



Australian Government

ICTGAM541 Design and create advanced particles, fluids and bodies for 3-D digital effects

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and create, advanced simulated effects in a 3-D and digital effects environment.

It applies to those with high-level mathematical, technical and communication skills working as concept artists, game designers, games programmers, animators and other personnel working in the game development industry.

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

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to create advanced simulated effects	1.1 Obtain design brief and requirements from required personnel according to organisational procedures 1.2 Analyse design requirements for particle systems, fluids and bodies according to brief and organisational documents 1.3 Identify where advanced simulated effects will fit into production pipeline 1.4 Identify factors influencing design approach to creating advanced simulated effects 1.5 Source and gather reference materials and maintain portfolio of references according to organisational procedures 1.6 Review and analyse media and techniques and gather ideas for simulated effects 1.7 Discuss solutions and approaches to creation of advanced simulated effects for 3-D environments according to design brief and organisational documents 1.8 Present design ideas and design considerations, with justification of choice of advanced simulated effects to required personnel
2. Finalise designs and plan approach to simulated effects	2.1 Adapt and finalise design according to feedback from required personnel 2.2 Identify skills and processes required for creating advanced simulated effects systems according to organisational procedures 2.3 Plan timeline to create advanced simulated effects according to design brief and requirements
3. Produce particles, fluids and bodies	3.1 Assist in production of advanced simulated effects using applicable programming languages and created code 3.2 Create prototype of advanced simulated effects according to finalised design using toolsets 3.3 Discuss implementation of effects with required personnel according to design requirements 3.4 Implement physics and forces to the advanced simulated effects according to design brief and requirements 3.5 Conduct testing of prototype according to organisational procedures 3.6 Review testing results and amend as required 3.7 Present created effects to required personnel for feedback
4. Finalise advanced simulated effects	4.1 Adapt advanced simulated effects and design as required, according to feedback 4.2 Refine advanced simulated effects according to design requirements

ELEMENT	PERFORMANCE CRITERIA
	4.3 Document work and testing performed in development process according to organisational procedures 4.4 Present finalised advanced simulation effects in requested form, according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	Interprets, analyses and comprehends briefs, documents and conceptual information to inform job requirements
Writing	Creates a cohesive and well-structured advanced simulation effects and documentation detailing work and testing performed using descriptive language
Oral Communication	- Uses listening and questioning techniques and effective mode of communication to articulate complex concepts and requirements using industry language for intended audience - Presents finalised advanced simulation effects using persuasive presentation techniques, plain English (translating games specific terminology where required)
Numeracy	Manipulates measurement, scale, ratio, coordinates, colour, shading and other elements of radical 3-D effects using whole numbers, decimals and percentages
Problem solving	- Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering required information and identifying and evaluating options against agreed criteria - Deals with complex issues using intuition to identify general problem area and switching to analytical processes to clarify goals and key issues - Generates possible solutions using lateral thinking processes - Develops and shapes several options before making final choice, using a combination of lateral and analytical thinking to tailor and strengthen ideas according to needs, resources and constraints
Self-management	- Takes responsibility for own workload and negotiates some key aspects with others - Sequences and schedules complex activities, monitors implementation, and manages required communication - Implements actions according to plan, making slight adjustments if necessary and addressing some unexpected issues

SKILL	DESCRIPTION
	Identifies value of continuous improvement in own work context
Technology	- Improves personal productivity and optimises software functions for specific purposes using a broad range of application features - Manages and maintains files in a variety of storage media and formats and is beginning to establish, maintain and monitor electronic paper trails

Unit Mapping Information

Supersedes and is equivalent to ICTGAM515 Design and create advanced particles, fluids and bodies for 3-D digital effects.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

Assessment Requirements for ICTGAM541 Design and create advanced particles, fluids and bodies for 3-D digital effects

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Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop at least three advanced simulation effects according to design brief and requirements.

In the course of the above, the candidate must:

- analyse design requirements and develop design documents according to organisational procedures
- use applicable effects including particles, fluids and rigid or soft bodies
- render digital effects on at least one small device and one large device and confirm pixels are optimised
- maintain portfolio of reference materials
- present pre-production portfolio demonstrating project research and development to required personnel
- seek evaluation and review from required personnel for finalised advanced simulation effects.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- programming languages and techniques required for creating 3-D digital effects
- overview of game development and production processes, including specific terminology
- design approaches to creating advanced simulated effects
- media and techniques used in designing and creating simulated effects
- key features of game-play hardware and software products
- technology requirements and human resources required in process of creating digital effects and each team member's respective skills

- methods of maintaining reference portfolios applicable in creating 3-D digital effects
- risk and critical path management techniques
- technical constraints that hardware imposes on:
 - software development
 - graphics requirements
 - code development
 - creative visual design
- techniques for applying concept development and visualisation skills
- methods of creating and testing 3-D digital effect prototypes
- documentation processes applicable in 3-D digital effects creation process
- creating and presenting pre-production portfolios demonstrating project research and development
- organisational procedures applicable to the design and creation of 3-D digital effects.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware and software applicable to designing and creating simulated effects
- games engine
- IDE
- digital devices
- file storage
- design brief
- the internet
- organisational procedures applicable to designing and creating simulated effects.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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