



Australian Government

CPPSIS5038A Develop a complex spatial and aspatial database

Release 1

CPPSIS5038A Develop a complex spatial and aspatial database

Modification History

Unit revised and not equivalent to CPPSIS5008A Develop a complex spatial and aspatial database

Element structure, performance criteria, and critical aspects reviewed to reflect workplace requirements

Skills and knowledge requirements and the range statement updated

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

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.

Licensing/Regulatory Information

No licensing, legislative and regulatory requirements apply to this unit at the time of endorsement.

Pre-Requisites

Nil

Employability Skills Information

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 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

- | | | |
|---|--|---|
| 1 | Prepare for the storage of complex spatial data. | <p>1.1 <i>Complex spatial and aspatial data</i> storage requirements and <i>constraints</i> are defined according to written spatial <i>specifications</i> and <i>client requirements</i>.</p> <p>1.2 Details of storage <i>techniques</i> to be used are considered and evaluated according to <i>organisational guidelines</i>.</p> <p>1.3 Data <i>design</i> is interpreted to identify <i>spatial data components</i> to be maintained.</p> <p>1.4 <i>OHS</i> and <i>legislative requirements</i> are adhered to.</p> <p>1.5 Pertinent <i>legal and statutory standards</i> are considered and adhered to.</p> <p>1.6 Work is allocated to appropriate personnel and <i>supervisory processes</i>, checks and measures are implemented to ensure work is completed within <i>time available</i>.</p> |
| 2 | Store complex spatial data. | <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 <i>Administrative and legal requirements</i> for data storage are complied with and recorded.</p> <p>2.3 Complex spatial data is recorded in an <i>index</i> according to <i>organisational guidelines</i>.</p> <p>2.4 Complex spatial data is backed up according to organisational guidelines.</p> |

- 2.5 **Method of complex spatial data storage** is selected according to organisational guidelines.
 - 2.6 **Distribution method** is determined to ensure that the most current data is available.
- 3 Access and retrieve spatial data.
 - 3.1 Arrangements are put in place for the use of the indexing system to locate complex spatial data source.
 - 3.2 Complex spatial data is translated into required format where necessary.
- 4 Manage contingencies.
 - 4.1 Reasonable **contingencies** and potential problems are considered in the development of a **risk management plan**.
 - 4.2 Contingency plans are communicated to **relevant personnel** and implemented where necessary.

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 verify reliability
- communication skills to:
 - consult effectively with clients and colleagues
 - impart knowledge and ideas through oral, written and visual means
- computer skills to:
 - complete business documentation
 - use software, hardware and networking applications
- literacy skills to:
 - assess and use workplace information
 - develop policy and guidelines
 - prepare and manage documentation
 - read and write technical reports
 - research and evaluate
- 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
- project management skills to coordinate spatial and aspatial database requirements
- spatial skills to:
 - archive and retrieve spatial data
 - manage and manipulate spatial data
 - manage files
 - team leadership to provide guidance to personnel

Required knowledge

- classification systems, processes and products linked to specification
- corporate information database environment
- current indexing systems
- data retrieval methods, querying and browsing
- key features of coordinating reference systems
- industry metadata standards, including positional accuracy, currency, coordinate system, metric system, lineage and source
- network and security guidelines
- organisational policies and guidelines relating to spatial and aspatial databases
- risk management principles as applied to spatial data storage
- 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 to maintain spatial and aspatial data
- understanding of errors, accuracy and precision in data systems to ensure that complex spatial data systems are maintained accurately

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 CPPSIS5043A 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
- knowledge of complex database systems.

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 of 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, that may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace.

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

Guidance information for

Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly

assessment

defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of surveying and 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

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 navigation satellite system (GNSS)
 - 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
 - written instructions.
- Spatial data components** may include:
- 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**
- access protocols and obligations

- requirements*** may include:
- 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
 - 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
 - clearly identified project stages
 - sound internal audit processes.
- Relevant personnel*** may include:
- colleagues
 - managers
 - personnel such as field hands and administrative staff
 - supervisors
 - surveyors.

Unit Sector(s)

Surveying and spatial information services

Custom Content Section

Not applicable.