



Australian Government

Department of Education, Employment and Workplace Relations

CPPSIS5008A Develop a complex spatial and aspatial database

Release: 1

CPPSIS5008A Develop a complex spatial and aspatial database

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to develop a complex spatial and aspatial database from a range of storage media, including digital or hard copy storage, often in a supervisory capacity. It requires the ability to analyse and evaluate spatial information from a variety of sources and to identify and access spatial information for set task requirements. Functions would be carried out within organisational guidelines.

Application of the Unit

Application of the unit

This unit of competency supports the application of organisational, sound communication, problem-solving and team leadership skills; the ability to demonstrate initiative and enterprise; and the use of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in surveying, cartography, town planning, mapping or geographic information systems.

While no licensing, legislative, regulatory or certification requirements apply holistically to this unit at the time of publication, relevant federal, and state or territory legislation, regulations and codes of practice impact upon this unit (see unit performance criteria and range statement).

Licensing/Regulatory Information

Refer to Application of the Unit

Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged, will assist in identifying employability skills requirements.

Elements and Performance Criteria Pre-Content

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

Elements and Performance Criteria

ELEMENT

PERFORMANCE CRITERIA

- | | |
|--|--|
| <p>1 Prepare for the storage of complex spatial data.</p> | <p>1.1 Complex spatial and aspatial data storage requirements and constraints are defined according to written spatial specifications and client requirements.</p> <p>1.2 Details of storage techniques to be used are considered and evaluated according to organisational guidelines.</p> <p>1.3 Data design is interpreted to identify spatial data components to be maintained.</p> <p>1.4 OHS and legislative requirements are adhered to.</p> <p>1.5 Pertinent legal and statutory standards are considered and adhered to.</p> <p>1.6 Work is allocated to appropriate personnel and supervisory processes, checks and measures are implemented to ensure work is completed within time available.</p> <p>1.7 Skills and knowledge are updated to accommodate changes in data storage.</p> |
| <p>2 Store complex spatial data.</p> | <p>2.1 Arrangements are put in place for the creation of data indexes to assist in retrieval and storage according to organisational spatial data and legal requirements.</p> <p>2.2 Administrative and legal requirements for data storage are complied with and recorded.</p> <p>2.3 Complex spatial data is recorded in an index according to organisational guidelines.</p> <p>2.4 Complex spatial data is backed up according to organisational guidelines.</p> <p>2.5 Method of complex spatial data storage is selected according to organisational guidelines.</p> <p>2.6 Distribution method is determined to ensure that the most current data is available.</p> |
| <p>3 Access and retrieve spatial data.</p> | <p>3.1 Arrangements are put in place for the use of the indexing system to locate complex spatial data source.</p> <p>3.2 Complex spatial data is translated into required format where necessary.</p> |
| <p>4 Manage contingencies.</p> | <p>4.1 All reasonable contingencies and potential problems are considered in the development of a risk management plan.</p> <p>4.2 Contingency plans are communicated to relevant personnel and implemented where necessary.</p> |

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- ability to interpret technical manuals
- ability to relate to people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities
- ability to verify reliability
- administration
- analytical skills
- communication skills to:
 - consult effectively with clients and colleagues
 - impart knowledge and ideas through oral, written and visual means
- computer skills (high technical user level) to complete business documentation and use software, hardware and networking applications
- information management
- literacy skills to:
 - assess and use workplace information
 - locate and interpret legislation and other written documentation
 - prepare and manage documentation
 - read and write technical reports
 - research and evaluate
- negotiation skills
- numeracy skills to:
 - analyse errors
 - conduct image analysis
 - perform mental calculations
 - interpret and analyse statistics
 - record with accuracy and precision
 - undertake computations
- organisational skills to:
 - coordinate technical and human resource inputs to research activities
 - prioritise activities to meet contractual requirements
- policy and guidelines development
- project management skills
- spatial skills to:
 - perform spatial data archival and retrieval and train others in this task
 - perform spatial data management and manipulation and train others in this task

REQUIRED SKILLS AND KNOWLEDGE

- perform file management and train others in this task
- solve problems relating to height, depth, breadth, dimension, direction and position in actual operational activity and virtual representation
- understand implications of height, depth, breadth, dimension and position to actual operational activity and virtual representation
- team leadership.

Required knowledge and understanding:

- classification systems, processes and products linked to specification
- coordinating reference systems
- corporate information database environment
- current indexing systems
- data formats
- data retrieval methods, querying and browsing
- errors, accuracy and precision in data
- industry metadata standards, including positional accuracy, currency, coordinate system, metric system, lineage and source
- network and security guidelines
- OHS requirements
- organisational policies and guidelines
- risk management principles as applied to spatial data storage
- safe work practices
- spatial data input technologies including digitising, scanning, remote sensing and satellite imagery
- spatial data management practices
- spatial data maintenance systems
- spatial data output and distribution technologies including scripting, query language, macro development, graphic interfaces, networks and remote access
- spatial data formats and structure requirements
- spatial reference systems and their relationship to each other
- storage media.

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, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment

This unit of competency could be assessed on its own or in combination with other units relevant to the job

function, for example unit CPPSIS5013A Design a spatial data storage system.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- creating a workable complex index system
- implementing data security and backup measures
- managing contingencies
- retrieving spatial data
- managing a team.

Specific resources for assessment

Resource implications for assessment include access to:

- assignment instructions, work plans and schedules, policy documents and duty statements
- assessment instruments, including personal planner and assessment record book
- registered training provider of assessment services
- relevant guidelines, regulations and codes of practice
- suitable venue and equipment.

Access must be provided to appropriate learning and assessment support when required.

Where applicable, physical resources should include equipment modified for people with disabilities.

Context for assessment:

Holistic: based on the performance criteria, evidence guide, range statement, and required skills and knowledge.

Method of assessment

Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment).

Demonstrated competency in a range of situations, which may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace.

Obtained by observing activities in this field and reviewing induction information. If this is not practicable, observation in realistic simulated environments may be substituted.

Guidance information for assessment

Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry

needs, it may be necessary to refer to portfolio case studies of a variety of spatial information services requirements to assess competency.

Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical).

Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff.

All practical demonstration must adhere to the safety and environmental regulations relevant to each State or Territory.

Where assessment is for the purpose of recognition (recognition of current competencies [RCC] or recognition of prior learning [RPL]), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge.

Assessment processes will be appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

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 in the performance criteria is detailed below. Add any 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.

Complex spatial and aspatial data may:

- include data combinations from:
 - echo sounder
 - global positioning system
 - level

- photogrammetry
- remote sensing
- total station
- relate to data without a spatial component
- relate to:
 - depth
 - dimension
 - direction
 - height
 - position
 - the manner in which data combinations and contingencies interact.

Constraints may include:

- coverage
- datum
- environmental factors
- industry requirements
- legal and statutory
- financial.

Specifications refer to:

- detailed technical descriptions of the survey data and its requirements.

Client requirements refer to description of outputs and may be contained in:

- contracts
- memos
- tender briefs
- verbal instructions
- written instructions.

Techniques may include:

- field
- office procedures.

Organisational guidelines may include:

- appropriate timelines
- code of ethics
- company policy
- final product formats
- formal design parameters
- legislation relevant to the work or service function
- manuals
- OHS policies and procedures
- personnel practices and guidelines outlining teamwork, work roles and responsibilities
- requirements for data processing.

Design may include:

- digital information
- hard copy plans
- maps

- Spatial data components*** may include:
- written instructions.
 - depth
 - dimension
 - direction
 - flow rates
 - position
 - slope.
- OHS*** may include:
- Australian standards
 - development of site safety plan
 - identification of potential hazards
 - inspection of work sites
 - training staff in OHS requirements
 - use of equipment and signage.
- Legislative requirements*** may include:
- Australian standards
 - award and enterprise agreements
 - certification requirements
 - codes of practice
 - copyright
 - quality assurance requirements.
- Legal and statutory standards*** may include:
- local government requirements
 - national standards
 - state statutes and regulations.
- Supervisory processes*** may include:
- directing activity
 - implementing
 - meeting deadlines
 - monitoring
 - planning
 - overseeing practices
 - reviewing
 - targeting.
- Time available*** may involve estimates for time duration of project, including:
- client instructions
 - consideration of contingencies
 - consideration of past project experiences
 - experience of project personnel
 - location of project
 - methods to be employed
 - resources and equipment to be used.
- Administrative and legal requirements*** may include:
- access protocols and obligations
 - Australian standards, quality assurance and certification requirements
 - award and enterprise agreements

- licensing arrangements
- organisational protocols for accessing physical, financial and human resources
- reimbursements
- Indigenous considerations
- relevant codes of practice
- relevant state, territory and federal legislation affecting organisational operations, including:
 - anti-discrimination and diversity
 - copyright and digital copyright
 - equal employment opportunity (EEO)
 - industrial relations
- royalty obligations
- title search processes
- understanding of company OHS guidelines.

Index:

- complexity may require several notations for cross-referencing
- may be in digital format
- hard copy.

Organisational guidelines may include:

- electronic format
- equipment specifications
- operator manuals
- printed product instructions and information
- spatial database
- warranty documents.

Method of complex spatial data storage may include:

- cross-referencing
- digital
- hard copy
- combination of digital and hard copy.

Distribution method refers to:

- network access to an authoritative data source that can accommodate storage in digital or hard copy format.

Contingencies may include:

- duplicates
- fireproof storage
- insurance
- media malfunction
- media and formats becoming outdated
- offsite storage
- storage in different media.

Risk management plan may include:

- effective management
- budgetary constraints
- timelines

Relevant personnel may include:

- clearly identified project stages
- sound internal audit processes.
- colleagues
- managers
- personnel such as field hands and administrative staff
- supervisors
- surveyors.

Unit Sector(s)

Unit sector

Spatial information services