

# News Release

## For more information:

Jonathan Hirshon, Principal, Horizon PR

[jh@horizonpr.com](mailto:jh@horizonpr.com)

Phone: +1 (408) 393-4900

## **Khronos Group Releases OpenGL ES 1.0 Specification for Portable Mobile and Embedded Audio Processing**

**Extensive Audio Functionality now Portable to any Platform and Operating System;  
Enhances Audio Capability in the Khronos Mobile Media API Ecosystem**

**24th March, 2009 – GDC, San Francisco, CA** – The Khronos™ Group is pleased to announce that it has today publicly released the OpenGL ES™ 1.0 specification, a royalty-free, cross-platform C-language API for high-performance, low-latency audio functionality on mobile and embedded devices. The OpenGL ES standard simplifies deployment of hardware and software audio capabilities across any platform or operating system and provides broad audio portability for application developers. The specifications are immediately available for download at <http://www.khronos.org/opensles/> and may be used royalty-free by implementers and developers. An Adopters Program for OpenGL ES including extensive conformance tests to ensure cross-implementation consistency and trademark usage by conformant implementations will be released by Khronos during April 2009.

The audio API space is highly fragmented and developers are forced to constantly port their audio code across proprietary or platform-specific APIs as even just playing a simple sound requires different code on different platforms. OpenGL ES fills a void in the audio API arena by enabling standardized, cross-platform access to a native platform's audio capabilities – not something that APIs such as OpenAL or ALSA were designed to do. OpenGL ES defines standardized access to both basic and advanced features such as MIDI playback and 3D positional audio on any device and operating system and is extensible by implementers to take advantage of emerging audio capabilities. OpenGL ES also provides a portable foundation for implementing the audio portions of higher-level APIs such as JSR 135 and JSR 234.

"As strong proponents of open standards, we expect that OpenGL ES will drive the evolution of enhanced audio in embedded devices with the same impact that the Khronos graphics APIs have driven advanced video and imaging," said Jörgen Lantto, CTO of ST-Ericsson. "OpenGL ES will open up the handheld market for game developers, and consumers will benefit from a broader and richer gaming experience in their mobile devices."

"As a founding member of Khronos we have been at the forefront of media API development and have long recognized the importance of open APIs for developers," said Tim Lewis, director of marketing, ZiiLABS. "OpenGL ES provides a cross-platform foundation to rationalize the wide variety of closed audio development libraries in embedded markets, providing developers and hardware vendors a stable standard to build the market for audio applications and accelerators."

## About OpenGL ES

OpenGL ES is a fully-featured audio API that enables application developers take full control of advanced audio functionality in a device while being isolated from platform specifics, enabling applications to run on a multitude of hardware accelerated and software-based audio solutions. OpenGL ES has been designed by many of the leading industry audio experts to provide access to a broad range of audio functionality:

- Playback of PCM and encoded content, MIDI ringtones and UI sounds, as well as extraction of content metadata;
- General audio controls such as volume, rate, and pitch; music player effects such as equalizer, bass boost, preset reverberation and stereo widening; as well as advanced 3D effects such as Doppler, environmental reverberation, and virtualization;
- Advanced MIDI including SP-MIDI, mobile DLS, mobile XMF, MIDI messages, and the ability to use the output of the MIDI engine as a 3D sound source;
- Full 3D positional audio including grouping of 3D sound sources;
- Audio recording in PCM as well as non-PCM formats from a microphone, line-in jack;
- Optional support for LED and vibrator control, 3D macroscopic control, and audio recording.

Due to the broad range of audio functionality, OpenGL ES defines three overlapping profiles allowing implementers to select the features required by a particular device while preserving application portability by implementing one or more profiles on a device:

- The Phone profile provides playback controls and volume controls, sound prioritization and MIDI as well as the ability to direct sound to multiple simultaneous outputs;
- The Music profile provides balance and pan controls, sound prioritization and audio effects such as virtualization, preset reverberation and equalizer controls;
- The Game profile provides buffer queues, pitch and playback rate control, environmental reverberation and extensive positional 3D audio controls that complements the use of OpenGL ES for 3D graphics in sophisticated mobile applications.

## About The Khronos Group

The Khronos Group is an industry consortium creating open standards to enable the authoring and acceleration of parallel computing, graphics and dynamic media on a wide variety of platforms and devices. Khronos standards include OpenGL<sup>®</sup>, OpenGL<sup>®</sup> ES, OpenCL<sup>™</sup>, OpenMAX<sup>™</sup>, OpenVG<sup>™</sup>, OpenGL ES<sup>™</sup>, OpenKODE<sup>™</sup>, and COLLADA<sup>™</sup>. All Khronos members are able to contribute to the development of Khronos specifications, are empowered to vote at various stages before public deployment, and are able to accelerate the delivery of their cutting-edge media platforms and applications through early access to specification drafts and conformance tests. More information is available at [www.khronos.org](http://www.khronos.org).

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