CPPSIS6027A Design spatial information services project deliverables

Release 1

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Modification History

Unit revised and not equivalent to CPPSIS6007A Design spatial information services project deliverables
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 analyse spatial requirements and design a product to meet client requirements. It requires the ability to analyse, diagnose, design and execute judgements across broad spatial project deliverables and accountability for personal and group outcomes. 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 surveying and spatial information services (SSIS) industry sector. It requires the application of planning, organisational, high-level communication, negotiation and problem-solving skills; interpreting technical documentation; 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 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	Scope spatial design requirements.	1.1	**_Client instructions_** are analysed to determine specific needs and **_spatial data requirements_**.
		1.2	Spatial data requirements and **_constraints_** are identified through further consultation with **_client_** and outcomes are recorded according to **_organisational guidelines_**.
		1.3	Site assessment is conducted, when required, to clarify the scope of the job and outcomes are recorded according to organisational guidelines.
2	Plan spatial design project.	2.1	Project objectives, deliverables, constraints and **_principal work activities_** are defined and documented according to written spatial data **_specifications_** and client requirements.
		2.2	Information is included in the plan relating to identified risks and **_contingencies_**, resources, technology details and techniques to be used to collect data in the specified format.
		2.3	Information on the validation process is specified in the plan to verify the integrity of the required spatial data.
		2.4	**_Design_** is interpreted to identify **_spatial data components_** to be controlled or monitored.
		2.5	**_Hazards_** and risks in the work site are identified according to organisational guidelines and **_OHS_** and **_legislative requirements_**.
		2.6	Pertinent **_legal and statutory standards_** are considered

and adhered to.

		2.7	Organisation of appropriate resources, equipment, materials and transport required for the project is designated to *relevant personnel*.
		2.8	Research on background analysis is documented.
3	Analyse, compute and design.	3.1	Work is allocated to appropriate personnel and *supervisory processes*, checks and measures are implemented.
		3.2	*Project management mechanisms* are implemented to measure, record and report progress of activities in relation to the agreed schedule and plans.
		3.3	Calculations and analysis are undertaken for product development.
		3.4	Design is prepared according to organisational and approving authorities' guidelines and requirements.
		3.5	Contingencies and constraints are managed to ensure project meets specifications.
		3.6	Progress is reviewed throughout project life cycle, with agreed changes implemented to ensure consistency with client needs, project scope, objectives and constraints.
		3.7	*Quality assurance processes* are implemented based on the project plan.
4	Present analysis, computations and design.	4.1	Product is validated for presentation.
		4.2	Outputs are validated against client requirements.
		4.3	*Metadata* is created according to organisational guidelines.
		4.4	*Written specifications* of design are communicated to relevant personnel and *stored* according to organisational guidelines.

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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
    - impart knowledge and ideas through oral, written and visual means
    - present information
- computer skills to develop business documentation and use software, hardware and equipment
- design skills to prepare digital information and report documentation
- initiative and enterprise skills to:
    - delegate duties
    - undertake day-to-day human resource management
- literacy skills to:
    - assess, develop and use workplace information
    - read and write key performance reports, including technical reports
    - research and evaluate
- 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:
    - manage contracts and information
    - plan and coordinate technical and human resource inputs to research activities
    - plan and prioritise activities to meet contractual requirements
    - quality assurance skills to determine if product or service meets specifications
- spatial skills to:
    - exercise precision and accuracy in all spatial project activity
    - archive and retrieve spatial data
    - manage and manipulate spatial data

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- 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

Required knowledge

- advanced computation methods
- design methods
- information management
- legislation as it applies to the spatial industry sector
- metadata
- methods of assessing existing spatial datasets and dataset sources
- organisational policies and guidelines
- project management tools, techniques and methodologies
- quality assurance principles
- presentation methods
- project review procedures
- relevant software packages
- safe work practices
- spatial data capture methodologies
- spatial information principles and their application
- SIS project contingencies
- spatial referencing systems
- spatial technologies

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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 CPPSIS6023A Determine client spatial requirements, and 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 considerations • applying qualitative and quantitative measurements for a project • applying analysis and design skills • assessing and acting upon contingencies • designing computations • determining precise data requirements • knowledge of spatial project processes.
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.

Client instructions refer to description of outputs and may be contained in:	• contracts • memos • tender briefs • verbal instructions • written instructions.
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.
Constraints may include:	• contractual arrangements • resource availability • time.

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Client may include:	• customers with routine or special requests
	• external to organisation
	• internal to organisation
	• regular and new customers, including:
	    • business enterprises
	    • government agencies
	    • members of the public
	    • suppliers.

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.
Principal work activities may include the survey design of:	• bridge • building construction (domestic and commercial) • railway • roads • sewerage system • stormwater system.
Specifications may include:	• detailed technical descriptions of spatial data and its requirements • preparation of cross-sections and plans with all information included.
Contingencies may include:	• environmental issues • equipment failure • injury to personnel • personnel turnover • observation errors • obstructions to work activity • weather.
Design may include:	• digital information • hard copy plans • maps • written instructions.
Spatial data components may include:	• depth • dimension • direction • flow rates • position

- slope.

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Hazards may include:	• awkward and repetitive postures • damaged or inappropriate equipment • electrical problems arising for cables, electrical fittings (switches and lights) and untested electrical equipment • environmental impact • mobile vehicle problems around plant and vehicles • moving and unguarded machinery and equipment • noise • occupational violence and bullying • poor manual handling techniques • poor personal hygiene practices • repetitive motion, force and vibration • syringes or other sharp objects • ultraviolet light • underfoot conditions e.g. slippery, uneven and rough surfaces • unrestricted people access • work in isolated and remote environments.
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 • quality assurance requirements.
Legal and statutory standards may include:	• local government requirements • national standards • state statutes and regulations.
Relevant personnel may include:	• colleagues • registered surveyors • site personnel • staff or employee representatives • supervisors or line managers • suppliers • users.
Supervisory processes may include:	• delegating • implementing • meeting deadlines

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	• monitoring
	• overseeing practices
	• planning
	• reviewing
	• targeting.
Project management mechanisms **may include:**	• communication with stakeholders
	• dispute resolution guidelines
	• monitoring and adjusting key milestones
	• progress reports.
Quality assurance processes **may include:**	• internal and external
	• product or service measurement against set criteria
	• standard verification
	• target monitoring.
Metadata **refers to:**	• summarised information about a spatial dataset that describes the characteristics of the dataset, including:
	• availability
	• conditions of use
	• coordinate system
	• currency
	• date of acquisition
	• quality
	• source
	• spatial data acquisition methodologies
	• version control.
Written specification **refers to:**	• detailed technical description of the spatial data and its qualifiers.
Stored **may include:**	• digital format
	• hard copy.

Unit Sector(s)

Surveying and spatial information services

Custom Content Section

Not applicable.