



Australian Government

CPPSIS6030A Undertake spatial information services research and development

Release 1

CPPSIS6030A Undertake spatial information services research and development

Modification History

Unit revised and not equivalent to CPPSIS6010A Undertake spatial information services research and development

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

References to sustainability strengthened

Skills and knowledge requirements and the range statement updated

Unit Descriptor

This unit of competency specifies the outcomes required to undertake research and development within the surveying and spatial information services (SSIS) 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

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.

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	Identify specific data and information requirements.	1.1	<i>Organisational guidelines</i> are analysed to determine specific needs and <i>spatial data requirements</i> .
		1.2	<i>Contents</i> are discussed with <i>relevant personnel</i> .
2	Identify research requirements.	2.1	<i>Purpose of research</i> is clarified.
		2.2	<i>Options for obtaining information</i> and <i>spatial data</i> 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 <i>stakeholders</i> are identified based on the parameters of the potential development.
		3.3	Results of the <i>information</i> search are <i>documented</i> 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 <i>contingencies</i> , resources, technology details and techniques to be used to collect data in the specified format.
		4.2	Pertinent <i>legal and statutory standards, environmental,</i>

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

Required Skills and Knowledge

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

Required 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
 - present information
 - computer skills to develop business documentation
- initiative and enterprise skills to:
 - delegate duties
 - manage contracts and information
- literacy skills to:
 - advanced written skills
 - assess, develop and use workplace information
 - develop detailed understanding of enterprise policies and procedures in order to identify current and future needs and opportunities
 - read and write key performance reports, including technical reports
 - research and evaluate in order to source SIS 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
- 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:
 - design spatial projects
 - exercise precision and accuracy in relation to spatial and aspatial data design
 - archive and retrieve spatial data
 - manage and manipulate spatial data
 - manage files
 - 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
 - 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

- copyright and other relevant legislation
- data presentation techniques
- design methods
- 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
- metadata
- methods of assessing existing spatial datasets and dataset sources
- organisational policies and guidelines, such as OHS guidelines
- project management tools, techniques and methodologies
- presentation methods
- relevant software packages

- 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

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 CPPSIS6024A 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 analysis and design skills • creating new product solutions • determining precise data requirements • documenting risks and contingencies • conducting spatial project deliverables • knowledge of spatial information principles .
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

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 navigation satellite system (GNSS) 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.
- Environmental requirements** may include:
- contamination
 - disposal of hazardous and non-hazardous materials
 - recycling
 - waste management
 - waste minimisation.
- OHS requirements** 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
 - 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)

Surveying and spatial information services

Custom Content Section

Not applicable.