

Draft 0.1

This is a draft update to CPPSIS6040 Develop 2-D and 3-D terrain visualisations:

<https://training.gov.au/Training/Details/CPPSIS6040>.

Code changed to CPPSUR6040.

Changed PCs to active voice.

Changed 'person' to 'candidate' in PE.

Range of Conditions added to Knowledge Evidence.

I've added mapping info.

TAG will need to reassess this as unit is redeveloped.

Unit of Competency

CPPSUR6040 Develop 2-D and 3-D terrain visualisations

Modification history

Release	Comments
1	Replaces superseded equivalent CPPSIS6040A Develop 2-D and 3-D terrain visualisations. This version first released with CPP Property Services Training Package Version 3.
	Replaces superseded equivalent CPPSIS6040 Develop 2-D and 3-D terrain visualisations

Application

This unit specifies the skills and knowledge required to develop two-dimensional (2-D) and three-dimensional (3-D) visualisations in a geographic information system (GIS) or computer-aided design (CAD) context. It requires the ability to apply wide-ranging specialised technical, creative and conceptual skills and a broad knowledge of spatial datasets. The unit requires the development of technical documentation incorporating mapping and scientific techniques, as well as the ability to communicate graphically. It also requires an understanding of the latest technologies that are available to remotely capture raw elevation data.

The unit supports those who work in a technical management role in a spatial information services team in areas such as cartography, town planning, mapping and GIS.

No licensing, legislative, regulatory, or certification requirements apply to this unit of competency at the time of publication.

Prerequisite Unit

None

Unit Sector

Surveying and spatial information services

Elements and Performance Criteria

1. Prepare 2-D or 3-D digital elevation model (DEM).	1.1 Design GIS or CAD environment or surface elevation according to project specifications and organisational requirements. 1.2 Investigate current remote sensing technologies for capturing raw elevation data. 1.3 Establish views and layouts according to job specifications. 1.4 Select and set up spatial computing platforms and software systems for suitability against job specifications according to organisational requirements.
2. Create 2-D drawings.	2.1 Verify availability of suitable data with potential suppliers and constraints are assessed according to job specifications. 2.2 Create detailed views and layouts using various scales according to job specifications. 2.3 Finalise 2-D drawings and modify existing 2-D model as necessary to meet job specifications.
3. Create 3-D model or DEM.	3.1 Model surface elevation by mathematically defined surfaces and by point or line data according to job specifications.

	<p>3.2 Determine products that can be derived from a DEM according to job specifications.</p> <p>3.3 Create and manipulate entities in 3-D space according to job specifications.</p> <p>3.4 Develop DEM with a range of thematic data and generate and drape profiles over model according to project specifications.</p> <p>3.5 Create contour map of area by employing procedures appropriate to data format and software according to job specifications.</p> <p>3.6 Create slope map of area from gradient and aspect components according to job specifications.</p> <p>3.7 Create shaded relief map of area from gradient and relief map representations according to job specifications.</p> <p>3.8 Finalise 3-D model and modify existing 3-D model as necessary to meet job specifications.</p>
4. Produce output.	<p>4.1 Document 2-D and 3-D outputs according to project specifications and organisational requirements.</p> <p>4.2 Save drawing files and elevation data outputs in appropriate format according to job specifications and organisational requirements.</p> <p>4.3 Extract physical properties to job specifications and slope map of area is used for analytical purposes.</p>

Foundation Skills

Candidates require:

- initiative and enterprise skills to:
 - extract and output information from engineering and environmental plans
 - translate specifications into drawing and analysis design
 - understand how raw elevation data is captured and assigned quality measures
- numeracy skills to:
 - apply quality and accuracy measures on modelled 2-D and 3-D outputs
 - apply understanding of height, depth, breadth, dimension and position to actual operational activity and virtual representation
 - use appropriate interpolation techniques to convert from point to raster data
- oral communication skills to:
 - liaise with clients and end users to identify project requirements and drawing detail
- reading skills to:
 - interpret graphical information, including rasters
 - interpret technical drawing standards
 - interpret engineering and environmental plans
- technology skills to:
 - conduct web-based searches and use digital techniques
 - operate hardware, including computers and plotters.

Unit Mapping Information

Supersedes and is equivalent to CPPSIS6040 Develop 2-D and 3-D terrain visualisations

Links

Companion Volume Implementation Guide:

<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b>

Assessment Requirements for CPPSUR6040 Develop 2-D and 3-D terrain visualisations

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Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria of this unit by:

- using a geographic information system (GIS) or computer-aided design (CAD) environment to develop two-dimensional (2-D) and three-dimensional (3-D) terrain visualisations that meet specifications for two different projects.

While developing the above 2-D and 3-D terrain visualisations, the candidate must:

- analyse and define job specifications, constraints and main work activities
- conduct web-based searches to identify available spatial data and verify its suitability to meet drawing specifications
- prepare the CAD environment by setting up the hardware and software system and drawing defaults and customising menus
- design the surface elevation, orientation and views to meet job specifications
- exercise precision and accuracy in relation to terrain visualisations
- select and use spatial computing platforms and software systems to prepare drawings and models that meet specifications relating to:
 - accuracy
 - completeness
 - coverage
 - density
 - logical consistency
- use appropriate interpolation techniques to convert from vector to raster data
- communicate clearly with clients and colleagues to clarify design requirements and detail
- comply with standard operating procedures, drawing standards and organisational requirements relating to:
 - completing records and reporting
 - quality and risk management
 - working safely when using the equipment specified in the assessment conditions
- create and manipulate entities in 3-D space to develop contour, slope and shaded relief maps of an area
- create detailed 2-D views using various scales
- create a digital elevation model in 3-D using mathematically defined surfaces and point or line data
- identify and assess constraints and problems relating to spatial data
- save drawing files in a range of formats.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- computer platforms and software for GIS, CAD and digital elevation models (DEM)
- copyright and ownership constraints relating to spatial data
- data formats and precision and accuracy requirements for preparing terrain visualisations in 2-D drawings and 3-D models
- digital image processing techniques
- display principles, including:
 - colour
 - composition
 - font type
 - legends
 - media
 - scale
 - size
 - text and line style
- existing spatial datasets and dataset sources
- GIS and CAD principles, capabilities and uses in relation to creating terrain visualisations
- methods for validating spatial data sources and constraints on use
- organisational requirements relating to records and reporting
- remote sensing technologies that capture raw elevation data
- key features of spatial referencing systems
- techniques for modifying existing 2-D and 3-D models
- types of products that can be derived from a DEM.

Assessment Conditions

Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations.

Assessment must be conducted in the workplace or a simulated workplace using realistic conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations.

Candidates must have access to:

- equipment:
 - personal computer, including GIS or CAD applications and software appropriate for developing 2-D and 3-D terrain visualisations
 - hardware, including printer, scanner, plotter and multimedia devices and peripherals
- specifications:
 - project and design specifications
 - organisational policies, procedures and documentation relating to:
 - quality measures relating to 2-D and 3-D terrain visualisations
 - data privacy and information copyright
- physical conditions:
 - access to equipped work station
- relationships with team members and supervisor:
 - lead role in a team
- relationships with client:

- client consultation required.

Links

Companion Volume Implementation Guide:

<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b>