



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **ICAGAM414A Create audio for digital games**

**Release: 1**

## ICAGAM414A Create audio for digital games

### Modification History

| Release   | Comments                                                                                                          |
|-----------|-------------------------------------------------------------------------------------------------------------------|
| Release 1 | This Unit first released with <i>ICA11 Information and Communications Technology Training Package version 1.0</i> |

### Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to produce and manipulate audio assets for computer games using a variety of tools.

### Application of the Unit

The unit applies to game musicians, audio technicians, audio programmers 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                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Elements describe the essential outcomes of a unit of competency.</i> | <i>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.</i> |

## Elements and Performance Criteria

|                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Research and document game audio requirements                    | <p>1.1 Explain the evolution of audio hardware and <b>audio formats</b></p> <p>1.2 Provide a historical perspective on how audio has become integrated into computer games</p> <p>1.3 Identify current trends and speculate on the future of game audio</p>                                                                                                                                                                                              |
| 2. Research and document the use of audio in computer games         | <p>2.1 Identify the different methods for using audio in computer games</p> <p>2.2 Explore the role of music in creating mood and atmosphere</p> <p>2.3 Explain how sound effects and vocals are used within computer games</p>                                                                                                                                                                                                                          |
| 3. Source existing sound effects, music tracks and voice recordings | <p>3.1 Find sources of sound effects, music tracks and voice recordings</p> <p>3.2 Create and maintain a small collection of audio assets</p> <p>3.3 Identify different audio formats</p> <p>3.4 Differentiate between compressed and uncompressed audio formats</p> <p>3.5 Identify different <b>genres</b> of music</p> <p>3.6 Develop an awareness of audio <b>copyright laws</b> and royalty free audio</p>                                          |
| 4. Record and manipulate audio for a game                           | <p>4.1 Record character voices, music and sound effects</p> <p>4.2 Develop a sound track for a game using audio editing</p> <p>4.3 Use <b>audio-editing software</b> to rearrange audio samples and apply audio effects</p> <p>4.4 Select appropriate sample format and bit rate</p> <p>4.5 Normalise audio samples to make volume uniform</p> <p>4.6 Trim audio samples</p> <p>4.7 Apply audio effects</p> <p>4.8 Export audio to a suitable format</p> |
| 5. Create sound effects or music for a game                         | <p>5.1 Identify <b>digital sound waveforms</b></p> <p>5.2 Apply <b>basic music theory</b> to simple <b>music-creation tool</b></p> <p>5.3 Determine suitable musical notation</p>                                                                                                                                                                                                                                                                        |

|                                                           |                                                                                                                                                                                                                                             |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                           | 5.4 Identify and use musical creation tools<br>5.5 Compose a simple piece of music for a game<br>5.6 Create various sound effects for a game                                                                                                |
| 6. Research audio-programming libraries                   | 6.1 Compare and contrast functional capabilities of <b>audio-programming libraries</b><br>6.2 Explain the use of channels and mixing                                                                                                        |
| 7. Integrate sound, music and vocals into a computer game | 7.1 Play a mixture of cached and streaming audio sources<br>7.2 Integrate sound effects in response to different events<br>7.3 Incorporate ambient music into sections of the computer game<br>7.4 Locate and play positional audio sources |

## Required Skills and Knowledge

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

### Required skills

- communication skills to:
  - communicate audio concepts and related sound requirements to designers and concept artists
  - seek and respond to feedback from target audience representatives, clients and colleagues
  - technical skills to generate, integrate, manipulate and record digital audio into a game project.

### Required knowledge

- audio-editing tools
- audio formats
- audio-programming libraries
- copyright as it applies to audio recordings
- music theory as it relates to using music-creation tools.

## 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.*

|                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Overview of assessment</b>                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b> | <p>Evidence of the ability to:</p> <ul style="list-style-type: none"> <li>record sound sources</li> <li>generate sound effects</li> <li>compose simple music tracks</li> <li>manipulate audio assets with suitable tools</li> <li>use audio programming libraries in a game.</li> </ul>                                                                                                                                                                                                                                                                               |
| <b>Context of and specific resources for assessment</b>                                             | <p>Assessment must ensure access to:</p> <ul style="list-style-type: none"> <li>computer hardware</li> <li>microphone and headphone sets</li> <li>input device, e.g. keyboard and mouse</li> <li>output device, such as monitor and speakers</li> <li>digital audio editing software, games engines and file storage</li> <li>copyright and intellectual property legislation</li> <li>OHS legislation and enterprise policy</li> <li>appropriate learning and assessment support when required</li> <li>modified equipment for people with special needs.</li> </ul> |
| <b>Method of assessment</b>                                                                         | <p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>evaluation of audio that has been included in a games project</li> <li>verbal or written questioning concerning aspects of game audio, including: <ul style="list-style-type: none"> <li>evolution of audio hardware and use of audio in computer games</li> <li>tools and techniques used</li> <li>capabilities of audio libraries.</li> </ul> </li> </ul>                |
| <b>Guidance information for assessment</b>                                                          | <p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate.</p> <p>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</p>                                                                                                                                                                                                                                    |

|  |                                                                                                                                                                                                                                                                             |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>work being performed.</p> <p>Indigenous people and other people from a non-English speaking background may need additional support.</p> <p>In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.</p> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 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.*

|                                                 |                                                                                                                                                                                                |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Audio formats</b> may include:               | <ul style="list-style-type: none"> <li>• music, such as mp3, ogg, xm, s3m, it, mod and midi</li> <li>• sound effects, such as wav, raw and voc.</li> </ul>                                     |
| <b>Genres</b> may include:                      | <ul style="list-style-type: none"> <li>• dance</li> <li>• jazz</li> <li>• pop</li> <li>• rap</li> <li>• rock</li> <li>• techno</li> <li>• trance.</li> </ul>                                   |
| <b>Copyright laws</b> may include:              | <ul style="list-style-type: none"> <li>• Australian Copyright Act 1968</li> <li>• international copyright laws.</li> </ul>                                                                     |
| <b>Audio-editing software</b> may include:      | <ul style="list-style-type: none"> <li>• Audacity</li> <li>• Music Editor Free</li> <li>• Power Sound Editor</li> <li>• Wavosaur.</li> </ul>                                                   |
| <b>Digital sound waveforms</b> may include:     | <ul style="list-style-type: none"> <li>• noise</li> <li>• pulse</li> <li>• sine</li> <li>• square</li> <li>• triangle.</li> </ul>                                                              |
| <b>Basic music theory</b> may include:          | <ul style="list-style-type: none"> <li>• bass or treble clef</li> <li>• notation, such as semi-quavers and quavers</li> <li>• notes</li> <li>• scales and chords</li> <li>• timing.</li> </ul> |
| <b>Music-creation tools</b> may include:        | <ul style="list-style-type: none"> <li>• FL Studio</li> <li>• Garage Band</li> <li>• MusicShake.</li> </ul>                                                                                    |
| <b>Audio-programming libraries</b> may include: | <ul style="list-style-type: none"> <li>• Audierre</li> <li>• Bass Library</li> <li>• DirectSound</li> <li>• FMOD</li> </ul>                                                                    |

|  |                                                                                |
|--|--------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"><li>• Open_AL</li><li>• SDL_Mixer.</li></ul> |
|--|--------------------------------------------------------------------------------|

## Unit Sector(s)

Game development