



Australian Government

Department of Education, Employment and Workplace Relations

CPPSIS6010A Undertake spatial information services research and development

Release: 1

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Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to undertake research and development within the spatial information services (SIS) area. It requires the ability to demonstrate a broad and specialised spatial data knowledge base, and to incorporate technical and creative skills to plan and execute activity to meet deliverables. Functions will entail complying with and developing or amending organisational guidelines.

Application of the Unit

Application of the unit

This unit of competency supports high-level project management activity in the SIS industry sector. It requires the application of planning, organisational, high-level communication, negotiation and problem-solving skills; the ability to demonstrate initiative and enterprise; and an understanding of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in information services, surveying, cartography, town planning, mapping and 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
1 Identify specific data and information requirements.	1.1 Organisational guidelines are analysed to determine specific needs and spatial data requirements. 1.2 Contents are discussed with relevant personnel. 1.3 Skills and knowledge are updated to accommodate research and design methods.
2 Identify research requirements.	2.1 Purpose of research is clarified. 2.2 Options for obtaining information and spatial data are identified. 2.3 Potential for development in SIS is identified.
3 Obtain data.	3.1 Literature and information searches are undertaken to evaluate current market demands and developments. 3.2 Possible stakeholders are identified based on the parameters of the potential development. 3.3 Results of the information search are documented and communicated according to organisational guidelines. 3.4 Funding sources are identified to match the potential development.
4 Prepare draft research proposal.	4.1 Information is included in the research proposal relating to identified risks and contingencies, resources, technology details and techniques to be used to collect data in the specified format. 4.2 Pertinent legal and statutory standards, OHS and legislative requirements are incorporated into the research proposal. 4.3 Research on background analysis is documented in the drafting of the research proposal. 4.4 Effectiveness of the data is checked to ensure clear and concise language is used so that key points and draft recommendations are understood. 4.5 Sources of information are acknowledged and recorded.
5 Produce final research proposal.	5.1 Research proposal is developed according to organisational guidelines, including aims, objectives, expected outcomes and contingencies. 5.2 Range of methodologies is evaluated against project plan and suitable method is chosen. 5.3 Work plan and budget, including resource requirements, are developed and negotiated with research workers. 5.4 Proposal to proceed is prepared and appropriate support is obtained. 5.5 Accuracy and relevance is established when information is collated.

ELEMENT**PERFORMANCE CRITERIA**

5.6 Research brief, including methodologies not used are ***filed or stored*** for future use according to organisational guidelines.

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 relate to people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities
- advanced written skills
- business negotiation
- communication skills to:
 - consult effectively with clients and colleagues, building on others' ideas to advance discussion and questioning others to clarify ideas
 - explore ideas in discussion
 - impart knowledge and ideas through oral, written and visual means
 - listen and question to clarify and elicit information
 - participate effectively in verbal interactions
- computer skills (high technical user level) to develop business documentation
- contractual management
- delegation of duties
- design
- information management
- literacy skills to:
 - assess, develop and use workplace information
 - develop detailed understanding of enterprise policies and procedures in order to identify current and future needs and opportunities
 - locate and interpret legislation and other written documentation
 - prepare and manage documentation and information flow
 - read and write key performance reports, including technical reports
 - research and evaluate (high level) in order to source SIS educational information
 - write complex flow chart in order to identify and distil information
 - write detailed text identifying specific course of action and detailing alternatives after defining the needs of audience and purpose of information

REQUIRED SKILLS AND KNOWLEDGE

- numeracy skills to:
 - analyse errors
 - conduct image analysis
 - estimate costs
 - interpret and analyse statistics
 - perform mental calculations
 - record with accuracy and precision
 - undertake high level computations
- organisational skills to:
 - plan and coordinate technical and human resource inputs to research activities
 - plan and prioritise activities to meet contractual requirements
- spatial skills to:
 - exercise precision and accuracy in relation to spatial and aspatial data design
 - perform spatial data archival and retrieval and train others in this task
 - perform spatial data management and manipulation and train others in this task
 - perform file management and train others in this task
 - solve complex problems relating to height, depth, breadth, dimension, direction and position in actual operational activity and virtual representation
 - train others in spatial precision techniques
 - understand implications of height, depth, breadth, dimension and position to actual operational activity and virtual representation
- present information
- problem-solving skills in order to select appropriate course of action from a wide variety of options
- proofreading and editing
- quality assurance
- research and analytical skills to:
 - assemble evidence and evaluate for accuracy and relevance
 - review and proofread own writing
 - summarise data in a logically coherent structure
 - use and follow academic procedure for research techniques and copyright procedures
 - use a variety of strategies for planning
- technical manual interpretation
- use relevant software, hardware and equipment.

Required knowledge and understanding:

- copyright and other relevant legislation
- data presentation techniques
- design methods

REQUIRED SKILLS AND KNOWLEDGE

- enterprise policies and procedures across the range of required tasks
- enterprise report formats
- guideline development
- information management
- legislation as it applies to the spatial industry sector
- measurement techniques
- methods of assessing existing spatial datasets and dataset sources
- organisational policies and guidelines, such as OHS guidelines
- project management tools, techniques and methodologies
- performance evaluation procedures
- presentation methods
- research techniques
- risk management principles
- safe work practices
- spatial data capture methodologies
- spatial information principles and their application
- SIS project contingencies
- spatial referencing systems
- spatial technologies
- sources of data relevant to the research
- standard and enterprise-preferred referencing techniques
- use of metadata
- use of relevant equipment
- use of relevant software packages.

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 CPPSIS6004A Design a spatial project plan.

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:

- applying cost consideration

- applying qualitative and quantitative measurements for a project
- applying analysis and design skills
- assessing contingencies
- communication and negotiation skills
- creating and implementing new product solutions
- designing computations
- determining precise data requirements
- developing new products
- documenting risks and contingencies
- understanding spatial project deliverables.

Specific resources for assessment

Resource implications for assessment include access to:

- assessment instruments, including personal planner and assessment record book
- assignment instructions, work plans and schedules, policy documents and duty statements
- 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

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 SIS 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.

Organisational guidelines
may include:

- code of ethics
- company policy
- legislation relevant to the work or service function
- manuals
- OHS policies and procedures
- personnel practices and guidelines outlining work roles and responsibilities.

Spatial data requirements
may include:

- administration (e.g. postcodes, suburbs, and federal and state electoral counties)
- analysis of environmental, land and geographic information
- asset management
- cartographic services
- civil engineering
- digital imagery
- electricity
- emergency services management
- environmental datasets
- geographic information systems
- integrated services - environmental, land and geographic related datasets
- land ownership tenure system
- local government
- location-based services
- global positioning
- mapping facilities
- site analysis
- survey marks
- sewerage
- telecommunications
- town planning
- utility services such as water.

Contents may include:

- appendices
- bibliography
- introduction
- computations
- design details
- executive summary
- financial figures
- footnotes and endnotes
- graphs
- graphics
- illustrations
- index
- research findings
- recommendations
- sales figures and reports
- spatial data components
- spatial requirements
- statistics
- summaries
- table of contents.

Relevant personnel may include:

- colleagues
- registered surveyors
- site personnel
- staff or employee representatives
- supervisors or line managers
- suppliers
- users.

Purpose of research may include:

- consultation with client
- consultation with manager or supervisor
- review of any documented meetings or discussions relevant to the research
- review of client request
- review of proposed research documentation.

Options of obtaining information may include:

- conferences
- databases
- designs
- emails
- faxes
- files
- internet
- libraries
- meeting and speaking with personnel or external

experts

- memos
- newspapers and journals
- reports
- specifications
- teleconferences
- telephone.

- Spatial data*** may:
- include data from:
 - echo sounder
 - global positioning system units
 - level
 - photogrammetry
 - remote sensing
 - total station
 - relate to:
 - depth
 - dimension
 - direction
 - height
 - position.
- Stakeholders*** may include:
- human resource personnel: internal or external
 - procurement agency: internal or external management.
- Information*** may include:
- design
 - digital or hard copy
 - illustrations
 - maps
 - metadata
 - spatial data components
 - text.
- Documented*** may include:
- databases
 - detailed technical description of the spatial data and its qualifiers
 - emails
 - faxes
 - quotations and estimates
 - reports
 - standard letters
 - tax invoices
 - statements.
- Contingencies*** may include:
- equipment failure
 - injury to personnel
 - personnel turnover
 - observation errors
 - obstructions to research
 - weather.
- Legal and statutory standards*** may include:
- confidentiality
 - copyright law
 - local government requirements

- national standards
- plagiarism
- privacy
- security
- slander
- state statutes and regulations.

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
- equal employment opportunity (EEO)
- quality assurance requirements.

Drafting of the research proposal may include:

- effective design and presentation of document
- making provision for comments and corrections of document
- thoroughly checking relevance and accuracy of all data.

Effectiveness of data may include:

- client satisfaction
- logical organisation of report, including:
 - location of information
 - list of figures and illustrations
 - relevance of appendices
 - sequence of topics
 - table of contents that reflects a logical flow of information
- reflecting intended aims
- relevance
- usefulness.

Clear and concise language may include:

- ensuring correct grammar, punctuation and spelling
- incorporating appropriate jargon and acronyms
- logical language structure
- using correct words.

Key points may include:

- aims
- charts and graphs, if intrinsic to the purpose
- conclusions
- evidence
- executive summary
- findings
- pertinent information to purpose
- purpose
- recommendations.

Draft recommendations
may include:

- modifications
- new services or products
- policy review
- urgent actions.

Acknowledged and recorded may include:

- acknowledgements
- bibliography
- following enterprise referencing policies and procedures
- footnotes and endnotes
- identifying sources clearly and correctly
- including full references.

Methodologies may include:

- data search
- expanding original research
- site work.

Accuracy and relevance
may include:

- consistent meaning and layout
- correct computations
- correct spelling, grammar and punctuation
- intended meaning is clear
- no omissions or oversights
- reliable data
- timely, up-to-date information.

Collated for processing may include:

- analysing relevance of data
- checking, cross-checking and re-checking data before and after processing
- collecting data in computer files, index cards or bound notebooks
- detailing data sources and date received
- organising information by theme, date, subject or source
- recording oral information.

Filed or stored may include:

- digital format
- hard copy.

Unit Sector(s)

Unit sector

Spatial information services