

# What is OpenAL?

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## What is OpenAL?

Developed by Loki Software in 2000, the Open Audio Library, commonly known as OpenAL, is an audio API and is available for many operating systems. OpenAL is used to output multi-channel 3D audio. OpenAL's API style is very similar to OpenGL.

OpenAL is also designed to replace other proprietary 3D audio systems, such as EAX and A3D. As mentioned above, OpenAL has the ability to simulate sound attenuation, Doppler effects and material density, making video games more realistic.



## Structure and function of OpenAL

OpenAL's general function is encoded in source objects, audio buffers and a listener (single listener). A source object contains a pointer to the buffer, velocity, position, direction and intensity of the sound. Listener objects contain the listener's speed, position and direction, as well as the general increase applied to all sounds. Buffer contains audio data in PCM, 8-bit or 16-bit format, in mono or stereo format. The rendering tool performs all the calculations necessary for sound attenuation by distance, Doppler effect, etc.

The end result of all this for the end user is that in an properly written OpenAL application, the sound works quite naturally when the user moves through the 3D space of the virtual world. From a programmer's point of view, doing this in an existing OpenGL-based 3D graphics application is quite simple.



Unlike OpenGL, OpenAL's specification includes two subsections for the API: Core includes actual OpenAL function calls and API ALC (Audio Library Context), used to manage rendering context (context context). export, the use and lock of resources in a multi-platform mode. In addition, there is the ALUT library (Audio Library Utility Toolkit), which provides convenient functions at a higher level, quite similar to GLUT of OpenGL.

To provide additional functionality in the future, OpenAL uses the extension mechanism. Therefore, individual vendors can include their own extensions into OpenAL distributions, often aiming to add additional functionality to its proprietary hardware. Extensions can be switched to the ARB (Architecture Review Board) state, stating that standard extensions will be maintained for backward compatibility. The ARB extensions are promising to be added to the core API after a period of time.

For advanced digital signal processing and sound effects with accelerated hardware, EFX (Effects Extension) or EAX can be used (Environmental Audio Extension).

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