ICTTEN7221A Manage end to end architectural solutions across multiple domains

Release: 1

ICTTEN7221A Manage end to end architectural solutions across multiple domains

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to analyse business options and design and implement end to end architectural solutions for a telecommunications service provider.
	No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Application of the Unit

Application of the unit	Network engineering staff or senior technical officers with project management roles and authority to direct the activities of installation staff apply the skills and knowledge in this unit. They also work in conjunction with manufacturers and vendors.
	This unit applies to network infrastructure service providers implementing new end to end architectural solutions.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate tools and techniques for architectural design	1.1. Apply the principles of architectural design within the lifecycle of application software 1.2. Develop a process to apply appropriate tools and techniques for architectural design of end to end solutions 1.3. Evaluate and select appropriate analysis and selection techniques to develop a partition between discipline technologies and derive discipline specific requirements
2. Analyse design options for optimal solutions	2.1. Analyse business options to support architectural design trade offs for an optimal design solution 2.2. Develop alternative architectural designs that are traceable to the requirements 2.3. Evaluate a range of architectural solutions and justify the selection of the optimum solution
3. Develop interface requirements for effective solutions across multiple domains	3.1. Evaluate *system element interfaces* and the *sources of complexity* for the *interface management* of the system across multiple domains 3.2. Develop a process and appropriate techniques to be adopted for the interface management of *system elements* for end to end architectural solutions 3.3. Produce a control process for the system element interfaces of the management system 3.4. Liaise and arbitrate between stakeholders where there are conflicts in the definition of interfaces
4. Manage end to end systems integration	4.1. Evaluate suitability of *system integration*, verification and validation plans for end to end architectural solutions across multiple domains 4.2. Develop systems integration, verification and *validation plans* for complex systems to ensure viable integration process 4.3. Manage system integration plan and diagnose complex faults 4.4. Document fault conditions, report to appropriate person and follow up corrective actions 4.5. Prepare evidence for customer acceptance and certification of the system integration management plan 4.6. Plan and manage a transition to operational activity for the end to end solution
5. Incorporate components of an	5.1. Negotiate with vendor for acceptable *vendor agreements* and agreed *roles and responsibilities* of

ELEMENT	PERFORMANCE CRITERIA
architecture from a third party	each party 5.2. Manage vendor within a clearly defined process for dealing with defects and scope changes 5.3. Plan beyond delivery of specific elements and establish requirements for ongoing maintenance and support from vendor

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ELEMENT	PERFORMANCE CRITERIA
6. Manage requirements for the architecture solution	6.1. Negotiate minimum *component costs* with vendors and analyse vendor component costs as part of the assessment for the appropriateness of vendors quote 6.2. Manage the vendor selection process to provide high level of solution and support costs

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to evaluate product and technology needs
- communication skills to:
    - interact with enterprise personnel, customers and other contractors, while maintaining a customer focus and consideration of customer needs
    - liaise with internal and external personnel on technical and operational matters
- literacy skills to:
    - prepare reports given a specific format
    - read and interpret technical documentation, software and hardware manuals, specifications and relevant enterprise policy
- numeracy skills to take and analyse measurements
- PC skills to use a word processor to translate enterprise and technology issues into system requirements
- planning and organisational skills to:
    - break large projects into a series of small projects
    - manage and prioritise own work
    - organise testing and contingency plans
- problem solving skills to resolve software, hardware and logistics problems
- safety awareness skills to follow all related occupational health and safety (OHS) requirements and work practices
- task management skills to work systematically with required attention to detail and adherence to project requirements
- technical skills to:
    - develop systems integration, verification and validation plans for complex systems
    - document fault conditions
    - manage systems integration

REQUIRED SKILLS AND KNOWLEDGE
Required knowledge
- architectural design tools   - interface management   - management of end to end system integration   - new end to end architecture design solutions   - solutions for business options across multiple domains   - system integration solutions techniques   - system interfaces   - validation plans   - vendor agreements and negotiations

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: - evaluate tools and techniques for architectural design - analyse design options for optimal solutions - develop interface requirements for effective solutions across multiple domains - manage end to end systems integration - incorporate components of an architecture from a third party - manage requirements for the architecture solution.
Context of and specific resources for assessment	Assessment must ensure: - site where architecture solutions across multiple domains can be managed - simulation software tools currently used in industry - vendor products, specifications, equipment and enterprise policy required for the activity.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples

EVIDENCE GUIDE	
	are appropriate for this unit:
	• direct observation of the candidate managing end to end architectural solutions across multiple domains
	• review of evaluations, documents and evidence for customer acceptance prepared by the candidate
	• oral or written questioning of the candidate to assess required knowledge.

EVIDENCE GUIDE	
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplaces and job role is recommended, for example: • ICTTEN7222A Manage solution architecture and impacts in line with organisational processes. Aboriginal people and other people from a non-English speaking background may have second language issues. Access must be provided to appropriate learning and assessment support when required. Assessment processes and techniques must be culturally appropriate, and appropriate to the oral communication skill level, and language and literacy capacity of the candidate and the work being performed. In all cases where practical assessment is used it will be combined with targeted questioning to assess required knowledge. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. Where applicable, physical resources should include equipment modified for people with special needs.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
System element interfaces may include:	• requirements posed on the system element • services to be provided by the system element • specified connected devices and interfaces • system elements that can support several interfaces.

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RANGE STATEMENT	
Sources of complexity may include:	• different domains • multinational programmes • multiple suppliers • novel technology.
Interface management may include:	• integration with existing system • fine-tuning capabilities in multi-operating environments • links to legacy systems.

System elements may include:	• relationships:
	   • contractual
	   • customer
	   • development
	   • hierarchical.

Systems integration may include:	• bringing together of the component subsystems into one system and ensuring that the subsystems function together as a system • process of linking together different computing systems and software applications physically or functionally.
Validation plans may include:	• identification of method • interaction between the stakeholders • timing for each activity.
Vendor agreements may include:	• dealing with defects and scope changes • milestones • objectives and acceptance criteria • roles and responsibilities • scope.
Roles and responsibilities may include:	• accountabilities • dependencies • impact on delivery.
Component costs may refer to:	• appropriateness • completeness • correctness.

Unit Sector(s)

Unit sector	Telecommunications

Co-requisite units

Co-requisite units		

Competency field

Competency field	Telecommunications networks engineering

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