



Australian Government

Department of Education, Employment and Workplace Relations

ICTTEN7225A Manage network testing strategies

Release: 1

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Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to plan and manage a test regime for evaluation of application software for a telecommunications network. 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.
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Application of the Unit

Application of the unit	Network engineering staff or senior technical officers with appropriate project management roles and authority to direct the activities of software testing and evaluation apply the skills and knowledge in this unit. Mobile phones, wireless modems, set top boxes, media centres, web applications and content servers use application software to provide a telecommunications service.
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan the test effort and develop test strategy for an application software	1.1. Analyse the functionalities of an application software from the system design document and create a test strategy for a new telecommunications product line 1.2. Produce the steps in developing the test strategy and the attributes of each step according to enterprise policy 1.3. Produce a test strategy for evaluating the suitability of the application software for integration into the telecommunications network 1.4. Analyse the test strategy and identify the types of risks that would hinder the test performance or reality
2. Plan test strategy for the regime	2.1. Produce the phases of a test cycle for a test regime according to the system design document 2.2. Assess a range of tests required to evaluate the performance and functionality of the application software and determine the tests required to suit the test regime 2.3. Evaluate features of testing tool and debuggers and select an appropriate tool to test the software application and detect faults 2.4. Evaluate the elements of a test plan that would cover the testing functionality of the application software
3. Design a test plan and produce test reviews	3.1. Determine the forecast time, effort and cost for low and medium intensity projects to perform testing 3.2. Develop a test case or test scenario with prerequisite states based on requirements to generate expected test results for the test plan 3.3. Produce a test plan for specific phases based on the requirements of the project specifications for the application software 3.4. Produce test reporting associated with particular test phases within the test plan 3.5. Analyse test reports and evaluate the impact of the test plan on the testing environment 3.6. Manage the progress of the test plan to minimise the risks associated with testing and ensure test compliance with test requirements 3.7. Report any detected defects to the product evaluation personnel and prepare a strategy to manage the defects

ELEMENT	PERFORMANCE CRITERIA
4. Manage test traceability	4.1. Create a traceability matrix to correlate the relationship between marketing requirements and detailed requirements of the software product to the matching parts of design, test plan and test cases 4.2. Analyse the testing metrics produced by the test tool to manage the tracking of defects and plan process improvements based on the metrics 4.3. Produce an evaluation report from the traceability matrix to manage the defects or failures from the test plan

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 the functionalities of an application software
- 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
- planning and organisational skills to:
 - manage and prioritise own work
 - organise testing
 - manage the progress of the test plan
- 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:
 - plan test strategy for the regime

REQUIRED SKILLS AND KNOWLEDGE

- manage test traceability

Required knowledge

- applications software features and functionalities
- configuration of software testing tools
- creation of traceability matrix
- elements of test plans
- features of testing tools and debuggers
- identification of types of risks
- legislation, codes of practice and other formal agreements that directly impact on testing
- manage software defects
- management of test traceability
- phases of test cycles
- production of test reviews
- specific OHS requirements that impact on activity in terms of safety of self and public safety
- steps in developing test strategy
- testing procedures

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:

- produce the steps in developing the test strategy
- produce a test strategy for evaluating the suitability of the application software
- design a test plan and produce test reviews
- develop a test case or test scenario
- produce a test plan for specific phases
- produce test reporting associated with particular test phases within the test plan
- create a traceability matrix
- produce an evaluation report from the traceability matrix to manage the defects or failures from the test plan.

Context of, and specific resources for assessment

Assessment must ensure:

- site where the planning and management of a test regime for evaluation of application software may be conducted
- software tools currently used in industry
- vendor products, specifications, equipment and enterprise policy required for the activity.

Methods of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct observation of the candidate managing a test regime for evaluation of application software
- direct observation of the candidate performing a systematic approach to test and analysis of problems arising
- review of test regime, test results with interpretation and improvement recommendations 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, workplace and job role is recommended, for example:

- ICTTEN7226A Manage development and application of testing artefacts.

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.

Application software may be for:

- firmware
- games software

RANGE STATEMENT	
	• media centre • mobile phone • operating system • set top box • sever • web application • wireless modem.
Test strategy may relate to:	• communicating test plans to stakeholders and obtain buy-in from business clients • coordinating test environment and data requirements before starting phase • defining objectives, timelines, and approach for test effort • defining test activities with roles and responsibilities.
Steps in developing the test strategy may include:	• objective and scope of testing: • business objectives • extent of application to be tested • goals to be met by testing effort • what systems and components need to be tested • types of testing: • different phases of testing required • different types of testing • test coverage • testing approach: • methodology for test development and execution • planning for test execution cycles • specification of test environment set up • testing process life cycle • testing templates, checklist and guidelines • test environment specifications: • configuration management, maintenance of test bed and build management • hardware and software requirements • test data creation • test automation: • criteria for feasibility of test automation • defect management • test automation strategy • test tool identification

RANGE STATEMENT	
	• communication and status reporting • configuration management: • list of testing artefacts • tools and techniques for configuration management • change management: • models for assessing impact of changes on testing • plan for managing requirement changes • process for keeping test artefacts in sync with development artefacts • testing metrics: • metric to match strategic objectives • plan of process improvement based on metrics • techniques for collecting metrics • tools to gather and analyse metrics.
Types of risks may include:	• development: • complexity • defects in existing programme • inefficiently controlled project timelines • lack of reviews and configuration control • lack of specifications • less skilled human resources • problems in team coordination • production: • complexity of user interface • dynamic frequency of usage • high business impact of the function • testing lack of: • domain knowledge • sufficient time and resources • test facilities and test data • testing and platform skills.
Phases of a test cycle may include:	• defect retesting • regression testing • requirements analysis • test closure • test development • test execution

RANGE STATEMENT	
	• test planning • test reporting • test result analysis.
Range of tests may include:	• compatibility • on demand testing • performance • process improvement • technical • test management • verification.
Features of testing tool and debuggers may include:	• automated functional graphical user interface (GUI) testing tool • benchmarks • formatted dump or symbolic debugging • performance analysis or profiling tool • program monitors: • code coverage reports • instruction set simulator • program animation.
Elements of a test plan may include:	• test coverage • test methods • test responsibilities.
Test plan includes the following tests:	• acceptance or commissioning test • design verification or compliance test • manufacturing or production test • regression test.
Defects may be:	• deferred • fixed • rejected • treated.

Unit Sector(s)

Unit sector	Telecommunications
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Telecommunications networks engineering
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