

**SKILLS FRAMEWORK FOR MEDIA
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT**

TSC Category	Game Programming and Quality Assurance					
TSC Title	Audio Programming					
TSC Description	Develop programs to implement interactive sound and sound effects within electronic games					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
		MED-GDP-2006-1.1	MED-GDP-3006-1.1	MED-GDP-4006-1.1	MED-GDP-5006-1.1	
		Write code to support the implementation of sound for games	Develop programs to support the audio asset pipeline and to implement specific audio components within a game	Design algorithms for game sound effects and lead the development of programs to implement game audio	Define the technical goals of games audio programming and identify technologies best suited for games audio implementation	
Knowledge		<ul style="list-style-type: none"> Fundamental concepts of acoustics and sound production Fundamentals of functioning of audio hardware Real-time sound event synchronisation Third-party audio middleware tools High-level programming languages for audio programming Scripting languages and tools Guidelines and conventions for documentation of programming 	<ul style="list-style-type: none"> Fundamental concepts of acoustics and sound production Fundamentals of functioning of audio hardware Features and functionalities of audio engines Digital Signal Processing (DSP) theory and concepts Concepts of mathematics for implementing DSP functionalities Audio synthesis techniques High-level programming languages for audio programming Scripting languages and tools Software development practices 	<ul style="list-style-type: none"> Audio synthesis techniques Principles and concepts of 3D positional sound Third-party audio Application Programming Interfaces (APIs) Third-party audio middleware tools Sound effect algorithm designs Integration of audio engines with game engines Techniques for implementing custom sound effects on top of audio engine functionalities Automated creation of sound effects for games 	<ul style="list-style-type: none"> Approaches to audio engine design Principles of sound design and implementation for games Industry standards in technologies for game audio development Principles and concepts of 3D positional sounds Physically-based audio concepts and applications Human hearing modelling and physical modelling for sounds Sound effect design Capabilities and limitations of third-party audio engines and middleware solutions 	
Abilities		<ul style="list-style-type: none"> Write code for specific functionalities of integration tools for game audio pipelines 	<ul style="list-style-type: none"> Analyse technical briefs to understand the audio programming requirements for the game 	<ul style="list-style-type: none"> Review game vision and technical goals for audio to determine the technical scope of audio programming 	<ul style="list-style-type: none"> Drive research and review proofs-of-concept to adopt new technologies that can 	

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		<ul style="list-style-type: none"> • Port sound assets into the games development environment • Develop programs for the integration of sounds with the gameplay • Create programs and scripts to trigger sound effects in sync with graphics and gameplay events • Test and debug code to ensure the audio programming is functional and accurate • Troubleshoot issues with game audio implementation • Maintain updated documentation for developed programming code 	<ul style="list-style-type: none"> • Analyse high-level designs for audio programming to understand the features and functionalities that would need to be implemented through programming • Create programming logic for the implementation of specific features of the game audio • Review code developed by junior programmers • Provide maintenance and technical support to sound design team for game audio tools • Review audio resource utilisation • Optimise audio implementation to improve resource management efficiency of games 	<ul style="list-style-type: none"> • Liaise with sound designers to define the technical goals of the project's audio programming and align expectations from the audio programming team • Develop custom algorithms for synthesis of sound effects for games • Select the right balance of human models, physical models and ad-hoc algorithms to achieve the best outcome for audio synthesis • Define parameters for 3D positional sounds for specific in-game events • Identify tools and middleware for game audio implementation • Lead the development of new tools for the game audio pipelines • Customise audio engine functionalities to suit specific game requirements • Review audio programming and suggest modifications to refine game audio implementation • Refine game audio implementation based on feedback to improve performance and synchronisation 	<p>improve the game audio pipelines</p> <ul style="list-style-type: none"> • Assess existing sound resources to check if they meet project requirements • Ideate and oversee the customisation of standard audio engines based on the project requirements • Drive the development of tools to meet the needs of the games audio pipelines • Review and refine custom audio algorithms designed for producing sound effects as required by the game • Analyse performance of audio engines and tools to identify scope for optimisation and improvement 	
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