Australian Government

Department of Education, Employment and Workplace Relations

ICAGAM524A Integrate multiple data sources into interactive 3-D environments

Release: 1

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Modification History

Release	Comments
Release 1	This Unit first released with *ICA11 Information and Communications Technology Training Package version 1.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to integrate multiple data sources into interactive 3-D environments.

Application of the Unit

This unit applies to concept artists, game designers, games programmers, animators and other personnel working in the game development industry.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

Elements and Performance Criteria

1. Catalogue elements to integrate into the interactive 3-D environment	1.1 Research and identify ***data sources*** that can be integrated into interactive 3-D environments 1.2 Identify data sources that will be integrated to suit the environment, ***game design, game genre, game mechanics, game-play elements***, and ***level specifications*** 1.3 Obtain or create data sources for the interactive 3-D environment
2. Identify tools that can be used to integrate assets	2.1 Identify ***tools and libraries*** for integration of identified elements into the 3-D environment 2.2 Review and document how the tools work
3. Integrate sources into the interactive 3-D environment	3.1 ***Create prototypes*** and integrate elements into the interactive 3-D environment using the identified tools 3.2 Test the integration of the elements 3.3 Ensure the elements' integrity during implementation is maintained
4. Present and evaluate completed 3-D environment with all data sources included	4.1 Present the interactive 3-D environment to appropriate ***personnel*** 4.2 Review ***feedback*** from presentation 4.3 ***Evaluate*** and justify implementation using tools for the data sources

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to:
  - analyse multiple data sources to inform integration into interactive 3-D environment
  - interpret briefs, work instructions, and technical and conceptual information
- communication skills to:
  - catalogue, check and confirm data sources
  - collect, interpret and communicate in visual and written forms effectively for various audiences, including engineers and artists
  - communicate clearly using speech and text
  - communicate technical requirements related to integration tools to supervisors and other team members
  - contribute to and work collaboratively
  - provide practical advice, support and feedback to colleagues and management
- learning skills to accept peer feedback and make improvements
- planning and organisational skills to:
  - refer decisions to a higher project authority for review and endorsement
  - delegate tasks and responsibility appropriately
  - establish clear roles and goals to achieve required game development outcomes
  - meet project deadlines
  - organise equipment and resources to achieve required outcomes
  - organise own time to meet milestones
  - prioritise work and meet critical milestones and deadlines
- problem-solving skills to recognise and address potential quality issues and problems at prototype and completed stages
- research skills to undertake practical, technical and desktop research into multiple data sources
- technical skills to:
  - integrate data sources into the 3-D environment
  - resolve basic hardware, software and other technical issues associated with game production
  - use correct file formats and archiving procedures.

Required knowledge

- budgeting and scheduling considerations
- capabilities and constraints of game engines
- computer game development, including specific terminology
- current game-play hardware and software products
- human resources required in the process of creating a game and their respective skills and technology requirements

- technical constraints that hardware imposes on software development, graphics requirements, code development and creative visual design.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • integrate multiple data sources into a working interactive 3-D environment • manage design requirements with technical requirements • deliver an interactive 3-D environment with working interactions that implements the external data sources.
Context of and specific resources for assessment	Assessment must ensure access to: • computer hardware, software, games engines and file storage • copyright and intellectual property legislation • OHS legislation and enterprise policy • appropriate learning and assessment support when required • modified equipment for people with special needs.

Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:
	• evaluation of:
	  • response to fault-finding exercises
	  • simulated workplace activities
	  • working interactions of 3-D environments
	• written or verbal questioning to evaluate knowledge of:
	  • data sources
	  • interactive 3-D environments
	  • integration
	• review of candidate's:
	  • presentations
	  • reports of completed 3-D environment
	  • documentation of 3-D environment specifications.

Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate. Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level,

	language, literacy and numeracy capacity of the candidate and the work being performed. Indigenous people and other people from a non-English speaking background may need additional support. In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.

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, if used in the performance criteria, is detailed below. 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) may also be included.

Data sources may include:	• 3-D models • databases • images • music • particle libraries • scripts • sounds • text • textures.
Game design may include:	• concept illustrations or graphics that enhance the comprehension of the document • design for all level missions • game mechanics that affect level design decisions • illustrations of level with all significant points of interest • introduction and overview (one page synopsis) • key selling points, including intended audience, genre and platforms • production details • scripts required for level • synopsis and scripts for each level • synopsis of level • title and cover art (art must be colour and of a reasonable resolution for high quality printing) • walk through for at least one mission or level.
Game genre may include:	• adventure • alternative reality • ancient • casino • cyberpunk • educational • edutainment • fantasy • first person shooter • flight shooter

	• flight simulation
	• futuristic
	• god simulation
	• massively multi-player online game
	• massively multi-player online role-playing game
	• medieval
	• modern
	• multi-player
	• post-apocalyptic
	• puzzle
	• racing shooter
	• racing simulation
	• real-time strategy
	• role-playing game
	• science fiction
	• side-scrolling shooter
	• single player
	• sports
	• strategy, including:
	  • action strategy
	  • turn-based strategy
	• tactical combat.

Game mechanics may include:	• lists and illustrations of:
	  • actions of a particular object (object dynamics)
	  • environment actions (environment dynamics)
	  • game objects organised into classes of object
	  • possible environment and object interactions
	  • possible object-to-object interactions
	  • specific game-play elements that provide uniqueness and key point of difference
	• overview of the key factors influencing core game-play experience.

Game-play elements may include:	• buildings • game flow • switches • terrain objects • transformations • transportation • traps.
Level specifications may include:	• level-specific components: • allies

	• base building and location • cinematic (cut scenes) • colours • enemies • graphics • health • lighting • non-player characters • resources and their harvesting • sounds and music • weapons • location • stages • transportation devices: • buttons • doors • keys • teleporters • tunnels and passageways.
Tools and libraries may include:	• Audierre • bass library • direct sound • FMOD • image importer libraries • LUA script • Open_AL • particle libraries • particle universe • SDL_Mixer • sound libraries • XML libraries.
Creating prototypes may involve:	• developing a comprehensive design for missions and levels, including concept visuals • developing a walkthrough for at least one mission or level • developing story synopsis and scripts for each level • knowledge of games as dynamic systems, such as: • applying game-tuning strategies in light of feedback from actual play • characteristics of a balanced game • working with quality assurance and understanding play-test feedback

	• use of appropriate tools and skills for fast, interactive development.
Personnel may include:	• animators • concept artists • game-play designers • graphic designers • instructional designers • modellers • motion capture technicians • other specialist staff • other technical staff • producers • programmers • project manager • sound engineers • team members • technical director • writers.

Feedback may involve:	• accepting and responding to comment, critique and suggestions from:
	  • clients
	  • colleagues
	  • target audience representatives.

Evaluate completed 3-D environment may involve:	• examining and analysing the impact of decisions, after the fact, such as:
	  • integration decisions
	  • methodology and process decisions
	• product 'post-mortems', reviewing actual use of resources to achieve outcomes against initial project plan and schedule.

Unit Sector(s)

Game development