



Australian Government

CPPSSI6040 Develop 2-D and 3-D terrain visualisations

Release: 1

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Modification History

Release 1 This version first released with CPP Property Services Training Package Release 12.0.

This unit supersedes and is equivalent to 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 includes the application of specialised technical and conceptual skills and a broad knowledge of spatial datasets. The unit also includes the development of technical documentation incorporating mapping and scientific techniques.

This unit is suitable for surveyors who use broad theoretical and technical knowledge to analyse information as well as interpret and provide solutions to unpredictable and sometimes complex surveying/spatial information problems. 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.

All work must be carried out to comply with workplace procedures, in accordance with relevant state/territory regulations that govern surveying work, as well as work health and safety (WHS) legislation and regulations that apply to the workplace.

Cadastral surveying must be undertaken under the supervision of a registered surveyor. Users must check with the relevant regulatory state/territory authority before delivery.

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

Pre-requisite Unit

Nil.

Unit Sector

Surveying and Spatial Information Services

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe what needs to be done to demonstrate achievement of the element.

- 1 Prepare 2-D or 3-D digital elevation model (DEM).
 - 1.1 Analyse job specifications, constraints and main work activities.
 - 1.2 Prepare CAD environment by setting up hardware and software systems, drawing defaults and customising menus.
 - 1.3 Design GIS or CAD environment of surface elevation according to project specifications and organisational requirements.
 - 1.4 Establish views and layouts according to job specifications.
 - 1.5 Investigate current remote sensing technologies for capturing raw elevation data.
 - 1.6 Conduct searches to identify available spatial data and evaluate and obtain suitable data to meet drawing specifications.
 - 1.7 Apply organisational requirements relating to working safely when using screen-based equipment.
- 2 Create 2-D drawings.
 - 2.1 Create detailed views and layouts using various scales according to job specifications.
 - 2.2 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.
 - 3.2 Determine products that can be derived from a DEM according to job specifications.
 - 3.3 Create and manipulate entities in 3-D space according to job specifications.
 - 3.4 Develop DEM with a range of thematic data and generate and drape profiles over model according to project specifications.
 - 3.5 Create contour map of area by employing procedures appropriate to data format and software according to job

specifications.

- 3.6 Create slope map of area from gradient and aspect components according to job specifications.
 - 3.7 Create shaded relief map of area from gradient and relief map representations according to job specifications.
 - 3.8 Finalise 3-D drawings and modify existing 3-D model as necessary to meet job specifications.
- 4 Produce output.
- 4.1 Apply quality and accuracy measures on modelled 2-D and 3-D outputs.
 - 4.2 Document 2-D and 3-D outputs according to project specifications and organisational requirements.
 - 4.3 Save drawing files and elevation data outputs in appropriate format according to job specifications and organisational requirements.
 - 4.4 Extract physical properties to job specifications and use slope map of area for analytical purposes.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

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

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b>

Assessment Requirements for CPPSSI6040 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.

For each project, the candidate must prepare drawings and models that meet specifications for accuracy, completeness, coverage, density and logical consistency.

For the 3-D terrain visualisations, the candidate must:

- develop contour, slope and shaded relief maps of an area by creating and manipulating entities in 3-D space
- create a digital elevation model in 3-D using mathematically defined surfaces and point or line data.

Knowledge Evidence

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

- interpretation of:
 - engineering and environmental plans
 - graphical information, including rasters
 - technical drawing standards
 - height, depth, breadth, dimension and position in terms of operational activity and virtual representation
- interpolation techniques to convert from point to raster data
- computer platforms and software for GIS, CAD and digital elevation models (DEMs)
- legislative requirements for data, copyright and licensing
- data formats and precision and accuracy requirements for preparing terrain visualisations in 2-D drawings and 3-D models
- techniques for processing and displaying digital images
- sources for existing spatial datasets

- methods for capture of raw elevation data
- GIS and CAD principles, capabilities and uses in relation to creating terrain visualisations
- methods for validating spatial data sources
- types of data set constraints
- 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.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting where these skills and knowledge would be performed.

Candidates must have access to:

- computer, including GIS or CAD applications and software appropriate for developing 2-D and 3-D terrain visualisations
- printer, scanner, plotter and multimedia devices and peripherals.

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