. Can include, but is not limited to:

- requirements for power, uninterruptible power supplies, grounding, lighting,
- temperature and air-conditioning, ventilation,
- fire protection systems,
- computer room security,
- network/telecommunications cabling, internal and external connectivity,
- access requirements, EMF

Hardware

Can include IT equipment of all types:

- Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems,
- Bridges, 3Com, Compaq, CISCO, IBM
- modems, analog, cable, ISDN, DSL
- servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys
- network cards, Adaptec, ARTIC, Compex, SMC
- switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies
- hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron,
- routers & gateways, 3Com, CISCO, D-Link, Intel,
- File & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems,

The candidate will need to implement a range of equipment or a number of the same hardware components.

Generally the larger and more expensive the equipment, the less likely in-house expertise will be available and the supplier will be relied on for support.

UNIT	
ICAITI085B	Review site for implementation
Inspection resources	<p>Can include:</p> <ul style="list-style-type: none"> • client/customer staff with technical knowledge of a client/customer specific environment, • technical and OH&S specifications of equipment to be installed, • tools to conduct audit, • site preparation plans
On-site	<p>Will be the specific site/s where the equipment is to be installed and will vary from project to project.</p> <p>This unit of competence relates to implementation at one location and many involve building-wide implementation.</p> <p>This unit of competence will not include implementation of multiple sites across a city, a state, country or many countries.</p>
Preliminary recommendations	Can include, but are not limited to: minor modifications to environment, enhancements to environment, relocations within environment, change in equipment to be ordered
Operational aspects of system	Can include: startup /shutdown, recovery and error handling, system performance
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment should confirm sufficient knowledge of components of site preparation, and relationship/impact to the overall installation schedule. Assessment must confirm the ability to identify environmental pre-requisites prior to installation commencing.</p> <p>Assessment can cover a number of scenarios, such as LANs incorporating hubs, routers with peripherals. Part of the assessment must determine the candidate's ability to logically sequence the preparatory steps taking into account time and budget constraints.</p>
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITI086A, ICAITI087A, ICAITI088B, ICAITI090A</p> <p>The interdependence of units of competency for assessment will vary with the particular project or scenario</p>

UNIT	ICAITI085B Review site for implementation	
<p>Underpinning skills and knowledge</p>	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad knowledge of the client business domain, for example when planning work area • Pre-requisites needed for system installation • Vendor specifications and requirements for installation • Possible legislative requirements relating to cabling and building preservation, for example when evaluating the environment • Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas • Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement • Detailed knowledge of the system's current functionality • Broad knowledge base of quality assurance practices, for example when evaluating the environment 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when preliminary recommendations for site are formulated and impact on installation schedule assessed • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when a report documenting findings and issues relating to site requirements and preparation is prepared • Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when support staff are organised to facilitate a successful installation • Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when changes to site to meet requirements are recommended and submitted to senior management for approval, and when final recommendations are submitted to senior management for approval • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when technical and environmental system requirements for equipment to be installed are obtained, site requirements are documented including OH&S site specific requirements, and when all hardware/software is reviewed and tested to ensure that the system meets client business requirements and system objectives
<p>Resources</p>	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills.</p> <p>Assessment of this competency requires access to:</p> <ul style="list-style-type: none"> • a mock or real customer computer site, • a list of equipment to be installed, • access to staff resources and technical equipment. <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p> <p>The assessor may interview ancillary people who may provide confirmation, if the assessment is based on a real implementation.</p>	

UNIT	ICAITI085B Review site for implementation
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Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the installation and testing aspects of this unit.</p>
Context	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills.</p> <p>This competency must be assessed in a simulated environment if this competency is assessed as part of a training course.</p> <p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p>

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	2	2	2

UNIT	ICAITI086B Scope implementation requirements
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FIELD	Implement IT Solutions
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DESCRIPTION	This unit describes the competency required to define boundaries and deliverables of an installation project
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include: ICAITI085B, ICAITI087B, ICAITI088B, ICAITI090B
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ELEMENT	PERFORMANCE CRITERIA
1. Confirm scope with parties	<ol style="list-style-type: none"> 1. Project plan and other documentation are reviewed to determine installation requirements and other implementation issues. 2. A preliminary scope document is developed and distributed to identified parties 3. Implementation areas to be further developed are identified with project team 4. Requests for revisions to scope are reviewed/negotiated with client users and system developers 5. Final documentation is prepared according to project standards 6. Key dates or events are specifically reviewed in terms of conflict with scheduled events
2. Update plans to account for scope	<ol style="list-style-type: none"> 1. Implementation plans are reviewed or developed taking into account the scope of the system 2. Revised plans and documentation are confirmed with client users 3. Project plan is signed-off by higher authorities
3. Develop project plan	<ol style="list-style-type: none"> 1. Agreed implementation plan is clarified with implementation team 2. Project plan and background information is presented and handed over according to project requirements 3. Technical advice is provided during implementation, regarding project plan and according to service level agreements

UNIT	ICAITI086B Scope implementation requirements
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Project scope or boundaries	<p>Implementation requirements will vary from project to project and across organisations. Can include, but are not limited to:</p> <ul style="list-style-type: none"> • milestones and time line, • project objectives, • project constraints, • financials, • resources required, • roles of involved parties, • equipment/software to be installed, • description of outcomes (deliverables), • customer acceptance criteria <p>This unit of competence relates to implementation at one location and many involve building-wide implementation.</p> <p>This unit of competence will not include implementation of multiple sites across a city, a state, country or many countries.</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to the scope of the implementation were considered and appropriate choices made given the implementation approach and measures of success.</p>
Project related resources or material	<p>Will vary from project to project and across organisations. Can include but is not limited to:</p> <ul style="list-style-type: none"> • supplier proposals, • resources included in preparation of proposal (customer and supplier), • implementation/delivery of installation project, • equipment/software specifications.

UNIT	ICAITI086B Scope implementation requirements
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • Bridges, 3Com, Compaq, CISCO, IBM • modems, analog, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • switches, 3Com, Accton, Cabletron, CISCO, Cnet, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Cnet, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • File & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems, <p>Generally the larger and more expensive the equipment, the less likely in-house expertise will be available and the supplier will be relied on for support.</p>
Software and Applications	<p>Can include packaged software, in-house development or out-sourced development. The amount of maintenance, change and tailoring that can be undertaken will vary.</p>
Standards and procedures	<p>May include formal procedures that must be adhered to with check points and sign offs with documented procedures and templates, implementation of financial control mechanisms, communication with stakeholders, dispute resolution and modification procedures, processes for determining size and cost</p>
Client User	<p>May be a department within the organisation or a third party and so the relation and ease of access will vary</p>
Documentation and Reporting	<p>Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates</p>
Scope definition	<p>Scope definition is to be expressed by clearly defined boundaries, such as:</p> <ul style="list-style-type: none"> • product breakdown structure (a cascade of hardware, software and components); • organisation breakdown structure (a cascade of resource types, skill types or activities); • work breakdown structure (a cascade of the products and work activities), and/or • some other form which comprehensively defines products and activities
Small Business	<p>In a small business there may not be a higher authority and so the requirements will be based on client requirements, approval and sign off. Procedures for top management approval and sign off will vary</p>
OH and S Standards	<p>As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency</p>

UNIT	ICAITI086B Scope implementation requirements
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Quality benchmarks

There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE and the ISO standards.

International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards <http://www.standards.com.au/>

Quality benchmarks will vary according to the type of organisation and the benchmarks will cover technical, cost savings, performance and quality. Some organisations may be quality certified and have well documented standards for addressing quality while others will not.

EVIDENCE GUIDE**Critical aspects of evidence**

Assessment must confirm the ability to identify and convey a clear understanding of project deliverables, boundaries & roles across all involved parties

Part of the assessment must determine the candidate's ability to consider and document implementation approach, implementation drivers, measures of success, implementation by functional area and implementation coordination.

Interdependent assessment of units

This unit may be assessed with any of the following: ICAITI085B, ICAITI087A, ICAITI088B, ICAITI090A
The interdependence of units of competency for assessment will vary with the particular project or scenario

UNIT	ICAITI086B Scope implementation requirements
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EVIDENCE GUIDE		
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Underpinning skills and knowledge	Underpinning knowledge	Underpinning skills
	<ul style="list-style-type: none"> • General knowledge of IT related services and issues, for example when confirming scope with parties and handing-over to implementation team • Specific knowledge of IT installation services and issues, for example when handing-over to implementation team • Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement • Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas • Broad knowledge of the client business domain, for example when confirming scope with parties • Pre-requisites needed for system installation, for example when confirming scope with parties • Vendor specifications and requirements for installation, for example when updating plans to account for scope • Possible legislative requirements relating to cabling and building preservation, for example when updating plans to account for scope • Broad knowledge base of vendor product directions, for example when confirming scope with parties 	<ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when implementation areas to be developed further are identified with project team • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when revised plans and documentation are confirmed with client users • Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when implementation areas to be developed further are identified with project team and when requests for revisions to scope are reviewed/negotiated with client users and system developers. • Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when agreed implementation plan is clarified with implementation team, and project plan and background information is presented and handed over according to project requirements • Leadership skills in relation to guidance for achieving outcomes and transferring and collecting information and gaining consensus on concepts, for example when project plan and background information is presented and handed over according to project requirements • Analysis and risk assessment skills in relation to analysis, evaluation and identification of issues, for example when key dates or events are specifically reviewed in terms of conflict with scheduled events, and when implementation plans are reviewed or developed taking into account the scope of the system • Project planning skills in relation to scope, time, cost, quality, communications and risk management for example when project plan and other documentation are reviewed to determine installation requirements and issues, and project plan is signed-off by higher authorities, and when technical advice is provided during implementation, regarding project plan and according to service levels.

UNIT

ICAITI086B Scope implementation requirements

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills.

To demonstrate this unit of competence the candidate will require access to

- The project plan,
- a client expectations brief,
- required hardware software and the related specifications

Assessment of this unit of competence could include review of documents developed by the candidate, which relate to implementation approach, implementation drivers, measures of success, implementation by functional area and implementation coordination.

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to address the provision of technical advice aspects of this unit.

Context

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills.

This competency must be assessed in a simulated environment if this competency is assessed as part of a training course.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	2	1	2	2

UNIT	ICAITI087B Acquire system components
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FIELD	Implement IT Solutions
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DESCRIPTION	This unit describes the competency required to identify system components and to follow procedures to purchase those components.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include: ICAITI086B, ICAITI088B, ICAITI089B, PMX509A, ICAITI090B
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ELEMENT	PERFORMANCE CRITERIA
1. Confirm system components to acquire	<ol style="list-style-type: none"> 1. Technical papers and recommendations that identify required hardware/software components are reviewed with implementation team 2. The fit with existing technology is assessed with systems developers 3. Best and current technology fit for each purpose is identified with systems developers 4. A list of required components is developed with specifications and possible suppliers.
2. Agree methods to acquire components	<ol style="list-style-type: none"> 1. The client organisation’s preferred acquisition methods and policies are identified and assessed against required components 2. Acquisition alternatives for required hardware/software components are evaluated against required service levels, cost constraints and geographic constraints 3. Recommended acquisition method is selected and discussed with client users and management

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Warranty	Will vary from supplier to supplier and component to component. Legal document which defines rights (support v replacement) during a pre-determined period after customer acceptance of component/s
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UNIT	ICAITI087B Acquire system components
Identification of system components	<p>Identification of system components may require consideration of the following:</p> <ul style="list-style-type: none"> • current business and IT strategic plans • data models, • functional process descriptions, • user requirements, • architectures, • standards, • service levels, etc
	<p>In a small business not all of these documents will be available and therefore the current business plan, user requirements and required service levels will need to be considered.</p>
System Components	<p>Can include but are not limited to:</p> <ul style="list-style-type: none"> • acquisition of products or services • hardware such as Mid-range, • PCs, Networks, printers, etc. • software such as applications, utilities, operating systems, • facility management, • integration and/or implementation services etc.
Acquisition method	<p>Can include but is not limited to: purchase, lease, rental, new or refurbished, outsourcing.</p> <p>Different acquisition methods can be found in IT strategy papers, or through discussions with IT Director, Finance Director, Suppliers</p>
	<p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to different acquisitions methods were considered and appropriate choices made given the organisational policy.</p>
Small business	<p>In a small business, there may not be systems developers or clients and so the identification of system components will be based on overall business needs and may be identified by one individual or in conjunction with hired expertise. Procedures for top management approval and sign off will vary</p>
Method of supplier selection	<p>In government organisations there may be well defined tender processes that have to be followed. In other organisations there may be no procedure and each tender handled differently.</p> <p>Different methods may include one or several of the following:</p> <ul style="list-style-type: none"> • Registration of Interest (ROI), • Request for Information (RFI), • Request for Proposal (RFP)
	<p>The above approaches could involve advertising to the open market, existing relationships or preferred supplier lists</p>

UNIT	ICAITI087B Acquire system components
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm the ability to identify correct system components and to follow procurement procedures to purchase those components. The acquisition approach selected by the candidate should be consistent with the technical and business requirements.</p> <p>Evidence may include: Formal request for tender documentation, Evaluation/performance criteria, Comparison check lists</p>
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITI086A, ICAITI088B, ICAITI089A, PMX509A, ICAITI090A. The interdependence of units of competency for assessment will vary with the particular project or scenario</p>

EVIDENCE GUIDE

Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad general knowledge of the client business domain, for example when confirming system components to acquire, and when agreeing to methods to acquire components • Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas • Broad knowledge base of vendor product directions, for example when best and current technology fit for each purpose is identified with systems developers • Broad knowledge base of quality assurance practices, for example when best and current technology fit for each purpose is identified with systems developers • A basic knowledge of information gathering techniques, for example when best and current technology fit for each purpose is identified with systems developers, and when recommended acquisition method is selected and discussed with client users and management • Broad knowledge of change management systems • Broad knowledge of risk management • Broad knowledge of financial management of lease arrangement, for example when the client organisation’s preferred acquisition methods and policies are identified and assessed against required components, and when acquisition alternatives for required hardware/software components are evaluated against required service agreements, cost constraints and geographic constraints 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when the fit with existing technology is assessed with systems developers • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when recommended acquisition method is selected and discussed with client users and management • Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature. • Facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when recommended acquisition method is selected and discussed with client users and management • Negotiation skills in relation to other team members and applied to a defined range of predictable problems, for example when best and current technology fit for each purpose is identified with systems developers • Project planning skills in relation to scope, time, procurement, cost, quality, communications and risk management, for example when technical papers and recommendations to identify required hardware/software components are reviewed with implementation team
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UNIT

ICAITI087B Acquire system components

Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills.</p> <p>To demonstrate this unit of competence the candidate will require access to</p> <ul style="list-style-type: none"> • current business and IT strategic plans • data models • functional process descriptions • user requirements • architectures • service levels <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to identify system components and select the preferred acquisition method required in this unit.</p>
Context	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills.</p> <p>This competency must be assessed in a simulated environment if this competency is assessed as part of a training course.</p> <p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p>

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	2	2	2	3

UNIT	ICAITI088B Evaluate and negotiate vendor offerings
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FIELD	Implement It Solutions
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DESCRIPTION	This unit describes the competency required to identify a vendor to supply components and to negotiate with the vendor
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITI085B, ICAITI086B, ICAITI087B, PMX509A, ICAITI089B
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ELEMENT	PERFORMANCE CRITERIA
1. Develop benchmarks	<ol style="list-style-type: none"> 1. System requirements are analysed and areas that require benchmark evaluation are identified 2. Benchmark criteria are documented and the required performance and functional specifications are listed 3. Mandatory system requirements are identified 4. Weightings that measure the importance of the requirements are developed
2. Select method to be used for finding vendor	<ol style="list-style-type: none"> 1. Organisation’s purchasing policy is evaluated to determine any required method of selecting vendors 2. Options such as tender, invitation, etc are considered, and recommendations on preferred method are made 3. Method to be used for selection is documented and the selection process is planned
3. Review vendor offerings	<ol style="list-style-type: none"> 1. Agreed company IT strategic direction method is used to notify vendors of requirements 2. Evaluation process is undertaken by comparing vendor offerings against company requirements 3. Vendor demonstrations and performance benchmark tests are organised 4. Evaluation and selection based on servicing, warranty and after sales service commitment is participated in 5. Evaluation and selection, based on the vendor’s ability to meet specific technical criteria is participated in
4. Prepare contracts and delivery requirements	<ol style="list-style-type: none"> 1. Contracts are reviewed and prepared for higher authority review 2. Delivery arrangements are identified with suppliers and are confirmed with client 3. Installation responsibilities are clarified with suppliers against implementation plan 4. Warranty and support requirements are reviewed with suppliers against service level agreements

UNIT	ICAITI088B Evaluate and negotiate vendor offerings
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

System Components	<p>Can include but are not limited to:</p> <ul style="list-style-type: none"> • acquisition of products or services • hardware such as Mid-range, • PCs, Networks, printers, etc. • software such as applications, utilities, operating systems, • facility management, • integration and/or implementation services etc.
Acquisition method	<p>Can include but is not limited to: purchase, lease, rental, new or refurbished, outsourcing.</p> <p>Different acquisition methods can be found in IT strategy papers, or through discussions with IT Director, Finance Director, Suppliers</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that all issues relating to different acquisitions methods were considered and appropriate choices made given the organisational policy.</p>
Small business	<p>In a small business, there may not be systems developers or clients and so the identification of system components will be based on overall business needs and may be identified by one individual or in conjunction with hired expertise. Procedures for top management approval and sign off will vary</p>
Method of supplier selection	<p>In government organisations there may be well defined tender processes that have to be followed. In other organisations there may be no procedure and each tender handled differently.</p> <p>Different methods may include one or several of the following:</p> <ul style="list-style-type: none"> • Registration of Interest (ROI), • Request for Information (RFI), • Request for Proposal (RFP) <p>The above approaches could involve advertising to the open market, existing relationships or preferred supplier lists</p>
Delivery arrangements	<p>Will vary, but typically cover delivery date, specific location, contact point and telephone, components to be delivered, part or full delivery,</p>
Contracts	<p>In some organisations there may be well defined negotiation and contract processes that have to be followed. In other organisations there may be no procedure and each negotiation and contract handled differently. For training purposes a number of formal approaches will be completed.</p>
Standards and procedures	<p>May include formal procedures that must be adhered to with check points and sign offs with documented procedures and templates, implementation of financial control mechanisms, communication with stakeholders, dispute resolution and modification procedures, processes for determining size and cost</p>

UNIT	ICAITI088B Evaluate and negotiate vendor offerings
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OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Installation responsibilities	Will vary according to supplier proposal. Can include installation by supplier or be considered customer installable
Warranty	Will vary from supplier to supplier and component to component. Legal document which defines rights (support v replacement) during a pre-determined period after customer acceptance of component/s
Support Requirements	Can include but is not limited to: inclusion into maintenance agreement, training both one to one and in groups

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm the ability to identify an appropriate vendor according to organisational requirements to supply components</p> <p>The acquisition approach selected by the candidate should be consistent with the technical and business requirements.</p> <p>The acquisition approach documented by the candidate should be a clear identification and specification of the business and technical requirements, identify the selection criteria and seek to identify the qualifications of vendors invited to submit proposals. The selection of tender should be against the identified benchmarks.</p>	
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITI085B, ICAITI086A, ICAITI087A, PMX509A, ICAITI089A The interdependence of units of competency for assessment will vary with the particular project or scenario</p>	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad knowledge of the client business domain, for example when selecting method to be used for finding vendor and reviewing vendor offerings • Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas • Broad knowledge base of vendor product directions • Broad knowledge base of quality assurance practices • A basic knowledge of information gathering techniques • Broad knowledge of change management systems • Broad knowledge of risk management • Broad knowledge of financial management of lease arrangement • Broad knowledge of benchmarking methodologies • Broad knowledge of contracts 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example options such as tender, invitation, etc are considered, and recommendations on preferred method are made • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when contracts are reviewed and prepared for higher authority review • Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when delivery arrangements are identified with suppliers and are confirmed with client, and installation responsibilities are clarified with suppliers against implementation plan • Facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when evaluation and selection, based on the vendor’s ability to meet specific technical criteria is participated in • Negotiation skills in relation to other team members and applied to a defined range of predictable problems, for example when vendor demonstrations and performance benchmark tests are organised • General financial analysis skills, for example when vendor demonstrations and performance benchmark tests are organised, and when evaluation process is undertaken by comparing vendor offerings against company requirements

UNIT	ICAITI088B Evaluate and negotiate vendor offerings
Resources	<p>To demonstrate this unit of competence the candidate will require access to:</p> <ul style="list-style-type: none"> • current business and IT strategic plans • data models • functional process descriptions • user requirements • architectures • service levels <p>Assessment of this unit of competence could include review of documents developed by the candidate, which document the acquisition approach and guide vendors who want to submit information for consideration.</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to identify potential vendors and select the preferred vendors required in this unit.</p>
Context	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills.</p> <p>This competency must be assessed in a simulated environment if this competency is assessed as part of a training course.</p> <p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p>

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	2	3	2	3	2

UNIT	ICAITI089B Implement and hand over system components
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FIELD	Implement IT solutions
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DESCRIPTION	This unit defines the competency required to ensure that the system is operational prior to client use.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITAD041B, ICAITS104B, ICAITS105B, ICAITS111B, ICAITS118B, ICAITAD042B, ICAITI090A, ICAITAD056B, ICAITT084B, ICAITS116B, ICAITS035C, ICAITT082B, ICAITT081B, PMX509A
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ELEMENT	PERFORMANCE CRITERIA
1. Confirm system integrity	<ol style="list-style-type: none"> 1. Functioning of system components as per specification in both a stand alone and complete manner is checked 2. Any shortcomings or problems are reviewed with client and an action plan is formulated according to project requirements 3. All changes made as a result of testing are fully documented and are checked in accordance with standards and procedures
2. Provide operation and maintenance guidance	<ol style="list-style-type: none"> 1. Operation issues and procedures are identified and discussed with client in accordance with implementation and support requirements 2. Maintenance issues are discussed with maintenance group and all supporting documentation completed in accordance with standards 3. Maintenance and service to be provided to client are identified with client against service level agreements 4. Warranty considerations are reviewed with client in accordance with service level agreements and implementation plans
3. Hand system to client	<ol style="list-style-type: none"> 1. Installed system is demonstrated to meet the standards identified in the agreed implementation plan, and is complete 2. Sign off is obtained from client to signify satisfaction with the system 3. Short term implementation support phase is discussed with client and any milestones to be met are agreed to 4. Further action items, training needs, amendments, etc., are discussed, documented and are submitted to relevant authority for action

UNIT	ICAITI089B Implement and hand over system components
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

System components	Details will be defined in scope of project plan may include, but are not limited to: hardware, services, operating system, network & communications equipment and software.
Service Level Agreements	Service Level Agreements (SLA) exist for many different infrastructure services including communications carriers, ISPs, ASPs and SLAs for vendor products. SLAs should consider business processes and requirements, clearly specify and quantify service levels, identify evaluation or audit of service levels
Systems Test	To confirm existing components are compatible with newly installed components or that completely new system is viable. The test will vary both in complexity and duration depending on the amount of additional components and the functional variation
Procedures	As per project requirements. Client procedures will require documenting, based on guidance given during hand-over
Project Plan	Written agreement between supplier and client that defines a number of project variables including parties and their responsibilities, project scope, project schedule, project budget etc.
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Acceptance criteria	Typically formulated on a project by project basis. Includes but not restricted to business rules and requirements, performance, operational considerations, compliance with user functional specifications

EVIDENCE GUIDE	
Critical aspects of evidence	Assessment must confirm the ability to confirm system integrity and operational and maintenance procedures are in place and viable.
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITAD041B, ICAITS104B, ICAITS105B, ICAITS111B, ICAITS118B, ICAITAD042B, ICAITI090A, ICAITAD056B, ICAITT084B, ICAITS116B, ICAITS035C, ICAITT082B, ICAITT081B, PMX509A. The interdependence of units of competency for assessment will vary with the particular project or scenario

UNIT	ICAITI089B Implement and hand over system components
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Underpinning skills and knowledge**Underpinning knowledge**

- Current business practices in relation to preparing reports, for example when confirming system integrity, and handing over system
- Current industry accepted hardware and software products with broad knowledge of general features and capabilities
- Broad knowledge base of vendor product directions, for example when confirming system integrity
- Broad knowledge of the client business domain, for example when any shortcomings or problems are reviewed with client and an action plan is formulated according to project requirements
- Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations
- Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement
- Broad knowledge base of quality assurance practices, for example when confirming system integrity
- A basic knowledge of information gathering techniques, for example when confirming system integrity and when providing operation and maintenance guidance
- Broad general knowledge of change management systems, for example when confirming system integrity
- Detailed knowledge of project plan - constraints, guidelines and deadlines
- General operational procedures for IT systems

Underpinning skills

- Negotiation skills in relation to other team members and applied to a defined range of predictable problems, for example when any shortcomings or problems are reviewed with client and an action plan is formulated according to project requirements
- Project planning skills in relation to set benchmarks and identified scope, for example when any shortcomings or problems are reviewed with client and an action plan is formulated according to project requirements
- Problem solving skills for a defined range of predictable problems, for example when installed system is demonstrated to meet the standards identified in the agreed implementation plan, and is complete
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when further action items, training needs, amendments, etc., are discussed, documented and are submitted to relevant authority for action
- Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when maintenance issues are discussed with maintenance group and all supporting documentation completed in accordance with standards.
- Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas, for example when maintenance issues are discussed with maintenance group and all supporting documentation completed in accordance with standards, and when further action items, training needs, amendments, etc., are discussed, documented and are submitted to relevant authority for action

UNIT

ICAITI089B Implement and hand over system components**Resources**

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills.

To demonstrate this unit of competence the candidate will require access to

- a customer computer site and system or simulation,
- project plan,
- service level agreements,
- implementation plan and
- people involved in hand-over.

Assessment of this unit of competence could include supplementary questioning of the candidate to identify how operational and maintenance issues were raised and/ or resolved with the client.

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to operation and maintenance guidance required in this unit.

Context

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills.

This competency must be assessed in a simulated environment if this competency is assessed as part of a training course.

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	2	3	2

UNIT	ICAITI090B Conduct pre-installation audit for software installation
FIELD	Implement IT Solutions
DESCRIPTION	This unit defines the competency required to identify the pre-requisites needed for installation of software and is useful to undertake prior to the purchase of software.
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITT081B, ICAITAD041B, ICAITS104B, ICAITS105B, ICAITS111B, ICAITS118B, ICAITAD042B, ICAITI090A, ICAITAD056B, ICAITT084B, ICAITS116B, ICAITS035C, ICAITT082B, ICAITT081B, PMX509A
ELEMENT	PERFORMANCE CRITERIA
1. Assess compatibility of existing software	<ol style="list-style-type: none"> 1. Details of software loaded on client's system are confirmed from actual system and from existing system documentation 2. Software pre-requisites needed for new software are identified, implications are noted, minimum requirements are confirmed and customer requirements are matched with technical specifications 3. Any compatibility issues are confirmed and assessed against installation plan and cost constraints 4. Recommendations on variances, level and software consistency are documented for higher authority consideration
2. Confirm interoperability of software with environment.	<ol style="list-style-type: none"> 1. Lack of conflict between software is confirmed 2. Defined degree of synergy between software is measured 3. Functioning of interoperability is confirmed
3. Assess system capacity to install ordered software	<ol style="list-style-type: none"> 1. Details of current system memory, disk, available disk storage, other specific hardware requirements are obtained from investigation of actual system and existing system documentation 2. Hardware pre-requisites needed for new software are confirmed, implications noted and minimum requirements identified 3. Capacity issues are confirmed and assessed against installation plan and cost constraints 4. Recommendations on variances in capacity are documented for higher authority consideration
4. Prepare and distribute audit report	<ol style="list-style-type: none"> 1. Findings, recommendations and impact on project are documented in a manner that the target audience can comprehend 2. Audit/analysis report is presented and distributed according to company and project procedures

UNIT

ICAITI090B Conduct pre-installation audit for software installation

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Hardware

Can include IT equipment of all types:

- Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems,
- Bridges, 3Com, Compaq, CISCO, IBM
- modems, analog, cable, ISDN, DSL
- servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys
- network cards, Adaptec, ARTIC, Compex, SMC
- switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies
- hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron,
- routers & gateways, 3Com, CISCO, D-Link, Intel,
- File & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems,

Generally the larger and more expensive the equipment, the less likely in-house expertise will be available and the supplier will be relied on for support.

Software and Applications

Can include packaged software, in-house development or out-sourced development. May be applications, utilities or operating systems

Software capacity

Typically specified in supplier's technical specifications versus client specifications

Diagnostics

Various utilities may be available to confirm the software versions and hardware capacity

Impact on project

Will vary according to findings of this audit. Can include: slippage to schedule, no impact, patches/upgrades need to be installed, upgrade to memory/hard disk, memory board or other technical component

Operating systems

Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare

Client User

May be a department within the organisation or a third party and so the relation and ease of access will vary

Documentation and Reporting

Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates

Standards and procedures

May include formal procedures that must be adhered to with check points and sign offs with documented procedures and templates, implementation of financial control mechanisms, communication with stakeholders, dispute resolution and modification procedures, processes for determining size and cost

OH and S Standards

As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency

UNIT	ICAITI090B Conduct pre-installation audit for software installation
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EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm sufficient ability to guide customers on what specific components are required prior to commencement of installation. Clear recommendations and assignment of responsibility for any missing components must be evident. Additionally, the candidate must be able to determine the impact and risk by either continuing or discontinuing the implementation	
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITT081B, ICAITAD041B, ICAITS104B, ICAITS105B, ICAITS111B, ICAITS118B, ICAITAD042B, ICAITI090A, ICAITAD056B, ICAITT084B, ICAITS116B, ICAITS035C, ICAITT082B, ICAITT081B, PMX509A. The interdependence of units of competency for assessment will vary with the particular project or scenario	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad knowledge of the client business domain, for example assessing compatibility of existing software • Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas • Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement, for example assessing compatibility of existing software • Detailed knowledge of the system’s current functionality, for example assessing compatibility of existing software, and when assessing system’s capacity to install ordered software • Broad knowledge base of quality assurance practices, for example when confirming inoperability of software with environment • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Broad knowledge of risk management, for example when preparing and distributing audit report 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when software pre-requisites needed for new software are identified, implications are noted, minimum requirements are confirmed and customer requirements are matched with technical specifications, and when capacity issues are confirmed and assessed against installation plan and cost constraints • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when findings, recommendations and impact on project are documented in a manner that the target audience can comprehend • Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when software pre-requisites needed for new software are identified, implications are noted, minimum requirements are confirmed and customer requirements are matched with technical specifications. • Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas, for example when audit/analysis report is presented and distributed according to company and project procedures • Facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when audit/analysis report is presented and distributed according to company and project procedures • Use of system diagnostics and utilities for example when details of current system memory, disk, available disk storage, other specific hardware requirements are obtained from investigation of actual system and existing system documentation • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when findings, recommendations and impact on project are documented in a manner that the target audience can comprehend.

UNIT

ICAITI090B Conduct pre-installation audit for software installation**EVIDENCE GUIDE**

Resources	<p>To demonstrate this unit of competence the candidate will require access to</p> <ul style="list-style-type: none"> • operational system and the system specifications, • technical specifications of components to be installed, • documentation tools. <p>Assessment of this unit of competence could include supplementary questioning of the candidate to identify how compatibility and interoperability issues were identified and resolved.</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to assess compatibly and interoperability.</p>
Context	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills.</p> <p>This competency must be assessed in a simulated environment if this competency is assessed as part of a training course.</p> <p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p>

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	2	2	3

UNIT	ICAITI091B Conduct post implementation review
FIELD	Implement IT Solutions
DESCRIPTION	This unit defines the competency required to plan and carry out a review of the system after the implementation has been completed and has been operational for some time
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include: ICAITAD041B, ICAITS104B, ICAITS105B, ICAITS111B, ICAITS118B, ICAITAD042B, ICAITI090A, ICAITAD056B, ICAITT084B, ICAITS116B, ICAITS035C, ICAITT082B, ICAITT081B, PMX509A

Element	PERFORMANCE CRITERIA
1. Schedule review	<ol style="list-style-type: none"> 1. Organisation standards and success criteria procedures are reviewed to identify the purpose of the review, and when and how it should be undertaken 2. Purpose of review is converted into specific criteria such as outcomes, measures of outcomes and standards related to organisational purpose 3. Appropriate person is contacted to schedule timings and venue 4. Work schedule based on standards is prepared, and action items and staff involved are identified 5. Interface between vendor and organisation is provided where necessary regarding support/service commitment
2. Carry out review	<ol style="list-style-type: none"> 1. Purpose of the review, their involvement and what is expected from them is explained to the parties involved 2. Review is carried out using techniques such as interview, questionnaire, observation, testing, etc. to obtain data on the areas under review 3. Any exceptions to results are followed up in order to ensure accurate information gathered, and case notes are completed 4. Minute findings, recommendations and impact on system and other projects are administered 5. Suggestions for resolution of problems are made and any actions resulting from audit report are summarised
3. Document and publish results	<ol style="list-style-type: none"> 1. Results and feedback are distributed to relevant parties 2. Additional meetings/review resulting from current review are scheduled 3. Recommendations and action items are finalised and are distributed to management so lessons learnt may be incorporated in future projects and the standards documentation. 4. Any add-ons required are identified through gap analysis and potentials

UNIT

ICAITI091B Conduct post implementation review

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Review process

Many organisations may not have a formal review procedure for the end of implementation but a post implementation review should cover:

- a review of any system problems,
- procedural issues,
- stated system goals and objectives,
- individual responsibility, training needs and procedures

Objectives in a review may include learning from mistakes, identifying user problems, checking operations, etc.

Implementation Project

Includes, but is not limited to: any hardware and/or software implementation or upgrade

Hardware

Can include IT equipment of all types:

- Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems,
- Bridges, 3Com, Compaq, CISCO, IBM
- modems, analog, cable, ISDN, DSL
- servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys
- network cards, Adaptec, ARTIC, Compex, SMC
- switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies
- hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron,
- routers & gateways, 3Com, CISCO, D-Link, Intel,
- File & print servers, Acer/Altos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems,

Generally the larger and more expensive the equipment, the less likely in-house expertise will be available and the supplier will be relied on for support.

Software and Applications

Can include packaged software, in-house development or out-sourced development. The amount of maintenance, change and tailoring that can be undertaken will vary.

UNIT	ICAITI091B Conduct post implementation review
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Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare
Standards and procedures	May include formal procedures that must be adhered to with check points and sign offs with documented procedures and templates, implementation of financial control mechanisms, communication with stakeholders, dispute resolution and modification procedures, processes for determining size and cost
Client User	May be a department within the organisation or a third party and so the relation and ease of access will vary
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Quality process	Some organisations may be quality certified and have well documented standards while others will not.
Impact on project	Will vary according to findings of this audit. Can include: slippage to schedule, no impact, patches/upgrades need to be installed, upgrade to memory/hard disk, memory board or other technical component.

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to comprehensively plan and carry out a review of the system after the implementation has been completed and has been operational for some time	
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITAD041B, ICAITS104B, ICAITS105B, ICAITS111B, ICAITS118B, ICAITAD042B, ICAITI090A, ICAITAD056B, ICAITT084B, ICAITS116B, ICAITS035C, ICAITT082B, ICAITT081B, PMX 509A. The interdependence of units of competency for assessment will vary with the particular project or scenario	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement • Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas • Broad knowledge of the client business domain, for example when reviewing schedule • Detailed knowledge of implementation process and issues, for example when carrying out review • Broad knowledge base incorporating theoretical concepts of review techniques, for example when carrying out review, and documenting/publishing results 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when suggestions for resolution of problems are made and any actions resulting from audit report are summarised • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when any exceptions to results are followed up in order to ensure accurate information gathered, and case notes are completed • Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when purpose of the review, their involvement and what is expected from them is explained to the parties involved • Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when purpose of the review, their involvement and what is expected from them is explained to the parties involved, and when results and feedback are distributed to relevant parties • Project planning skills in relation to scope, time, cost, quality, communications and risk management, for example when recommendations and action items are finalised and are distributed to management so lessons learnt may be incorporated in future projects and the standards documentation

UNIT	ICAITI091B Conduct post implementation review
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Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills.</p> <p>To demonstrate this unit of competence the candidate will require access to</p> <ul style="list-style-type: none"> • operational system and/or its specifications, • technical specifications of components installed, • documentation tools, • success criteria. <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to identify system problems and conduct review with system users and others.</p>
Context	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures; quality projects, questioning on underpinning knowledge and skills.</p> <p>This competency must be assessed in a simulated environment if this competency is assessed as part of a training course.</p> <p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p>

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	3	1	3	2

UNIT	ICAITI092B Document operational procedures
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FIELD	Implement IT Solutions
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DESCRIPTION	This unit defines the competency required to assess and document the operational procedures required to utilise the system.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include the Analysis and Design, Project Management, Test, Build, the teamwork functional areas and documentation
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ELEMENT	PERFORMANCE CRITERIA
1. Determine procedural areas to document	<ol style="list-style-type: none"> 1. Existing technical and client user documentation is reviewed for currency against requirements 2. Operation of system is reviewed with development staff to confirm technical documentation is current 3. Possible areas where new and/or revised procedures are required are identified with system developers and/or client users 4. Specific procedures are identified and reviewed with frontline staff using techniques appropriate to the project or company requirements
2. Confirm design procedures	<ol style="list-style-type: none"> 1. Design requirements are specified to meet the capabilities of the target audience taking into account ability, experience, skills, etc. of users. 2. Range of display media is specified to meet specifications and user operational methods 3. Required operational procedures are developed using appropriate display material, tutorials, help files, manuals, search engines etc 4. Proposed layout is sequenced in a manner that is logical to target audience 5. Proposed design of the procedures is submitted to client users and management for agreement
3. Develop operational procedures	<ol style="list-style-type: none"> 1. Proposed design of the operational procedures is reviewed and all resources required are available 2. Development is planned and tasks and activities are assigned to individuals as necessary 3. Manuals, help messages, tutorials etc., are written as specified in the design in accordance with organisation standards and procedures.

UNIT	ICAITI092B Document operational procedures
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4. Validate documentation	<ol style="list-style-type: none"> 1. Documentation is checked to cover all technical and client user operational procedures covered by the system 2. Scope and limitations of the system are defined 3. Documentation is checked to include all procedures identified in implementation plan 4. Documentation of procedures is prepared for sign-off/approval by higher authority 5. Documentation is distributed to the operational area in accordance with organisation standards and procedures
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Documentation Procedures

Documentation procedures can cover the following:

- Identifying user profiles
- Completing a task breakdown,
- Step through work flow and procedures
- Prototyping documentation

Documentation resources

Can include, but are not limited to: paper based manuals, on-line documents, documents (not limited to XML, HTML), help messages, tutorials, Wizards, etc.

Specific documentation tools include:

- Codestone, Codework, CodeMapper, DocWright
- Eztools, Clipboard Plus
- Visual Vision
- Filters such as Quadralay Webworks or MIF2GO

UNIT	ICAITI092B Document operational procedures
Quality benchmarks	<p>There are several organisations that have developed standards for software review mainly: US Department of Defence (DoD) standards, IEEE, the Software Engineering Institute (SEI), and the ISO standards.</p> <p>Relevant quality standards include: AS/NZS 4258:1994 Software user documentation process, ISO 5807:1985 Information processing -- Documentation symbols and conventions for data, program and system flowcharts, program network charts and system resources charts, ISO/IEC 6592:2000 Information technology -- Guidelines for the documentation of computer-based application systems, ISO 9127:1988 Information processing systems -- User documentation and cover information for consumer software packages, ISO/IEC TR 9294:1990 Information technology -- Guidelines for the management of software documentation, ISO/IEC TR 10000-1:1998 Information technology -- Framework and taxonomy of International Standardized Profiles -- Part 1: General principles and documentation framework, ISO 11442-1:1993 Technical product documentation -- Handling of computer-based technical information -- Part 1: Security requirements, ISO 11442-2:1993 Technical product documentation -- Handling of computer-based technical information -- Part 2: Original documentation, ISO 11442-3:1993 Technical product documentation -- Handling of computer-based technical information -- Part 3: Phases in the product design process, ISO 11442-5:1999 Technical product documentation -- Handling of computer-based technical information -- Part 5: Documentation in the conceptual design stage of the development phase, ISO 15226:1999 Technical product documentation -- Life cycle model and allocation of documents, ISO/IEC 15910:1999 Information technology -- Software user documentation process,</p> <p>International and Australian Standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards http://www.standards.com.au/</p> <p>Will vary according to the type of organisation and the benchmarks will cover technical, cost savings, performance and quality. Some organisations may be quality certified and have well documented standards for addressing quality while others will not.</p>
Organisation Standards	Will vary between organisations from formal procedures that have to be adhered to through to broad guidelines.
Target Audience	The audience that the procedures are written for will vary from inexperienced, low skill users through to proficient high level technicians. The way of presenting information and the media used will vary.
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach. Information gathering processes may have associated templates
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Standards and procedures	May include formal procedures that must be adhered to with check points and sign offs with documented procedures and templates, implementation of financial control mechanisms, communication with stakeholders, dispute resolution and modification procedures, processes for determining size and cost
Quality process	Some organisations may be quality certified and have well documented standards for addressing quality while others will not.
EVIDENCE GUIDE	
Critical aspects of evidence	Assessment must confirm ability to manage the production of produce clear, easy to read procedures conforming with required standards for the utilisation of the specified system.
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit can be assessed with a range of various units and can be assessed with ICAITU128A.

UNIT	ICAITI092B Document operational procedures	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> Detailed knowledge of documentation standards and tools, for example when determining procedural areas to document Broad knowledge of the client business domain, for example when determining procedural areas to document Broad knowledge base of the role of stakeholders and the degree of stakeholder involvement, for example when possible areas requiring new and/or revised procedures are identified with system developers and/or client users Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas Current business practices in relation to preparing reports, for example when validating documentation 	<p>Underpinning skills</p> <ul style="list-style-type: none"> Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when design requirements are specified to meet the capabilities of the target audience taking into account ability, experience, skills, etc. of users Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when validating documentation, and when specific procedures are identified and reviewed with frontline staff using techniques appropriate to the project or company requirements Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when specific procedures are identified and reviewed with frontline staff using techniques appropriate to the project or company requirements. Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas Media development application skills, for example when documentation is distributed to the operational area in accordance with organisation standards and procedures
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills.</p> <p>To demonstrate this unit of competence the candidate will require access to</p> <ul style="list-style-type: none"> Project related documentation, Staffing resources, Documentation tools. <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence</p>	
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to identify the system components and select and document the system.</p>	

UNIT	ICAITI092B Document operational procedures
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Context

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for one’s own outputs in relation to specified quality standards; and
- take limited responsibility for the quantity and quality of the output of others.

Key Competencies						
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Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	2	2	1	2	2

UNIT	ICAITI093A Prepare structured training for clients
FIELD	Implement IT Solutions
DESCRIPTION	This unit describes the competency required to organise and prepare structured training for client users of IT systems. This unit is from the Workplace Trainer Competency Standards August 1994 to July 1999.
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include the Analysis and Design, Project Management, Test, Build, the teamwork functional areas and documentation

ELEMENT	PERFORMANCE CRITERIA
1. Review the training needs	<ol style="list-style-type: none"> 1. Advice from appropriate personnel on the specific training needs is identified and sought 2. Training needs are reviewed with appropriate personnel to ensure that training requirements are fully understood and identified 3. Training objectives are developed that reflect the training needs and these are agreed with appropriate personnel including client users. 4. Training is either developed in-house or brought externally
2. Plan and document training session	<ol style="list-style-type: none"> 1. Performance criteria from the training outcomes is clearly stated and explicitly detailed where appropriate 2. Training session is outlined following a logical sequence in the training session steps 3. Appropriate training method(s) are selected for: trainee outcomes; trainee characteristics; and availability of equipment and resources 4. Methods for trainees are identified to practise learning outcomes 5. Provision for monitoring trainees' progress is made 6. Method for collecting evidence required for assessment is stated
3. Arrange location and resources	<ol style="list-style-type: none"> 1. Approval from appropriate personnel for resources required for training is identified and sought 2. Suitable locations for the training are arranged 3. Equipment, tools and other resources required are organised to be available as needed 4. Arrangements are made with any people who are required to help in the training session or in the follow-up to the training session 5. Training environment is arranged so that it is safe and accessible and is laid out in an appropriate fashion for the type of training delivered

UNIT	ICAITI093A Prepare structured training for clients
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4. Notify trainees	<ol style="list-style-type: none"> 1. Trainees are notified of the time and place of the training session and of any pre-requisite activities 2. Trainees and other appropriate personnel are identified and are notified of arrangements for travel, parking, lunches, breaks, etc 3. Trainees' supervisor(s) are notified of the time and place of the training and of any other requirements for the training session 4. All involved are notified of the purpose of the training
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RANGE OF VARIABLES	
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VARIABLE	SCOPE
Location of the training	May include but is not limited to: off-site training rooms, in-house training rooms, on-line desktop training environment, a work space not designated for training, normal workplace
Training methods	May include but are not limited to: lectures, tutorials, self paced learning, videos, computer based training, audio tapes, books, on the job training etc.
Size of training group	Training may be on a one to one basis or to a small group of trainees
Trainees' characteristics	May be new client users with minimal IT knowledge, advanced client users requiring detailed information or client non-users requiring general overview, directions and capability of the IT solution
Training needs	May range from induction training through to refresher course.
Degree of training	Certified training, formal training, informal training, and suitable level for training
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used

EVIDENCE GUIDE	
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Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of interpreting training needs</p> <p>Assessment must confirm the ability to meet trainee training requirements by clearly and coherently identifying trainee learning objectives in a logically sequenced training session plan</p> <p>Assessment must confirm the ability to manage and administer a program designed for a group of people, and the associated timings, scheduling and administration</p>
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITI094A, ICAITI095A, ICAITI091A, ICAITI086A.</p> <p>The interdependence of units of competency for assessment will vary with the particular project or scenario</p>

UNIT	ICAITI093A Prepare structured training for clients
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Underpinning skills and knowledge**Underpinning knowledge**

- Basic principles of adult education
- Basic principles of learning styles
- General knowledge of training delivery methodologies with detail in some areas

Underpinning skills

- Development of basic training resources and use of training resources in a limited manner
- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when training objectives are developed that reflect the training needs and these are agreed with appropriate personnel including client users
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when performance criteria from the training outcomes is clearly stated and explicitly detailed where appropriate
- Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when advice from appropriate personnel on the specific training needs is identified and sought, and when provision for monitoring trainees' progress is made.
- Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas, for example when performance criteria from the training outcomes are clearly stated and explicitly detailed where appropriate

EVIDENCE GUIDE**Resources**

Assessment of this competency requires access to TNA, course outlines, lesson guides. Peers and supervisors for obtaining information on the extent and quality of the contribution made. Competence must be demonstrable across a range of trainees with different trainee characteristics.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Context

Assessment of this unit of competence will usually include observation of real work processes and procedures; quality projects, questioning on underpinning knowledge and skills

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	1	2	2

UNIT	ICAITI094A Deliver structured training for clients
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FIELD	Implement IT Solutions
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DESCRIPTION	This unit describes the competency required to deliver structured training. This unit is from the Workplace Trainer Competency Standards August 1994 to July 1999.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include the Analysis and Design, Project Management, Test, Build, the teamwork functional areas and documentation
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ELEMENT	PERFORMANCE CRITERIA
1. Prepare trainees	<ol style="list-style-type: none"> 1. Objectives of the training session are explained and are discussed with the trainees 2. Sequence of activities to be followed in the training session is explained to the trainees 3. Trainees are made aware of the work application of the skills or job being taught 4. Any barriers to performance of the skills or job being taught are identified and discussed 5. Assessment process is explained to the trainees
2. Instruct trainees	<ol style="list-style-type: none"> 1. A systematic approach is taken to instruction, taking into account: explanation, demonstration, review, trainee explanation, trainee demonstration and feedback 2. Instruction process is revised and is modified as necessary to meet the trainees' learning needs 3. Trainees are encouraged by positive comments from the trainer 4. Feedback during instruction is designed to help trainees learn from their mistakes 5. Trainees are encouraged and guided to evaluate their own performance and diagnose it for improvement
3. Provide opportunities for practice	<ol style="list-style-type: none"> 1. Practice opportunities are provided according to the specific learning situation and training objectives 2. Constructive feedback and reinforcement are provided during practice 3. Trainees' readiness for assessment is monitored
4. Confirm trainee has reached required standard of performance	<ol style="list-style-type: none"> 1. Evidence of satisfactory performance by the trainee is collected in accordance with the training session plan 2. The trainee is advised that he/she has reached the required standard of performance 3. Other appropriate personnel are advised that the trainee has reached the required standard of performance

UNIT	ICAITI094A Deliver structured training for clients
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RANGE OF VARIABLES	
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VARIABLE	SCOPE
Location of the training	May include but is not limited to: off-site training rooms, in-house training rooms, on-line desktop training environment, a work space not designated for training, normal workplace
Training methods	May include but are not limited to: lectures, tutorials, self paced learning, videos, computer based training, audio tapes, books, etc.
Size of training group	Training may be on a one to one basis or to a small group of trainees
Trainees' characteristics	May be new client users with minimal IT knowledge, advanced client users requiring detailed information or client non-users requiring general overview, directions and capability of the IT solution
Training needs	May range from induction training through to refresher course.
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm sufficient knowledge of training delivery methodologies</p> <p>Assessment must confirm the ability to meet trainee training requirements by clearly and coherently delivering training in a logically sequenced manner which meet the trainees' learning needs</p>	
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITI093A, ICAITI095A, ICAITI091A, ICAITI086A. The interdependence of units of competency for assessment will vary with the particular project or scenario</p>	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Basic principles of adult education • Basic principles of learning styles • General knowledge of training delivery methodologies with detail in some areas • Detailed knowledge of the system's current functionality, for example when trainees are made aware of the work application of the skills or job being taught • Broad general knowledge of the client business domain, for example when trainees are made aware of the work application of the skills or job being taught 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Delivery of basic training resources • Use of training resources in a limited manner • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when any barriers to performance of the skills or job being taught are identified and discussed • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information • Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when a systematic approach is taken to instruction, taking into account: explanation, demonstration, review, trainee explanation, trainee demonstration and feedback. • Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts, for example when trainees are encouraged and guided to evaluate their own performance and diagnose it for improvement • Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas, for example when other appropriate personnel are advised that the trainee has reached the required standard of performance

UNIT	ICAITI094A Deliver structured training for clients
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Resources	Assessment of this competency requires access to the prepared training material. The individuals may also be interviewed or polled post training. Peers and supervisors for obtaining information on the extent and quality of the contribution made.
Consistency	Competence in this unit needs to be assessed through observation of training delivery on a number of occasions. If this is not possible then a single observation should be supported by supplementary evidence from a supervisor or discussions with trainees
Context	Competence must be demonstrable across a range of trainees with different trainee characteristics. Assessment of this unit of competence will usually include observation of real work processes and procedures; quality projects, questioning on underpinning knowledge and skills This competency can be assessed in the workplace or in a simulated environment.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	2	2	2	1	2	2

UNIT	ICAITI095A Review structured training for clients
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FIELD	Implement IT Solutions
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DESCRIPTION	This unit describes the competency required to review structured training.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include the Analysis and Design, Project Management, Test, Build, the teamwork functional areas and documentation
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ELEMENT	PERFORMANCE CRITERIA
1. Evaluate training session	<ol style="list-style-type: none"> 1. Appropriateness of time allowed for trainees to practise what they have been taught is ensured 2. Interviews of trainees, or other methods such as a questionnaire are organised to gauge response to the training 3. Trainees are encouraged to raise problems or difficulties with any aspect of the training session 4. Trainees are asked to discuss their ability to apply the learning outcomes 5. Trainer's performance is reviewed against session objectives and in response to trainees' comments 6. Review comments are summarised and the results of the evaluation are used to guide further training
2. Record training	<ol style="list-style-type: none"> 1. The details of the trainees who have completed the training are accurately recorded according to the organisation's requirements 2. Other records as required by legislation or agreement are kept 3. Records are released to authorised personnel only 4. Records are securely stored
3. Provide information on training	<ol style="list-style-type: none"> 1. Information on training proposed, in hand, or completed is provided to management as required 2. Information on proposed training is provided to prospective trainees on request 3. Information on appropriate, available training is provided to employees on request

UNIT	ICAITI095A Review structured training for clients
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RANGE OF VARIABLES	
VARIABLE	SCOPE

Training methods	May include but are not limited to: lectures, tutorials, self paced learning, videos, computer based training, audio tapes, books, etc.
Workplace environment	May involve work in the trainee’s work environment with normal workplace interruptions
Size of training group	Training may be on a one to one basis or to a small group of trainees
Trainees’ characteristics	May be new client users with minimal IT knowledge, advanced client users requiring detailed information or client non-users requiring general overview, directions and capability of the IT solution
Training records	May be computerised or maintained manually.

EVIDENCE GUIDE	
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Critical aspects of evidence	Assessment must confirm sufficient knowledge of the organisation’s record keeping arrangements and security and access procedures	
	Assessment of satisfactory performance in this unit should include observation of the trainer’s review with trainees, an inspection of records and discussion with the trainer about his or her appreciation of the session	
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITI093A, ICAITI094A, ICAITI091A, ICAITI086A. The interdependence of units of competency for assessment will vary with the particular project or scenario	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Basic principles of adult education • Basic principles of learning styles • General knowledge of training delivery methodologies with detail in some areas • Broad general knowledge of the client business domain • Broad knowledge of training review methodologies 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Delivery of basic training resources • Use of training resources in a limited manner • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when review comments are summarised and the results of the evaluation are used to guide further training • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information, for example when information on appropriate, available training is provided to employees on request • Teamwork skills involve the contribution to solutions and goals of a non-routine or contingency nature, for example when trainees are encouraged to raise problems or difficulties with any aspect of the training session • Group facilitation and presentation skills in relation to transferring and collecting information and gaining consensus on concepts • Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas

UNIT	ICAITI095A Review structured training for clients
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Resources	Peers and supervisors for obtaining information on the extent and quality of the contribution made. Competence must be demonstrable across a range of trainees with different trainee characteristics.
Consistency	Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts
Context	Assessment of this unit of competence will usually include observation of real work processes and procedures; quality projects, questioning on underpinning knowledge and skills

Key Competencies						
Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)						
There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	1	2	2

UNIT	ICAITI096B Complete data transition
FIELD	Implement IT Solutions
DESCRIPTION	This unit defines the competency required to undertake manipulation, migration, conversion of data whilst maintaining data integrity.
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITI093A, ICAITI094A, ICAITI095A, ICAITB061B, ICAITB062B, ICAITB063B, ICAITT077B, ICAITT081B, ICAITT083B, ICAITAD055B

ELEMENT	PERFORMANCE CRITERIA
1. Perform data transition	<ol style="list-style-type: none"> 1. Current situation of impacted data assets are identified, whether in digital or manual format, and elements to be transferred or migrated and those to archived are identified 2. Required data is collected and the need to clean up data prior to transfer according to implementation plan, database requirements or conversion plan is considered 3. Conversion programs are written and tested, if practical and part of the implementation plan 4. Clean data take-on is performed by re-keying or conversion, according to database requirements or conversion plan 5. Requirements for archival of existing data are determined
2. Check data transition	<ol style="list-style-type: none"> 1. Reports and other statistical analysis are run on old and new systems to verify quantity and quality of data transition 2. The number of records in each file is compared where applicable against database requirements 3. Production or specialised programs are run against the data to confirm control totals, balances, etc. 4. Referential integrity of data is checked against database requirements or conversion plan
3. Check data integrity	<ol style="list-style-type: none"> 1. Mandatory fields are tested and all fields identified as required in database requirements are populated 2. A sample of data elements is selected for verification with original data using appropriate methods according to the nature of the data 3. Test data is carried out and ensured to meet system requirements or conversion plan outcomes 4. Steps are iterated if test does not meet database requirements 5. Requirements for archival of existing data are determined

UNIT	ICAITI096B Complete data transition
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Data	<p>Variables may include but are not limited to: established computer based files, data from mixed sources and applications such as, mainframe hierarchical files, standard relational tables, and proprietary application file systems such as SAP</p> <p>Supplementary questioning may be used during the summative assessment phase, where necessary, to ensure that:</p> <ul style="list-style-type: none"> • all data is complete and valid, • the structural integrity of both the legacy system and the new database/data warehouse is sound, • the data reflects and works with the business rules and data standards, • the data will work well with the conversion process.
Existing data	<p>May be already in a computer system or stored manually, includes but not limited to names and addresses, financial transactions, employee records, receipts, despatches, invoices, cheques, etc.</p>
Database	<p>May be a simple collection of files accessed by programs or based upon a complex Database Management System</p>
Volumes	<p>Can vary from a few hundred to many hundreds of thousands. Techniques for checking will vary depending upon these volumes and how critical the data is</p>
Tools	<p>Main types of data conversion tools are: tools that analyse data quality (QDB/Analyze, WizRule, and Unitech Systems Inc have tools for analysing data quality), tools for extraction and transformation (ETI Extract, Passport, Warehouse Manager, InfoPump, InfoHub, InfoRefiner and InfoSuite) and tools for cleansing data (Integrity, Enterprise/Integrator). Data mart management tools</p>
DBMS	<p>Can include distributed or centralised, online, partitioned geographically or thematically distributed. Client/server or legacy databases may include DB2, Tandem Enscribe, IMS, Informix, Oracle, SAP R/3, Sybase, NCR Teradata, and VSAM. Object-oriented databases and relational databases</p>
Client	<p>May be a department within an organisation, a business requiring an e-commerce solution or a third party and so the relationship and ease of access will vary.</p> <p>Supplementary questioning of the client may be used during the assessment phase, where necessary, to ensure that all issues relating to the client business information requirements were considered and appropriate choices made given the business objectives and business information and archiving requirements.</p>
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.</p> <p>Reports meet the specific output requirements and are presented in a logical and accessible manner.</p>

UNIT	ICAITI096B Complete data transition
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OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
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EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to produce consistency in results, database verification, integrity and security of data. Assessment must confirm sufficient knowledge of the organisation’s record keeping arrangements and security and access level procedures	
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITI093A, ICAITI094A, ICAITI095A, ICAITB061B, ICAITB062B, ICAITB063B, ICAITT077B, ICAITT081B, ICAITT083B, ICAITAD055B. The interdependence of units of competency for assessment will vary with the particular project or scenario	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Broad knowledge of the client business domain, for example when checking data transition • Current industry accepted hardware and software products with broad knowledge of general features and capabilities and detailed knowledge in some areas • Broad knowledge base incorporating theoretical concepts of database structures • Broad knowledge base incorporating theoretical concepts of system data requirements • Broad knowledge base incorporating theoretical concepts of software tools • Detailed knowledge of the system’s current functionality, for example when performing data transition • Broad knowledge base of quality assurance practices, for example when checking data integrity • Broad general knowledge of change management systems, for example when performing data transition, and checking data integrity 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information • Problem solving skills for a defined range of predictable problems • Low level programming skills • Change Management skills in relation to a defined scope
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • a data conversion plan • an implementation plan • if necessary a conversion program <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>	

UNIT

ICAITI096B Complete data transition

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to ensure the successful transition of data.

Context

Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.

The self directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.

Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas;
- analyse and plan approaches to technical problems or management requirements;
- transfer and apply theoretical concepts and/or technical or creative skills to a range of situations;
- evaluate information using it to forecast for planning or research purposes;
- take responsibility for own outputs in relation to broad quantity and quality parameters; and
- take limited responsibility for the achievement of group outcomes.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	2	2	3	2

UNIT	ICAITI097B Install and configure a network
FIELD	Implement IT Solutions
DESCRIPTION	This unit defines the competency required to carry out installation of the network hardware and software and initial configuration.
RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITU019B, ICAITS024C, ICAITS025B, ICAITS113B, ICAITS020C, ICAITS021C, ICAITB060B, ICAITU127A, ICAITS114B, ICAITS031B, ICAITU126B

ELEMENT	PERFORMANCE CRITERIA
1. Confirm client requirements and network equipment	<ol style="list-style-type: none"> 1. Existing network design documentation is reviewed to ensure it is current and complete 2. Network components, both hardware and software that are required to be installed are identified 3. Equipment specifications are confirmed and availability of all components ensured
2. Install hardware	<ol style="list-style-type: none"> 1. Installation of cabling and associated components is confirmed and is in accordance with industry standards, building requirements for type of cable and bandwidth 2. Security clearance and time slot approval is gained from authorised personnel 3. Server hardware is installed in accordance with organisational and industry standards 4. Workstation and other client hardware is installed in accordance with organisational and industry standards 5. Any other hardware components are installed such as printers, routers, hubs, gateways, etc in accordance with organisational and industry standards
3. Install software	<ol style="list-style-type: none"> 1. Server software is installed in accordance with organisational or industry standards 2. Server software is configured in accordance with organisational policies and procedures 3. Workstation software is installed in accordance with organisational or industry standards 4. Workstation software is configured in accordance with organisational policies and procedures
4. Configure and test network	<ol style="list-style-type: none"> 1. Any other software required for the network to operate is installed and configured 2. Hardware installation is tested to ensure that all components are functioning as expected 3. Network is tested to ensure it is functioning according to specification
5. Document and sign off	<ol style="list-style-type: none"> 1. Hardware and asset recording documentation is completed in line with organisational requirements 2. PC boot up procedures and configuration are documented 3. Client and/ or higher authority sign off is gained

UNIT

ICAITI097B Install and configure a network

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Network	Is restricted to large and small LANs, data and voice, etc. Does not include WANs
On-site	Will be the specific site/s where the equipment is to be installed and will vary from project to project. This unit of competence relates to implementation at one location and many involve building-wide implementation. This unit of competence will not include implementation of multiple sites across a city, a state, country or many countries.
Requirements	May vary from a simple addition or upgrade to a major new installation.
Cables	May include but not restricted to UTP, STP and fibre.
Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare
Software	Most likely to be packaged software but can be supplied from many varying vendors and can include full suites or individual components
Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience. Reports meet the specific output requirements and are presented in a logical and accessible manner.
Small business	In a small business, there may not be a client or a higher authority and the implementation may be undertaken by one individual or in conjunction with hired expertise. Procedures for top management approval and sign off will vary
Hardware	Can include IT equipment of all types: <ul style="list-style-type: none"> • Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • Bridges, 3Com, Compaq, CISCO, IBM • modems, analog, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • File & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems, <p>Generally the larger and more expensive the equipment, the less likely in-house expertise will be available and the supplier will be relied on for support.</p>
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency

UNIT	ICAITI097B Install and configure a network
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EVIDENCE GUIDE	
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Critical aspects of evidence	<p>Assessment must confirm knowledge of networking technologies and how hardware and software is installed and configured.</p> <p>Assessment must confirm the ability to install network hardware and software and to configure the network.</p>	
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITU019B, ICAITS024C, ICAITS025B, ICAITS113B, ICAITS020C, ICAITS021C, ICAITB060B, ICAITU127A, ICAITS114B, ICAITS031B, ICAITU126A. The interdependence of units of competency for assessment will vary with the particular project or scenario</p>	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Current industry accepted hardware and software products with broad knowledge of general features and capabilities • Broad knowledge of the client business domain, business function and organisation, for example when confirming client requirements and network equipment • Networking technologies with broad knowledge of general features and capabilities incorporating substantial depth in some areas. • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Broad knowledge of transmission technologies and protocols 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Plain English literacy and communication skills in relation to dealing with clients and team members, for example when PC boot up procedures and configuration are documented • Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas, for example when hardware and asset recording documentation is completed in line with organisational requirements • Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in networking technologies, for example when network components, both hardware and software that are required to be installed are identified • Project planning skills in relation to set benchmarks and identified scope • Problem solving skills for a defined range of predictable problems
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Network design documentation • Equipment specifications <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>	
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency.</p>	

UNIT

ICAITI097B Install and configure a network**Context**

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for one's own outputs in relation to specified quality standards; and
- take limited responsibility for the quantity and quality of the output of others.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	1	2	2	2	3	3

UNIT	ICAITI098B Install and manage complex networks
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FIELD	Implement IT Solutions
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DESCRIPTION	This unit defines the competency required to install and manage a network consisting of multiple components and connectivity options
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITAD041B, ICAITAD043B, ICAITAD045B, ICAITAD044B, ICAITI099A, ICAITS123B, ICAITS122A, ICAITB070A, ICAITAD056B
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ELEMENT	PERFORMANCE CRITERIA
1. Implement multiple servers	<ol style="list-style-type: none"> 1. Client user requirements are reviewed and the benefits to be obtained by using multiple servers are evaluated 2. Network structure is developed that makes use of multiple servers acting individually or in concert 3. Impact of the changes being implemented is conveyed to users 4. Documentation is completed in line with organisational requirements 5. Multiple servers are implemented and configured to provide appropriate services 6. Network is tested to ensure expected services are provided to client users and appropriate security is maintained
2. Install and configure devices to extend network reach	<ol style="list-style-type: none"> 1. Network communication devices are installed and configured to provide network services to meet client user requirements 2. Cabling and associated components are checked and are installed in accordance with industry standards for type of cable and bandwidth 3. Documentation is completed in line with organisational requirements 4. Remote access services are installed and configured to meet client user requirements
3. Manage differing levels of security	<ol style="list-style-type: none"> 1. Levels of user access are determined according to their work requirements and organisational approval 2. Need for firewalls is planned and they are implemented 3. Viability and reliability of the network security is monitored 4. Internal and external access is monitored 5. Documentation on the security policy for technicians and users is developed

UNIT	ICAITI098B Install and manage complex networks
4. Connect to a host computer	<ol style="list-style-type: none"> 1. Client user requirements to be satisfied by host connection are identified 2. Appropriate hardware, network components and software in host system are evaluated, are selected and installed 3. Host gateway, protocol converter or other appropriate hardware and software are installed and configured 4. Appropriate client software to provide host connectivity is installed and configured 5. Documentation is completed in line with organisational requirements 6. Configuration of host connectivity options are tested and configured
5. Integrate and manage network resources with network utilities	<ol style="list-style-type: none"> 1. Appropriate network management tools are identified that will assist in the administration of the complex network 2. Network tools are selected and installed in accordance with industry and organisational standards 3. Tools are tested to ensure they are fully operational 4. Ability of users to use the changes that have occurred is confirmed 5. Procedures are developed to ensure regular network reporting and administration in accordance with organisational policies and procedures

RANGE OF VARIABLES

VARIABLE

SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Network

May include but not restricted to large and small LANs, national WANs, the Internet, the use of the PSTN for dial up modems only, private lines, data and voice, etc. This does not include international WANs

Hardware

Can include IT equipment of all types:

- Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems,
- Bridges, 3Com, Compaq, CISCO, IBM
- modems, analog, cable, ISDN, DSL
- servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys
- network cards, Adaptec, ARTIC, Compex, SMC
- switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies
- hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron,
- routers & gateways, 3Com, CISCO, D-Link, Intel,
- File & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems,

Generally the larger and more expensive the equipment, the less likely in-house expertise will be available and the supplier will be relied on for support.

UNIT	ICAITI098B Install and manage complex networks
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Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used
Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience. Reports meet the specific output requirements and are presented in a logical and accessible manner.
Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
File system Servers	May involve multiple or single servers, multiple or single logical disks and complex directory or folder structures May include: <ul style="list-style-type: none"> • Application/web servers; BEA Weblogic Servers, IBM VisualAge and WebSphere, Microsoft Host Integration Server, NetDynamics, Netscape Application Server • Email Servers; • File & Print Servers; • FTP Servers; • Proxy Servers

EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm knowledge of the facilities available in the operating environment. Providing timely client service is critical. Assessment must confirm the ability to manage a complex network that consists of multiple components and connectivity options		
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITAD041B, ICAITAD043B, ICAITAD045B, ICAITAD044B, ICAITI099A, ICAITS123B, ICAITS122A, ICAITB070A, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario		
Underpinning skills and knowledge	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> Underpinning knowledge <ul style="list-style-type: none"> • Current industry accepted hardware and software products with broad knowledge of general features and capabilities • Broad knowledge of the client business domain, business function and organisation, for example when implementing multiple servers • Networking technologies with broad knowledge of general features and capabilities incorporating substantial depth in some areas • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Broad knowledge of supporting documentation systems, for example when procedures are developed to ensure regular network reporting and administration in accordance with organisational policies and procedures • Indepth knowledge of the OSI Model </td> <td style="width: 50%; vertical-align: top;"> Underpinning skills <ul style="list-style-type: none"> • Plain English literacy and communication skills in relation to dealing with clients and team members, for example when asset/ inventory recording documentation is completed in line with organisational requirements • Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas, for example when procedures are developed to ensure regular network reporting and administration in accordance with organisational policies and procedures • Questioning and active listening skills in relation to clients and team members, for example when impact of the changes being implemented is conveyed to users • Project planning skills in relation to scope, time, cost, quality, communications and risk management. • Problem solving skills for a defined range of unpredictable problems </td> </tr> </table>	Underpinning knowledge <ul style="list-style-type: none"> • Current industry accepted hardware and software products with broad knowledge of general features and capabilities • Broad knowledge of the client business domain, business function and organisation, for example when implementing multiple servers • Networking technologies with broad knowledge of general features and capabilities incorporating substantial depth in some areas • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Broad knowledge of supporting documentation systems, for example when procedures are developed to ensure regular network reporting and administration in accordance with organisational policies and procedures • Indepth knowledge of the OSI Model 	Underpinning skills <ul style="list-style-type: none"> • Plain English literacy and communication skills in relation to dealing with clients and team members, for example when asset/ inventory recording documentation is completed in line with organisational requirements • Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas, for example when procedures are developed to ensure regular network reporting and administration in accordance with organisational policies and procedures • Questioning and active listening skills in relation to clients and team members, for example when impact of the changes being implemented is conveyed to users • Project planning skills in relation to scope, time, cost, quality, communications and risk management. • Problem solving skills for a defined range of unpredictable problems
Underpinning knowledge <ul style="list-style-type: none"> • Current industry accepted hardware and software products with broad knowledge of general features and capabilities • Broad knowledge of the client business domain, business function and organisation, for example when implementing multiple servers • Networking technologies with broad knowledge of general features and capabilities incorporating substantial depth in some areas • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations • Broad knowledge of supporting documentation systems, for example when procedures are developed to ensure regular network reporting and administration in accordance with organisational policies and procedures • Indepth knowledge of the OSI Model 	Underpinning skills <ul style="list-style-type: none"> • Plain English literacy and communication skills in relation to dealing with clients and team members, for example when asset/ inventory recording documentation is completed in line with organisational requirements • Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas, for example when procedures are developed to ensure regular network reporting and administration in accordance with organisational policies and procedures • Questioning and active listening skills in relation to clients and team members, for example when impact of the changes being implemented is conveyed to users • Project planning skills in relation to scope, time, cost, quality, communications and risk management. • Problem solving skills for a defined range of unpredictable problems 		

UNIT

ICAITI098B Install and manage complex networks

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Network design documentation
- Equipment specifications

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency.

Context

Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.

The self directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.

Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas;
- analyse and plan approaches to technical problems or management requirements;
- transfer and apply theoretical concepts and/or technical or creative skills to a range of situations;
- evaluate information using it to forecast for planning or research purposes;
- take responsibility for own outputs in relation to broad quantity and quality parameters; and
- take limited responsibility for the achievement of group outcomes.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	3	2	2	3	3

UNIT	ICAITI099B Build an intranet
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FIELD	Implement IT Solutions
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DESCRIPTION	This unit defines the competency required to design and implement an intranet to provide services to client users
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITAD043B, ICAITAD045B, ICAITAD044B, ICAITI098A, ICAITS123B, ICAITS122A, ICAITB070A, ICAITAD056B
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ELEMENT	PERFORMANCE CRITERIA
1. Plan and design an intranet to meet business requirements	<ol style="list-style-type: none"> 1. Client user requirements that can be satisfied by the use of an intranet are evaluated 2. Intranet specification is produced to meet client user requirements and budget constraints 3. The intranet hardware, software, network and security requirements are designed 4. Plan is developed for the sourcing and implementation of intranet technologies
2. Install and configure intranet infrastructure to meet business requirements	<ol style="list-style-type: none"> 1. Server hardware and software are installed and are configured 2. Networking components are installed where necessary 3. Workstation and client hardware and software are installed and are configured to be able to access services 4. Necessary hardware and software required to connect the intranet to the Internet are installed if required 5. Domain names and IP addresses are configured to facilitate intranet and Internet access
3. Install and configure intranet services to meet business requirements	<ol style="list-style-type: none"> 1. Software is installed and is configured to provide editing, storage and retrieval of HTML, XML documents 2. Software is set up to provide services as required including news groups, E-mail, FTP facilities, multimedia, conferencing etc. 3. Software is installed and is configured that provides intranet links with existing databases, documents, files etc. 4. Security and access levels are configured to safeguard data making use of appropriate tools and techniques such as fire walls, encryption, etc.

UNIT	ICAITI099B Build an intranet
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4. Manage and support the intranet	<ol style="list-style-type: none"> 1. Policies and procedures are developed that are to be implemented and used in managing and updating the intranet 2. Management tools to assist in intranet administration are obtained, are installed and are used 3. Traffic and hits are monitored over the intranet 4. Logs and other reports required to manage and support the intranet are created 5. Intranet performance is fine tuned and is optimised
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Network	May include but not restricted to large and small LANs. Intranet may be installed on existing network or a new one.
Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used
Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience. Reports meet the specific output requirements and are presented in a logical and accessible manner.
Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare. Each product will have different functionality and ways of operating. Intranet services may be built in or optional extra. In addition third party products may also be used in the intranet.
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Small business	In a small business, there may not be a need for policies and procedures to be formally documented and the implementation may be undertaken by one individual or in conjunction with hired expertise or a hosting service. If the small business uses a hosting service the small business will still require in-house expertise for ongoing maintenance chores.
Intranet requirements	May range from simple sharing of HTML documents, file sharing, to collaborative computing software, to comprehensive e-commerce sites with Internet and other external connections.
Servers	May include: <ul style="list-style-type: none"> • Application/web servers; BEA Weblogic Servers, IBM VisualAge and WebSphere, Microsoft Host Integration Server, NetDynamics, Netscape Application Server • Email Servers; • File & Print Servers; • FTP Servers; • Proxy Servers

UNIT	ICAITI099B Build an intranet	
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • Bridges, 3Com, Compaq, CISCO, IBM • modems, analog, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • File & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems, <p>Generally the larger and more expensive the equipment, the less likely in-house expertise will be available and the supplier will be relied on for support.</p>	
Software	<p>Most likely to be packaged software but can be supplied from many varying vendors and can include full suites or individual components</p> <ul style="list-style-type: none"> • Intranet Connections • ColdFusion • Xpedio • Samba • ERoom • Collabra Share 	
Critical aspects of evidence	<p>Assessment must confirm knowledge of intranet technologies and the technology (hardware and software) is installed, configured and used.</p> <p>Assessment must confirm the ability to design and implement an intranet</p>	
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITAD043B, ICAITAD045B, ICAITAD044B, ICAITI098A, ICAITS123B, ICAITS122A, ICAITB070A, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario</p>	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Current industry accepted hardware and software products with broad knowledge of general features and capabilities • Broad general knowledge of the client business domain, business function and organisation • Broad knowledge of communications technologies • Intranet technologies with broad knowledge of general features and capabilities incorporating substantial depth in some areas • Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Plain English literacy and communication skills in relation to dealing with clients and team members • Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas • Problem solving skills for a defined range of predictable problems • Questioning and active listening skills in relation to clients and team members • Project planning skills in relation to scope, time, cost, quality, communications and risk management.

UNIT

ICAITI099B Build an intranet

EVIDENCE GUIDE

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Server hardware and software
- Internet connections

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency.

Context

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for one's own outputs in relation to specified quality standards; and
- take limited responsibility for the quantity and quality of the output of others.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	2	3	3

UNIT	ICAITI100B Build an Internet infrastructure
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FIELD	Implement IT Solutions
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DESCRIPTION	This unit defines the competency required to design and implement an Internet to provide services to client users
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include ICAITI097B, ICAITS114B, ICAITS020C, ICAITS124B, ICAITS107B, ICAITS112B, ICAITS030B, ICPMM65cA, ICPMM81eA, ICAITU126B, ICAITU127B, ICAITT077B, ICAITT083B, ICAITAD052B, ICAITB059B, ICAITAD044B, ICAITAD054B, ICAITAD056B
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ELEMENT	PERFORMANCE CRITERIA
1. Plan and design an Internet to meet business requirements	1. Client user requirements that can be satisfied by the use of an Internet are evaluated 2. Internet specifications are produced to meet client user requirements and budget constraints 3. Internet hardware, software, network and security requirements are designed 4. Plans for the sourcing and for the implementation of Internet technologies are developed 5. ISP requirements are determined and best ISP option and class address is identified
2. Install and configure Internet infrastructure to meet business requirements	1. Server hardware and software is installed and configured 2. Networking components are installed where necessary 3. Workstation and client hardware and software are installed to be able to access services 4. Necessary hardware and software required to connect the Internet to intranets or networks are installed if required 5. Domain names and IP addresses are configured to facilitate intranet and Internet access
3. Install and configure Internet services to meet business requirements	1. Software is installed and configured to provide editing, storage and retrieval of HTML documents 2. Software is set up to provide services as required including news groups, E-mail, FTP facilities, multimedia, conferencing etc. 3. Software that provides Internet links with existing databases, documents, files etc. is installed and configured 4. Templates and style guides are developed for Internet documents 5. Security and access levels are configured to safeguard data making use of appropriate tools and techniques such as fire walls, encryption, etc

UNIT	ICAITI100B Build an Internet infrastructure
4. Monitor security and Internet access	<ol style="list-style-type: none"> 1. Security and access levels are monitored to safeguard data making use of appropriate tools and techniques 2. Viability and reliability of security techniques are monitored and evaluated, such as fire walls, encryption, alerts etc 3. Up to date information is maintained through industry sources on general security breaches, new viruses and changes in security technologies
5. Ensure user accounts controlled	<ol style="list-style-type: none"> 1. Default user settings are modified to ensure that they match security policies 2. Previously created user settings with more relaxed security are modified according to security and access policies 3. Appropriateness of legal notices displayed at log on is ensured 4. Appropriate utilities are used to check strength of passwords used 5. Procedures are reviewed to ensure that users who leave have their accounts disabled or deleted 6. Information services through the Internet are accessed to identify well-known and up to date security gaps and these are plugged with appropriate hardware and/or software
6. Manage and support the Internet	<ol style="list-style-type: none"> 1. Policies and procedures are developed to be implemented and used in managing currency of information and updating the Internet 2. Management tools to assist in Internet administration are obtained, are installed and are used 3. Traffic, appropriateness of broadcasts and hits over the Internet are monitored 4. Logs and other reports required to manage and support the Internet are created 5. Internet performance is fine tuned and is optimised

RANGE OF VARIABLES

VARIABLE	SCOPE
Network	May include but not restricted to large and small LANs, national WANs, the use of the PSTN for dial up modems only, private lines, data and voice, etc.
Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience. Reports meet the specific output requirements and are presented in a logical and accessible manner.
Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare. Each product will have different functionality and ways of operating. Internet services may be built in or optional extra. In addition third party products may also be used in the Internet.
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency

UNIT	ICAITI100B Build an Internet infrastructure
Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used
Servers	<p>May include:</p> <ul style="list-style-type: none"> • Application/web servers; BEA Weblogic Servers, IBM VisualAge and WebSphere, Microsoft Host Integration Server, NetDynamics, Netscape Application Server • Email Servers; • File & Print Servers; • FTP Servers; • Proxy Servers
Software	Most likely to be packaged software but can be supplied from many varying vendors and can include full suites or individual components
Internet requirements	May range from simple sharing of HTML documents to comprehensive e-commerce sites with Internet and other external connections.
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • Bridges, 3Com, Compaq, CISCO, IBM • modems, analog, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • multilayer switching, switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • File & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems, <p>Generally the larger and more expensive the equipment, the less likely in-house expertise will be available and the supplier will be relied on for support.</p>
Routing	<p>May include static and dynamic routers</p> <p>Router protocols:</p> <ul style="list-style-type: none"> • Hot Standby Router Protocol (HSRP) • Border Gateway Protocol (BGP) • Cisco Discovery Protocol (CDP) • (Enhanced) Interior Gateway Routing Protocol • Routing Information Protocol • NetWare Link State Protocol • Open Shortest-Path First Interior Gateway Protocol
EVIDENCE GUIDE	
Critical aspects of evidence	<p>Assessment must confirm knowledge of Internet technologies and how the technology is installed, configured and used.</p> <p>Assessment must confirm the ability to develop an Internet infrastructure and to maintain a viable and reliable security systems</p>
Interdependent assessment of units	This unit may be assessed with any of the following: ICAITI097A, ICAITS114B, ICAITS020C, ICAITS124B, ICAITS107B, ICAITS112B, ICAITS030B, ICPMM65cA, ICPMM81eA, ICAITU126A, ICAITU127A, ICAITT077B, ICAITT083B, ICAITAD052B, ICAITB059B, ICAITAD044B, ICAITAD054B, ICAITAD056B. The interdependence of units of competency for assessment will vary with the particular project or scenario

UNIT

ICAITI100B Build an Internet infrastructure

EVIDENCE GUIDE

Underpinning skills and knowledge

Underpinning knowledge

- Current industry accepted hardware and software products with broad knowledge of general features and capabilities, for example when installing and configuring Internet infrastructure to meet business requirements
- Broad general knowledge of the client business domain, business function and organisation, for example when installing and configuring Internet service to meet business requirements
- Broad knowledge of communications technologies, for example when planning and designing an Internet to meet business requirements
- Internet technologies with broad knowledge of general features and capabilities incorporating substantial depth in some areas, for example when managing and supporting the Internet
- Broad knowledge of OHS requirements in relation to work safety, environmental factors and ergonomic considerations
- Security technologies with broad knowledge of general features and capabilities incorporating substantial depth in some areas, for example when monitoring security and Internet access
- Broad knowledge base of vendor product directions, for example when installing and configuring Internet infrastructure to meet business requirements

Underpinning skills

- Plain English literacy and communication skills in relation to dealing with clients and team members, for example when Internet specifications are produced to meet client user requirements and budget constraints
- Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas, for example when logs and other reports required to manage and support the Internet are created
- Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when plans for the sourcing and for the implementation of Internet technologies are developed
- Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in Internet development and security
- Questioning and active listening skills in relation to clients and team members
- Project planning skills in relation to scope, time, cost, quality, communications and risk management.

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Server hardware and software
- Security policies

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

UNIT	ICAITI100B Build an Internet infrastructure
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Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency.

Context

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for one’s own outputs in relation to specified quality standards; and
- take limited responsibility for the quantity and quality of the output of others.

Key Competencies							
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Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology	Cultural Understanding
3	2	2	2	2	2	3	2

UNIT	ICAITI101B Install and manage network protocols
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FIELD	Implement IT Solutions
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DESCRIPTION	This unit defines the competency required to install and manage network protocols in a network.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit. Some include: ICAITS025B, ICAITS121A, ICAITS031B, ICAITS032B, ICAITU126A, ICAITS120B, ICAITS024C.
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ELEMENT	PERFORMANCE CRITERIA
1. Install and configure network protocol environment	<ol style="list-style-type: none"> 1. Client user networking requirements are evaluated and an appropriate structure is designed that will link Domains, facilitate IP addressing and directory naming services (DNS) 2. Network addressing system with subnet and host ids are designed using appropriate devices such as gateways, routers or emulations 3. Hosts and workstations are configured to use IP addresses either manually or through automatic allocation of addresses such as found with DHCP
2. Install network protocol applications	<ol style="list-style-type: none"> 1. Client user requirements are evaluated and network protocol services that could be used are advised upon, such as Telnet, FTP, SMTP, etc 2. Services that will meet the client user requirements are installed and configured 3. Operation of services and communication between applications making use of appropriate facilities are tested, such as DNS, sockets, pipes, etc.

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Network	May include but not restricted to large and small LANs, WANs
Documentation and Reporting	Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience. Reports meet the specific output requirements and are presented in a logical and accessible manner.
Operating systems	Win 95/98/NT/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC VMS, Mac OSX, Linux, NetWare. Each product will have different functionality and ways of operating. Intranet services may be built in or optional extra. In addition third party products may also be used in the intranet.

UNIT	ICAITH101B Install and manage network protocols
OH and S Standards	As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency
Organisational Standards	May be based upon formal, well documented methodologies or non-existent. For training delivery purposes best practice examples from industry will be used
Hardware	<p>Can include IT equipment of all types:</p> <ul style="list-style-type: none"> • Workstations, PCs, IBM, Compaq, Hewlett Packard, Sun, Dell, Gateway 2000, SGI, Sun Microsystems, • Bridges, 3Com, Compaq, CISCO, IBM • modems, analog, cable, ISDN, DSL • servers, Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett-Packard, IBM, Macintosh, NEC, SGI, Sun Microsystems, Unisys • network cards, Adaptec, ARTIC, Compex, SMC • multilayer switching, switches, 3Com, Accton, Cabletron, CISCO, D-Link, Farallon, Hewlett-Packard, Intel, Network Technologies • hubs & repeaters, 3Com, Compaq, CISCO, Accton, Asante, D-Link, Farallon, Hewlett-Packard, Intel, Omnitron, • routers & gateways, 3Com, CISCO, D-Link, Intel, • File & print servers, AcerAltos, Aerocomm, AlphaServer, Dell, D-Link, Hewlett-Packard, IBM, NEC, Sun Microsystems, <p>Generally the larger and more expensive the equipment, the less likely in-house expertise will be available and the supplier will be relied on for support.</p>
Software	Most likely to be packaged software but can be supplied from many varying vendors and can include full suites or individual components
Routing	<p>May include static and dynamic routers</p> <p>Router protocols:</p> <ul style="list-style-type: none"> • Hot Standby Router Protocol (HSRP) • Border Gateway Protocol (BGP) • Cisco Discovery Protocol (CDP) • (Enhanced) Interior Gateway Routing Protocol • Routing Information Protocol • NetWare Link State Protocol • Open Shortest-Path First Interior Gateway Protocol
Servers	<p>May include:</p> <ul style="list-style-type: none"> • Application/web servers; BEA Weblogic Servers, IBM VisualAge and WebSphere, Microsoft Host Integration Server, NetDynamics, Netscape Application Server • Email Servers; • File & Print Servers; • FTP Servers; • Proxy Servers

UNIT	ICAITI101B Install and manage network protocols
Network protocol application	<p>Some organisations may use a wide range of protocols while others a few or none at all, though more and more companies are using a large number of protocols</p> <ul style="list-style-type: none"> • TCP/IP • Hypertext Transfer Protocol (HTTP) protocol • Simple Network Management Protocol SNMP • H.323 protocol • Internet Protocol (IP) • Electronic Mail Protocols • Address Resolution Protocol (ARP) • Wireless Application Protocol (WAP) • Dynamic Host Configuration Protocol (DHCP) • Simple Object Access Protocol - SOAP • IPv6 (Internet Protocol version 6) • File Transfer Protocol (FTP)
Naming conventions	Organisations will external access especially with the Internet may have strict requirements for names while others do not.

EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm knowledge of network protocols and how it can be used internally and to facilitate interconnectivity.</p> <p>Assessment must confirm the ability to install and manage network protocols in a network</p>	
Interdependent assessment of units	<p>This unit may be assessed with any of the following: ICAITS025B, ICAITS121A, ICAITS031B, ICAITS032B, ICAITU126A, ICAITS120B, ICAITS024C. The interdependence of units of competency for assessment will vary with the particular project or scenario</p>	
Underpinning skills and knowledge	<p>Underpinning knowledge</p> <ul style="list-style-type: none"> • Current industry accepted hardware and software products with broad knowledge of general features and capabilities • Broad general knowledge of the client business domain, business function and organisation, for example when installing network protocol applications • Communications technologies with broad knowledge of general features and capabilities incorporating substantial depth in some areas • Substantial knowledge of network protocols, for example when installing and configuring network protocol environment • Broad knowledge base of vendor product directions 	<p>Underpinning skills</p> <ul style="list-style-type: none"> • Plain English literacy and communication skills in relation to dealing with clients and team members • Problem solving skills for a defined range of unpredictable problems involving participation in the development of strategic initiatives, for example when network addressing system with subnet and host ids are designed using appropriate devices such as gateways, routers or emulations • Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas • Project planning skills in relation to set benchmarks and identified scope, for example when network addressing system with subnet and host ids are designed using appropriate devices such as gateways, routers or emulations

UNIT	ICAITI101B Install and manage network protocols
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Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will ideally need access to a live network</p> <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competency.</p>
Context	<p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p> <p>Applications involve responsibility for, and limited organisation of, others.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating some theoretical concepts; • apply solutions to a defined range of unpredictable problems; • identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas; • identify, analyse and evaluate information from a variety of sources; • take responsibility for one’s own outputs in relation to specified quality standards; and • take limited responsibility for the quantity and quality of the output of others.

Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	2	2	2	3	2	3

UNIT	ICAITI187A Implement change management processes
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FIELD	Implement
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DESCRIPTION	This unit defines the competency required to apply techniques that aid in evolution, composition and policy management of the design and implementation of information technology systems.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Plan for change	<ol style="list-style-type: none"> 1. Updating and loading guidelines are able to be applied. This should include any generic policies on regulatory, accessibility and industry standards that must be applied to any change. 2. Version management plan is developed and approved ensuring that it includes: backup frequency, location and storage requirements; templates, content and design consistency guidelines that separate content creation from software interface; directory and file naming conventions. 3. Version identification procedures and conventions are developed and applied; links are managed and updated concurrently; and communication procedures to inform user, business and stake holders are developed. 4. The need for specific change is identified by performance being regularly measured against benchmarks and feedback being sought from users, the business and other relevant stakeholders (such as software developers). 5. Site activity is tracked and audited in order to determine changing user or business patterns that may result in the need for change. 6. Key personnel responsible for identifying, authorising and implementing change management procedures are identified.

UNIT	ICAITI187A Implement change management processes	
2. Implement change	<ol style="list-style-type: none"> 1. A change management assessment for proposed change is conducted. It determines the impact on business, people, communications, clients, implementation, property and any other relevant issues. 2. The personnel responsible for implementing the change are appointed and authorised. 3. New performance benchmarks and milestones are developed, signed off and applied to the change. 4. Change management methodology for the specific change is identified and communicated to relevant stakeholders. 5. Change is implemented in accordance with the appropriate guidelines, procedures and policies. 6. Where concurrent change is being implemented, changes are prioritised with resources and effort allocated accordingly. 7. Stakeholders are involved wherever and whenever possible. 8. Training requirements are identified to support the change. In some cases this may need to be implemented prior to the intended change and will be contingent on the scope and impact of the change being implemented. 9. Change is communicated to stakeholders 	
3. Monitor implementation	<ol style="list-style-type: none"> 1. Change performance is measured against new benchmarks. 2. Automated quality software, such as link managers and browser sniffers, are applied. 3. Implementation is measures against milestones and benchmarks. 4. Feedback channels to users and other stakeholders, including employees, have been established and any relevant information acted on. 	
4. Review implementation results	<ol style="list-style-type: none"> 1. Training standards of support staff and users are reviewed 2. User, employee and business comments and feedback are sought and acted upon. 3. Feedback on the impact of the change is provided to all users. 4. Change process is signed off as complete. 	

UNIT	
ICAITI187A Implement change management processes	
RANGE OF VARIABLES	
VARIABLE	SCOPE
Workplace environment	May involve a business involved in a total organisational change, a systems only change, a business improvement process, an e-business solution involving the total organisation or part of the organisation
Documentation and Reporting	Documentation for version control may follow ISO standards. Audit trails, naming standards, version control, project management templates and report writing styles will vary according to organisational approach, information gathering processes may have associated templates. Updating and loading guidelines are available. Generic policies on regulatory, accessibility and industry standards are available.
Liaison methods	May include but are not limited to: <ul style="list-style-type: none"> • websites, • web applications, • CRM technologies, • written reports, • group meetings, • one on one meetings, • e-mail, telephone calls, newsletters, etc.
Consulting techniques	May include: interviews, surveys, chat rooms, focus groups
Analysis Techniques	May include: gap analysis, urgency and impact, statistical and a range of current methodologies
Hardware	Can include IT equipment of all types; <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers
Operating System	Win 95/98/2000, Sun Solaris/SunOS, HP-UX, AIX, Digital Unix, Silicon Graphics IRIX, DOS, DEC, VMS, Mac OSX, Linux, Netware
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Version control plans	Version control plans contain backup frequency, location and storage requirements; templates, content and design consistency guidelines

UNIT	ICAITH187A Implement change management processes
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EVIDENCE GUIDE

Critical aspects of evidence	<p>Assessment must confirm the ability to plan for, implement, monitor and review change and apply existing guidelines and policies to the change management process.</p> <p>Competence includes being able to adequately identify elements that require changing and planning a change management intervention. Complex issues of version management and maintaining compliance with existing accessibility and other policies need to be demonstrated. The candidate must demonstrate competence at planning, implementing, monitoring and reviewing the change.</p>	
Interdependent assessment of units	<p>The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.</p>	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Web site architecture • Server operating systems • Server access security procedures • FTP software protocols • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles. • User analysis • Project management • Performance Benchmarking • Stakeholder communication • Version management procedures • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • Web site analysis • Web site publishing • Data gathering and analysis skills • File transfer • Directory maintenance • Information architecture • Connecting to remote servers • Version back up and storage • Directory management

UNIT

ICAITI187A Implement change management processes

Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • Updating and loading guidelines • Version control guidelines <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence.</p> <p>The candidate must be able to develop an implementation plan and measure implementation against actual performance. The requirements to take into account the impact of change on existing systems and personnel needs to be assessed and addressed in the form of supporting communications and training plans.</p>
Context	<p>Breadth, depth and complexity involving analysis, documentation and design across a broad range of technical and/or managerial functions including identifying the technical and human computer interface requirements which drive design. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.</p> <p>Applications involve significant judgement in planning, design, evaluation, technical or leadership/guidance and communications functions related to products, services, operations, processes and procedures.</p> <p>The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • Demonstrate understanding of specialized knowledge with depth in some areas; • Analyse, diagnose, design and execute judgements across a broad range of technical or management functions; • Demonstrate a command of wide ranging, highly specialised technical, creative or conceptual skills; • Generate ideas through the analysis of information and concepts at an abstract level; • Demonstrate accountability for personal outputs within broad parameters; and • Demonstrate accountability for group outcomes within broad parameters.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITI188A Install and maintain a server
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FIELD	Implement
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DESCRIPTION	This unit defines the competency required to deploy a server and monitor its operation
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Installation plan is developed	<ol style="list-style-type: none"> 1. Deployment environment is assessed with reference to system capacity, interdependencies and interoperability 2. Installation options are identified 3. Scale of installation and use of pilots is determined as required 4. Data migration requirements are identified 5. Backup and recovery requirements are identified and applied as required with reference to organisational policy 6. Education and training requirements are identified as required in line with client requirements and relevant enterprise policies 7. Resource requirements are identified 8. Deployment plan is created, reviewed and documented as required
2. Server is installed	<ol style="list-style-type: none"> 1. Local data is backed up and restored as required 2. User group is advised of deployment and potential down times 3. Server is installed and configured as required by functional specification 4. Relevant connectivity devices are reconnected and reconfigured as required 5. Relevant operating system and application upgrades are installed and configured as required 6. Relevant tests are implemented with results recorded, analysed and reported as required 7. Deployment pilot where relevant is repeated as required 8. Documentation is created for users and maintainers

UNIT	ICAITI188A Install and maintain a server
3. Server operation is monitored	<ol style="list-style-type: none"> 1. Required service levels are identified and performance benchmarks are determined and operation monitored against these 2. Relevant management tools are identified and used with reference to server functionality and enterprise policies 3. A program of selective independent audits and tests are developed and implemented 4. Audit and test programs with results are recorded, analysed and reported as required with any tuning completed 5. Configuration and operational changes are made and documented as required

RANGE OF VARIABLES	
VARIABLE	SCOPE
Server applications	file sharing, printer sharing, messaging, web services, network and remote access, database and data warehousing, directory services, management, line of business applications, terminal services
Server Monitoring	Three primary methods exist, namely taking periodic baseline measurements, using server management tools and surveying the user community
Aspects of server configuration	Log file rotation, Entry cache, database cache, consumers and suppliers, large objects, search and write performance, LDAP clients, cache sizes, port numbers, directory configuration, root DN, access control needs, hostnames, IP addresses, DNS, server domains, network connectivity issues, NetBIOS naming
Policies	Incident response procedures, network intrusion detection systems, forensic procedures, training and awareness raising policy
Documentation	Documents as required detailing the engineering and use of desktop, laptop and server operating systems; sever management tools, logon scripts and file schema;
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Deployment considerations	Legacy systems, desktop and server specification, time synchronisation services, TCP/IP architecture, the physical and logical network, training requirements

UNIT	ICAITI188A Install and maintain a server
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EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to deploy, monitor and maintain server operation with minimum downtime and disruption to the business		
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.		
Underpinning skills and knowledge	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning knowledge:</p> <ul style="list-style-type: none"> Features of a current Network Operating Systems (NOS) eg: OS/2, Novell Netware, Linux, Unix Ware, MS Windows NT, MS Windows 2000. Features of a current server applications depending on requirements: eg: Lotus Notes / Novell GroupWise for messaging; Apache / MS IIS for web services; Novel Border Manager / MS Proxy Server for network services; Oracle / MS SQL Server / IBM DB2 for databases and data warehousing; Novell Directory Services / iPlanet for directory services; HP Openview / Intel LAN Desk Server Manager / CA UniCenter for management; SAP / PeopleSoft / Baan for line of business applications; and MS Terminal Server / Citrix MetaFrame for terminal services. Desktop applications and operating systems as required Knowledge of compatibility issues and resolution procedures Knowledge of system backup procedures Enterprise communication / training systems in relation to training and advising staff involved in the deployment Australian Computer Society Code Of Ethics </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>Underpinning skills:</p> <ul style="list-style-type: none"> use of relevant server management tools project management skills ability to create technical and user documentation ability to understand user applications and relate user needs to configuration ability to analyse operational issues ability to outline maintenance procedures ability to follow specified maintenance procedures ability to troubleshoot failures </td> </tr> </table>	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> Features of a current Network Operating Systems (NOS) eg: OS/2, Novell Netware, Linux, Unix Ware, MS Windows NT, MS Windows 2000. Features of a current server applications depending on requirements: eg: Lotus Notes / Novell GroupWise for messaging; Apache / MS IIS for web services; Novel Border Manager / MS Proxy Server for network services; Oracle / MS SQL Server / IBM DB2 for databases and data warehousing; Novell Directory Services / iPlanet for directory services; HP Openview / Intel LAN Desk Server Manager / CA UniCenter for management; SAP / PeopleSoft / Baan for line of business applications; and MS Terminal Server / Citrix MetaFrame for terminal services. Desktop applications and operating systems as required Knowledge of compatibility issues and resolution procedures Knowledge of system backup procedures Enterprise communication / training systems in relation to training and advising staff involved in the deployment Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> use of relevant server management tools project management skills ability to create technical and user documentation ability to understand user applications and relate user needs to configuration ability to analyse operational issues ability to outline maintenance procedures ability to follow specified maintenance procedures ability to troubleshoot failures
<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> Features of a current Network Operating Systems (NOS) eg: OS/2, Novell Netware, Linux, Unix Ware, MS Windows NT, MS Windows 2000. Features of a current server applications depending on requirements: eg: Lotus Notes / Novell GroupWise for messaging; Apache / MS IIS for web services; Novel Border Manager / MS Proxy Server for network services; Oracle / MS SQL Server / IBM DB2 for databases and data warehousing; Novell Directory Services / iPlanet for directory services; HP Openview / Intel LAN Desk Server Manager / CA UniCenter for management; SAP / PeopleSoft / Baan for line of business applications; and MS Terminal Server / Citrix MetaFrame for terminal services. Desktop applications and operating systems as required Knowledge of compatibility issues and resolution procedures Knowledge of system backup procedures Enterprise communication / training systems in relation to training and advising staff involved in the deployment Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> use of relevant server management tools project management skills ability to create technical and user documentation ability to understand user applications and relate user needs to configuration ability to analyse operational issues ability to outline maintenance procedures ability to follow specified maintenance procedures ability to troubleshoot failures 		
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> a server policies related to back up and recovery <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>		

UNIT	ICAITI188A Install and maintain a server
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Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence.</p>
Context	<p>Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.</p> <p>Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.</p> <p>Applications involve responsibility for, and limited organisation of, others.</p> <p>An individual demonstrating these competencies would be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of a broad knowledge base incorporating some theoretical concepts; • apply solutions to a defined range of unpredictable problems; • identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas; • identify, analyse and evaluate information from a variety of sources; • take responsibility for ones own outputs in relation to specified quality standards; • and take limited responsibility for the quantity and quality of the output of others.

Key Competencies						
<p>Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)</p> <p>There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.</p>						
Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3

UNIT	ICAITI189A Ensure website content meets appropriate technical protocols & standards
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FIELD	Implement
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DESCRIPTION	This unit defines the competency required to prepare a mix of content for a website in accordance with customer specifications whilst ensuring that content is compatible with appropriate technical and infrastructure protocols
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Content meets required standards	<ol style="list-style-type: none"> 1. Text based content meets the customers needs and the required style standards 2. Multimedia based content meets the business design standards or overall “look” of the website 3. The mix between multimedia and text based content provides the required level of interaction identified in the project brief or for maintaining current levels 4. Content conforms with the target audiences expectations and technology
2. The technology supports content	<ol style="list-style-type: none"> 1. The protocols required for multimedia content are available 2. The bandwidth required to support the content is available 3. Servers support the content and levels of interaction 4. All plugins required to support content are made available 5. Compression techniques support delivery of content
3. Test content	<ol style="list-style-type: none"> 1. Content displays as intended and according to business requirements 2. Content encourages interaction and content interaction performs as intended 3. Plugins download with a minimum of steps 4. Any interactive tools are available and provide the expected results

UNIT	ICAITI189A Ensure website content meets appropriate technical protocols & standards
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RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Content	Can include text based documents, multimedia content such as audio/ video streaming, animation, static graphics, sound files
Firewalls	Hardware appliances, proxy servers, individual PC solution, also: varying functionality including network address translation (NAT) / IP Masquerading, routing to specific machines
Site Design Specifications	Design specification documentation that has detailed the purpose, strategy and maintenance of the web has been provided to candidates. The candidate is to be able to determine the broad site policies and specific procedures to update the site and load new content.
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.
Content standards	May include style guides, design requirements, The Standard for Internet Commerce 1.0
Legislation	Privacy Legislation, Copyright, Liability statements

EVIDENCE GUIDE	
Critical aspects of evidence	Assessment must confirm the ability to prepare and integrate a mix of content for a website. Content must operate as expected – that is the correct streaming/ compression techniques were used.
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.

UNIT	ICAITI189A Ensure website content meets appropriate technical protocols & standards
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Underpinning skills and knowledge

Underpinning knowledge:

- Server operating systems
- Server access security procedures
- FTP software protocols
- Privacy principles
- Internet protocols
- Security issues – denial of service, viruses, hackers
- Copyright issues
- Streaming technologies
- Compression technologies
- IEEE Std. 2001-1999 Web Page Engineering
- Australian Computer Society Code Of Ethics
- Copyright and intellectual property
- National Privacy Principle Guidelines (to be published in October 2001)
- The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000.
- The National Privacy Principles

Underpinning skills:

- Web site publishing
- File transfer
- Directory maintenance
- Site testing skills

Resources

This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills

To demonstrate competence in this unit the candidate will need access to:

- Style guides and or design brief
- Compression and streaming software

Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.

Consistency

Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts

Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence

UNIT

ICAITI189A Ensure website content meets appropriate technical protocols & standards**Context**

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for ones own outputs in relation to specified quality standards;
- and take limited responsibility for the quantity and quality of the output of others.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
2	3	3	2	3	3	3

UNIT	ICAITI190A Maintain information standards
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FIELD	Implement
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DESCRIPTION	This unit defines the competency required to establish and maintain information standards for the use and information of website clients. These might include website update notations, privacy information, product and payment option information, help facility and contact/feedback mechanisms.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Website content displays required statements	<ol style="list-style-type: none"> 1. Company identification information is available and includes physical address and contact details 2. Privacy, security and liability statements are correctly displayed and conform to legislative requirements 3. Website indicates when the site was last updated 4. Copyright notice is present if required by company 5. Display information to notify the customer which country’s laws that the merchant believes apply to the customer’s transaction 6. Any licenses or required qualifications/ memberships required by the business to perform services and produce product are listed
2. General information	<ol style="list-style-type: none"> 1. Customers can access an “Information Centre” from every page on the website 2. The “Information Centre” will provide general information that the majority of business customers want 3. Different payment options preferred by the business and customers are listed for choice 4. The “Information Centre” will be clearly and predictably named for easy access

UNIT	
ICAITI190A Maintain information standards	
3. Disclosure of policies and services	<ol style="list-style-type: none"> 1. A clear statement on all charges including product/service cost, shipping and handling charges and taxes is available before the customer commits to purchasing or ordering 2. Complete warranty information including the length of the warranty, what is covered, what is not covered, who administers the warranty etc is available to the customer commits to purchasing or ordering 3. Information outlining post sale support and services including the length service and support, what kind of service and support, who is responsible 4. Cancellation, return and refund policy and any associated conditions is stated 5. Business credit card charging policy is stated
4. Product /Service conditions and notifications	<ol style="list-style-type: none"> 1. Business and legislative restrictions on who or where goods and services will be sold/ shipped to is displayed 2. Estimates on product /service availability are listed and back-orders notified 3. Orders and cancellations are confirmed as quickly as possible and includes details on the items ordered/ cancelled, total cost and expected date of arrival
5. Customer service support	<ol style="list-style-type: none"> 1. Customer services standards are available to the customer 2. Tools are available for customers to provide feedback 3. Acknowledgement of complaints is sent to the customer detailing the referral if necessary

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Standards	Standards are being introduced on a regular basis it is worthwhile monitoring the following organisations in relation to XML standards Organization for the Advancement of Structured Information Standards, ISO and IEEE to web-oriented groups like IETF and W3C, IEEE Std. 2001-1999 Web Page Engineering, The Internet Commerce Standard 1.0
E-commerce models	Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models
E-Business	Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts
Knowledge Economy	Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.

UNIT	
UNIT	ICAITH190A Maintain information standards
Development environment	<p>For example</p> <ul style="list-style-type: none"> • Text file editors • HTML editors • Dreamweaver • Microsoft Visual InterDev • Drumbeat
Web development standards	<p>Web Content Accessibility Guidelines 1.0 (WCAG)</p> <p>Authoring Tool Accessibility Guidelines 1.0 (ATAG)</p> <p>User Agent Accessibility Guidelines 1.0 (UAAG)</p>
Documentation and Reporting	<p>Includes maintaining standards of definition, standards of format, user access information. Information should be clear and written in such a way that it will be readily understood by the target audience.</p> <p>Reports meet the specific output requirements and are presented in a logical and accessible manner.</p> <p>Relevant legislated accessibility standards, business accessibility policy and special requirements are available.</p>
EVIDENCE GUIDE	
Critical aspects of evidence	<p>Assessment must confirm the ability to ensure that information relevant to e-business transactions are readily accessible to customers</p>
Interdependent assessment of units	<p>The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.</p>

UNIT	ICAITI190A Maintain information standards	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • Electronic Commerce Modelling Language • Copyright issues • Privacy legislation • Consumer protection legislation • Understanding of information architecture • Obligations of merchants • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • Australian Computer Society Code Of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • HTML • Basic policy writing skills • Web site analysis • Web site publishing • Archiving
Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • A range of business policies, privacy, customer service, warranties <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>	
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate competence</p>	

UNIT	ICAITI190A Maintain information standards
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Context

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for, and limited organisation of, others.

An individual demonstrating these competencies would be able to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;
- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for ones own outputs in relation to specified quality standards;
- and take limited responsibility for the quantity and quality of the output of others.

Key Competencies

Key Competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. (Mayer definition)

There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	1	2	2

UNIT	ICAITI212A Monitor and improve new or existing knowledge management system
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FIELD	Implement
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DESCRIPTION	This unit defines the competency required to monitor and improve existing knowledge management systems or when implementing new knowledge management systems.
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RELATED COMPETENCY STANDARDS	The project lifecycle and the IT methodology employed will determine which particular units of competency are relevant to this unit, some include the Project Management, Implementation, Support, the teamwork functional areas and documentation.
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ELEMENT	PERFORMANCE CRITERIA
1. Anticipate need and organise required information on live system	<ol style="list-style-type: none"> 1. Client needs for specific information/material are anticipated and information/material is available and organised to meet needs 2. Information/material subject to recurrent requests is organised to facilitate client access and retrieval of information 3. Clients and staff readily access required information
2. Increase awareness and use of knowledge management system	<ol style="list-style-type: none"> 1. Mechanisms to develop and improve awareness of networked information resources are established, monitored and improved 2. Strategies are developed and maintained to improve access to, and use of, networks for communication and information access and retrieval 3. Tools are available to identify, search, retrieve and use networked information effectively and appropriately to satisfy client needs 4. Strategies are realistic and reasonable and take into account ways of reducing information overload 5. Opportunities to improve services or provide innovative services to clients are identified and implemented appropriately 6. Mechanisms are established and used to share information, ideas and resources to improve system standards, access and use 7. Mapping of information resources reflects knowledge of appropriate tools and clients requirements

UNIT	ICAITI212A Monitor and improve new or existing knowledge management system	
3. Increase efficiency of access to knowledge management system	1.	The most cost-effective means of accessing networked facilities and information to meet client needs are sought and acted on
	2.	Access issues are discussed regularly with all stakeholders to assure continuous improvement of systems accessibility
	3.	Support, training and encouragement are provided to enable clients to access and use networked information, and taking into account client characteristics and needs
	4.	Mechanisms for more efficient delivery of information from remote sources are sought and implemented and/or recommendations are made to appropriate person(s)
	5.	Increased efficiency of network access and use takes into account the need for security, legal agreements, client needs and accounting mechanisms
4. Review new systems to improve access information	1.	Functions, capabilities or operations which the new system is designed to address are monitored
	2.	Review reflects awareness of relevant staff and client requirements for access to information
	3.	Client and staff awareness and ability to use system is monitored

RANGE OF VARIABLES	
VARIABLE	SCOPE

The Range of Variables section contextualises the unit of competence and provides a focus for assessment. The information provided is intended to define the scope of assessment and to assist assessors define the performance to be achieved by an individual in the workplace.

Legislation, codes	Copyright Act and amendments Licensing agreements Archives Act Equal Opportunity legislation Occupational Health and Safety legislation Privacy Act
Systems and processes	Computer systems (hardware and software) Networks (local, national or international) Workflows, associated routines and operating procedures

UNIT	ICAITI212A Monitor and improve new or existing knowledge management system
Software	<p>Communications software</p> <p>Multimedia and computer graphics</p> <p>Databases</p> <p>Intranet and collaborative working software</p> <p>Web enabled and other software</p>
Process improvements	<ul style="list-style-type: none"> • Reduce production cost • Improve value adding • Improved international or domestic competitiveness • Improved international competitiveness • New products • New or improved business processes • Improve customer relationships
E-commerce models	<p>Includes any kind of business-related transaction conducted with the assistance of electronic tools across and within organisations or with individual customers. May include Brochure Site, Customer Service Site, Real Time Site, Quote Aggregator, Insurance Mall, Direct Channel, Virtual Carrier, Quote Mall, Agent Mall, Consumer Auction, Carrier Auction, Time Limited Information, Investor Relations, Technical Support, Pre Sales Support and Corporate Awareness, Proprietary Standard Promotion. E-commerce models are changing all the time and the above are just an example of possible models</p>
E-Business	<p>Encompasses how organisations structure themselves and capture information, manage their workers, relate and partner with other organisations and groups to achieve effective functioning, efficient operations and cultural shifts</p>
Knowledge Economy	<p>Involves all individuals participating on-line for professional or personal research and learning, communicating with friends or associates and the pursuit of leisure activities. The knowledge economy is broader than on-line participation and includes knowledge workers and organisations and recognises the value of life long learning and the need to capture knowledge within organisations to ensure effective functioning.</p>
Hardware	<p>Can include IT equipment of all types;</p> <ul style="list-style-type: none"> • Work stations, PCs • Networks • Remote sites • Servers

UNIT	ICAITI212A Monitor and improve new or existing knowledge management system
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EVIDENCE GUIDE

Critical aspects of evidence	Assessment must confirm the ability to monitor and implement strategies to improve a new or existing knowledge management system. The candidate will ensure that staff and/or clients can access the required information and that all relevant information is being accessed and irrelevant information is not.	
Interdependent assessment of units	The interdependence of units of competency for assessment will vary with the particular project or scenario. This unit has importance to a range of IT services and should therefore be assessed in a holistic manner with the technical/ support units.	
Underpinning skills and knowledge	<p>Underpinning knowledge:</p> <ul style="list-style-type: none"> • evaluating client information needs effectively and matching them to appropriate resources • information management • using information management systems • a range of information sources in all types of formats • searching electronic networks and remote databases for required information • knowledge and application of database structures and organisation • applying principles of database structure and construction • reviewing new systems for organising information • Copyright Act and amendments • Copyright and intellectual property • National Privacy Principle Guidelines (to be published in October 2001) • The Commonwealth Privacy Act 1988 as amended by the Privacy Amendment (Private Sector) Act 2000. • The National Privacy Principles • ACS Code of Ethics 	<p>Underpinning skills:</p> <ul style="list-style-type: none"> • the use of SQL or other language • Techniques to elicit information from users • Short and long term capacity planning • Business analysis skills • Communicating with clients • Modelling of data processes

UNIT	ICAITI212A Monitor and improve new or existing knowledge management system
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Resources	<p>This competency can be assessed in the workplace or in a simulated environment. Assessment of this unit of competence will usually include observation of real or simulated work processes and procedures, quality projects, questioning on underpinning knowledge and skills</p> <p>To demonstrate competence in this unit the candidate will need access to:</p> <ul style="list-style-type: none"> • database/s • organisational information requirements • information repositories <p>Questions related to the performance criteria and directed to the candidate, peers and business client will assist in assessing competence. Observation of skills may assist in the collection of evidence.</p>
Consistency	<p>Competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a range of contexts</p> <p>Simulated activities must closely reflect the workplace and may need to take place over a period of time to allow the candidate to fully demonstrate the monitoring and client/ staff interaction components of this unit.</p>
Context	<p>Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination. The self-directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</p> <p>Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions.</p> <p>Group or team co-ordination may be involved. The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.</p>

Key Competencies

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There are seven key competencies that have been formally identified. The Key Competencies are generic in that they apply to work generally, rather than being specific to work in particular occupations or industries.

Collect, Analyse & Organise Info.	Communicate Ideas & Information	Plan & Organise Activities	Work with Others & in Teams	Use Mathematical Ideas & Techniques	Solve Problems	Use Technology
3	3	3	3	3	3	3