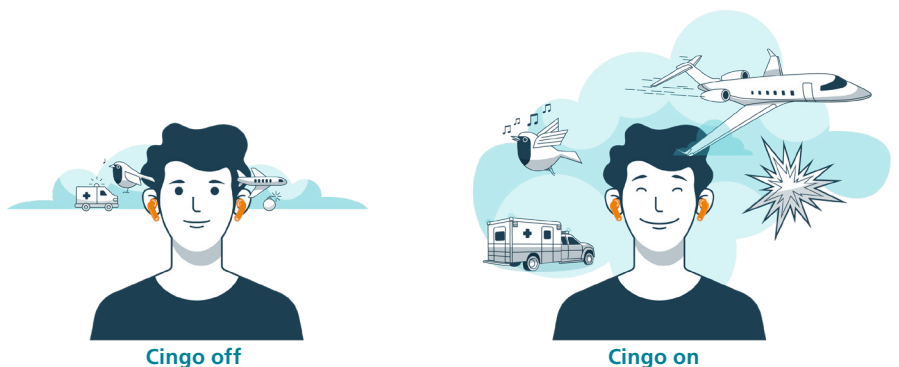


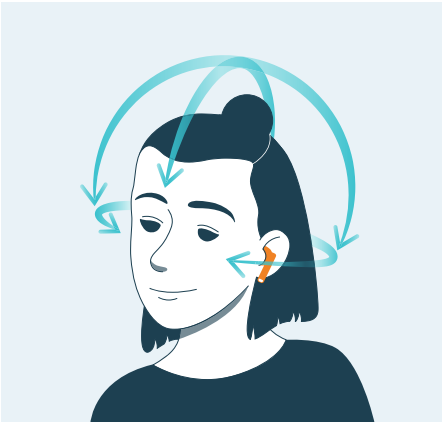
Fraunhofer Cingo

Immersive Audio for Everyday Life

Fraunhofer Cingo was designed to optimize sound quality and ensure the best user experience when playing back media content on the go. The object-based binaural rendering technology frees the spatial dimension of media experience from the limitations of traditional audio playback. It enables immersive audio playback over headphones and the loudspeakers of mobile devices. Dynamic spatial audio with Cingo makes 3D audio accessible for everyone.

Cingo creates a fascinatingly natural auditory environment. Traditional headphone reproduction results in soundscapes being perceived inside the listener's head. The Fraunhofer technology restores the spatial impression of a natural sound field, in which sound sources can be perceived to be positioned all around the listener, ensuring a lifelike experience. Various personalization options include content-specific presets, loudness and dialogue enhancement, and device-specific equalization.

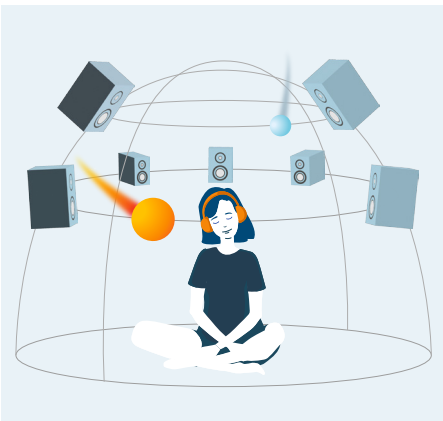




Creates Lifelike Dynamic Spatial Audio

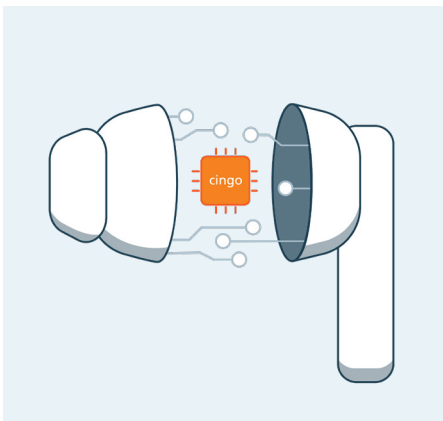
Cingo delivers acoustic scenes that feel amazingly real while preserving the timbre of the original mix. Minimal coloration delivers transparent audio quality. Low-latency headtracking with three degrees of freedom fixes virtual objects to their positions in space. This helps create an audio image which is perceived outside the listener's head. The result is a lifelike sense of immersion in the acoustic scene.

Motion-to-sound latency can nearly be eliminated: Cingo can render spatial audio directly on the headphone's DSP (Digital Signal Processor), reducing it even below perceivable thresholds. This enables dynamic spatial audio independent of Bluetooth latency that works with any audio source device.



Flexible object-based rendering of any input format

Cingo's native, codec-agnostic input interface combines channel and object-based rendering. The configurable channel input interface is compatible with formats from mono and stereo to established surround and 3D audio formats. Cingo's audio object interface enables the free, dynamic positioning of virtual sources in azimuth, elevation, and distance. This unique framework delivers ease of use and full flexibility for integrators. It also makes it the ideal choice for NGA (Next Generation Audio) audio codecs such as 360 Reality Audio as well as MPEG-H Audio, which is already supported with advanced metadata.



Fits footprints from handhelds to hearables

Cingo's floating- and fixed-point libraries are available for mobile (iOS, Android) and desktop (Windows, Mac, Linux) platforms. Thanks to its minimal resource footprint and an optimized fixed-point version, the algorithm runs on established headphone processors. Available for popular audio development platforms for a seamless embedded integration. A custom platform integration can be realized upon request.

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