NOKIA

OZO

We are storytellers

The videos. The songs. The things that make you laugh as you go about your day. Whether you're an influencer to millions, or just sharing funny photos with your family, OZO Audio captures the essence of your story while OZO Playback lets your audience experience it in its panoramic glory.

OZO presents a new opportunity for audio experiences to be shared on smart devices like never before.

OZO AUDIO

OZO Audio utilises pioneering intelligent technology to capture moments with clarity and focus.

OZO PLAYBACK

OZO Playback provides an all-immersive spatial audio experience for audiences, whatever the content, whatever the device.

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Technology Licensing

OZO for device manufacturers

Leading audio software technologies for licensing

- Industry-leading OZO Audio and OZO Playback portfolio of technologies
- Advanced features that enable differentiation
- Technical support for product integration and customization
- Available for a wide range of target platforms

Services for achieving optimal audio performance

- Support for designing best-in-class audio capabilities for devices
- Custom audio tuning for each device to ensure optimal performance for all features in all conditions
- DXOMARK audio tuning optimization

World-class team and R&D facilities

- 20+ years experience in audio engineering for devices
- Expertise covering entire R&D and productization workflow
- State-of-the-art audio laboratory including standards-compliant anechoic chambers and listening rooms
- Efficient utilization of advanced measurement and simulation techniques

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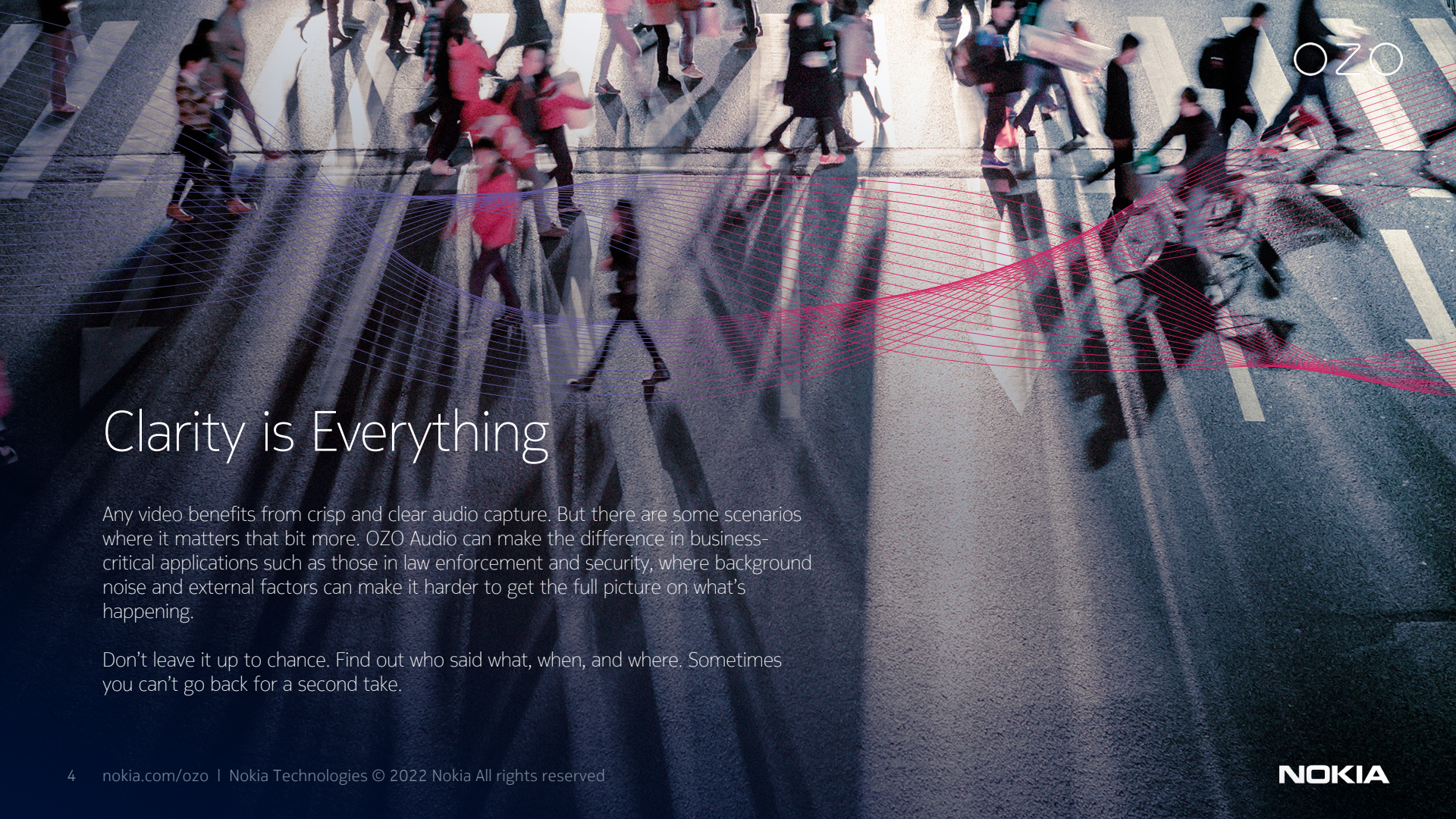

Clarity is Everything

Any video benefits from crisp and clear audio capture. But there are some scenarios where it matters that bit more. OZO Audio can make the difference in business-critical applications such as those in law enforcement and security, where background noise and external factors can make it harder to get the full picture on what's happening.

Don't leave it up to chance. Find out who said what, when, and where. Sometimes you can't go back for a second take.

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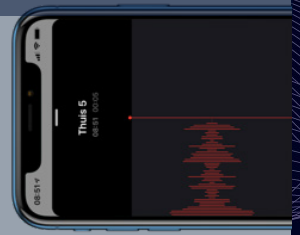
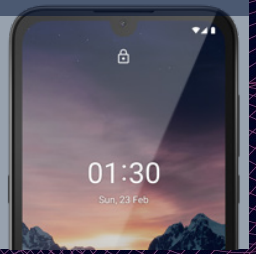
Use cases to support your device

Best-in-class audio capture



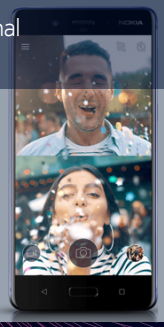
Action-oriented devices

2 microphone devices

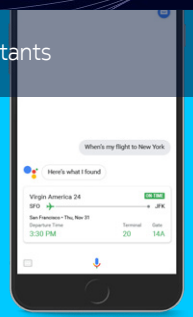


User-generated content workhorses

Multi-directional audio devices



Voice assistants



Public safety cameras

Business devices

Devices with self-retracting/ motorized components

Best-in-class playback

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OZO Audio Features

Audio 3D
Capture the full audio landscape with vibrant depth, direction and detail.

Audio Framing
3+
Precise sound mapping capabilities that make devices smarter.

Audio Source Tracking
3+
Automated tracking of audio—even when source is off-camera.

Audio Zoom
Imagine a telephoto lens for audio. Get up close to the sound that matters most.*

Microphone Blocking Detection
Provides notification if some of the device's microphones are blocked e.g. by a finger.

Audio Tune
3+
Fine-tune the moment with post-capture audio adjustment tools.

Audio Detect
Help voice assistants perform in real-world conditions.

Ambient Noise Reduction
Reduce background noise and make captured audio sound even more natural.

Audio Windscreen
Bring clarity to audio in windy conditions—no additional hardware required.

Intelligent Noise Reduction
Smartly adapts background noise processing to distinguish between different types of noise.

Motor Noise Reduction
Overcome device-created mechanical noise with specially tuned filtering algorithms.

*In 2-microphone devices the performance is limited to suppressing audio from the sides

3+ = for 3-microphone devices

OZO Playback Features

Bass Enhancement

Generate virtual low frequencies beyond the capabilities of the device hardware to really boost playback. Suitable for both mono- and stereo-loudspeaker playback.

Loudness Optimization

Tune loudspeaker playback to utilize the full potential of the device's hardware. Suitable for both mono- and stereo-loudspeaker playback.

Equalization

The headphone and/or loudspeaker output is equalized for optimal balance. Possible to have one or more EQ presets that can be dynamically changed.

Stereo Widening

Create an impressively wide and spatial listening experience for stereo loudspeaker and headphone playback. In headphone playback, the spatialization can help reduce listening fatigue. Not available for mono loudspeaker playback.

OZO Audio Optimization

Utilize the meta-data of OZO Audio captured content to create a truly amazing listening experience for user-generated content on stereo loudspeaker playback.

= for loudspeakers

= for headphones

Feature descriptions and performance with 2-mic devices

OZO

Audio 3D

Capture the full audio landscape with vibrant depth, direction, and detail.

Audio Zoom

In audio interviews, audio zooming is available along the sides of the device that have microphones. This feature can also attenuate side noises.

Ambient Noise Reduction

Reduces static background noises to make the captured audio sound even more natural.

Audio Windscreen

Bring clarity to audio in windy conditions — no additional hardware required.

Microphone Blocking Detection

Provides notification if some of the device microphones are blocked (e.g. by a finger).

Intelligent Noise Reduction

Smartly adapts the background noise processing to different and varying types of noise.

Motor Noise Reduction

Overcome device-created mechanical noise with specially tuned filtering algorithms.

Audio Detect

Help voice assistants perform in real-world conditions.

Note: These descriptions for 2 microphone devices assumes that the microphones are located at different ends of the device and that the device is held horizontally during audio capturing.

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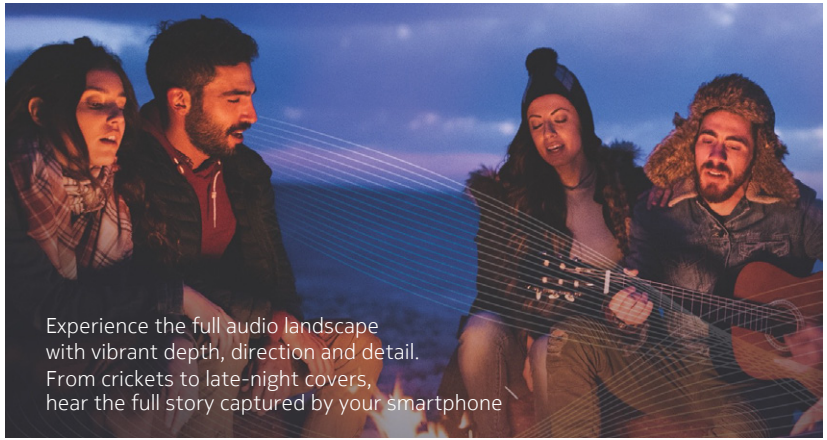
Audio 3D

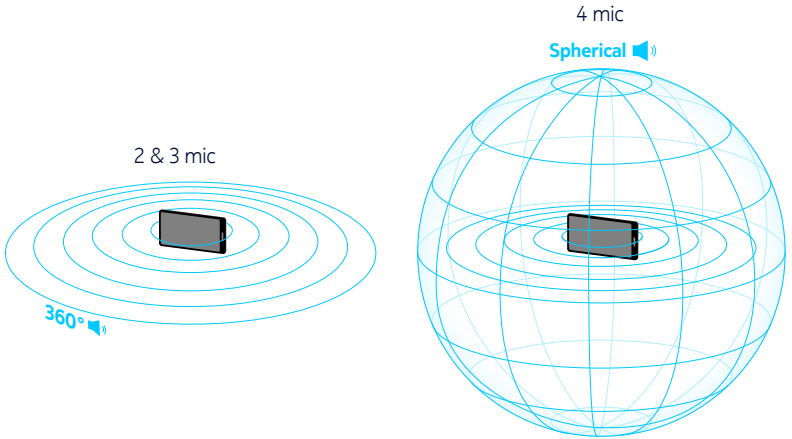
Immerse yourself in sound

Audio 3D captures and delivers a natural spatial sound experience and high fidelity audio within one degree of accuracy. Capture the full sonic richness in depth, direction, and detail without missing a moment.



Capture the full audio landscape with vibrant depth, direction and detail

- Get the highest spatial precision (within one degree of accuracy).
- Don’t miss a moment, even if it’s out of frame.
- Let the audio immerse you.



Audio Zoom

Get up close to the things you want to hear

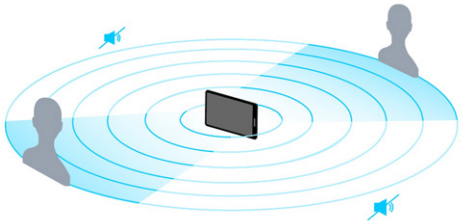
Audio Zoom allows users to dynamically pinpoint and amplify audio to correspond to zoomed video. It acts like a telephoto lens for audio that takes you right into the action.

Customize configuration to take advantage of rich spatial audio zooming, magnified zooming to mono, or any mixture in between.

for 2-mic devices

Focus on sounds that matter

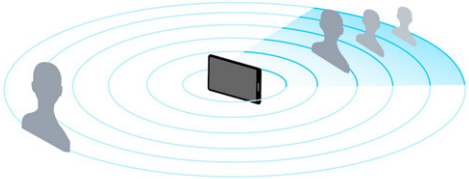
- Suppresses unwanted noises from the side directions duri video capture.
- Enables audio recorder applications to have specific interview mode.



for 3+ mic devices

Clear and spatial audio up close

- Dynamically adjust the amou of Audio Zoom to the desirec direction.
- Suppress unwanted noise an clearly capture audio without distortion.
- Maintain superior spatial audio quality also when zooming.



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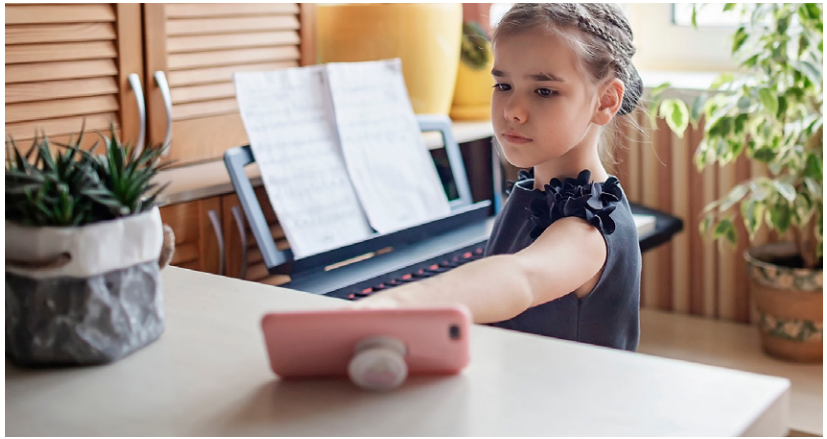
Ambient noise reduction

Erase everyday distractions from your audio

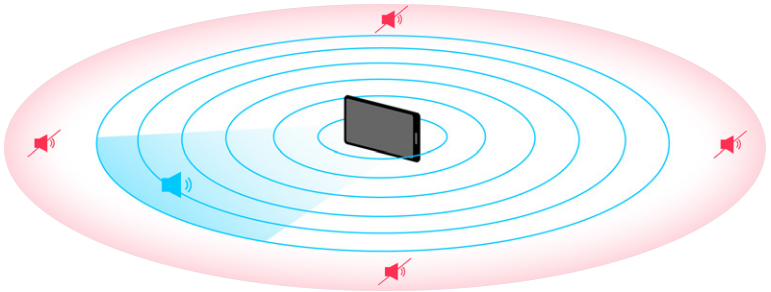
The hum from an air conditioning unit, a washing machine purring away in another room. The human mind is good at blocking out these kinds of noises, but they can be irritating presences when capturing sound in an otherwise peaceful environment.

Ambient noise reduction recognizes such noises and reduces their levels to ensure the captured sounds resonate as intended.



Reduce ambient levels for a more human-centric audio experience

- Focus only on what matters.
- Ambient sounds can be louder than they seem to the human ear.
- Experience the sounds you want to hear.



Audio Framing

Reveal the sounds that make the story

Audio Framing opens up new possibilities by mapping the sonic landscape for the strongest audio sources. It also inspires a range of clever video modes that bring rich new solutions to storytelling.

Mic Blocking Detection

Clearing the way to clearer audio

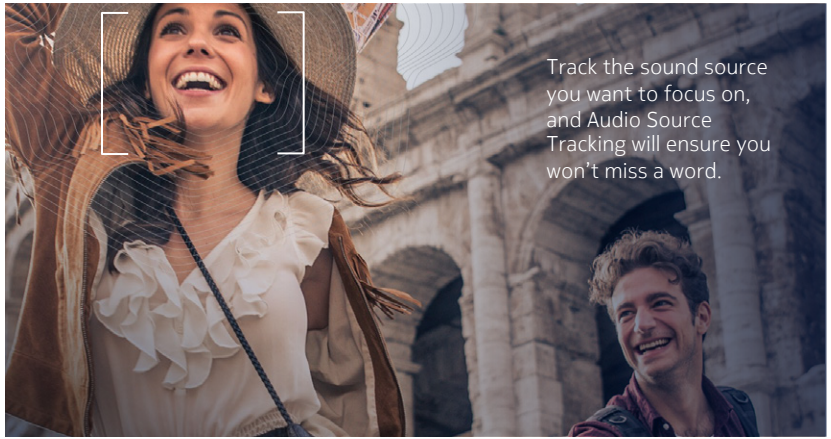
Microphone Blocking Detection (MBD) solves common problems with muffled mics in audio recording. MBD can detect microphone anomalies (such as a finger blocking it or mic damage) and assess how severe the problem is. When an issue is detected, the user can be alerted of an unusual mic input. In many occasions, it can be solved by simple repositioning.

Audio Source Tracking

A new chapter in audiovisual storytelling that attaches sounds to their sources.

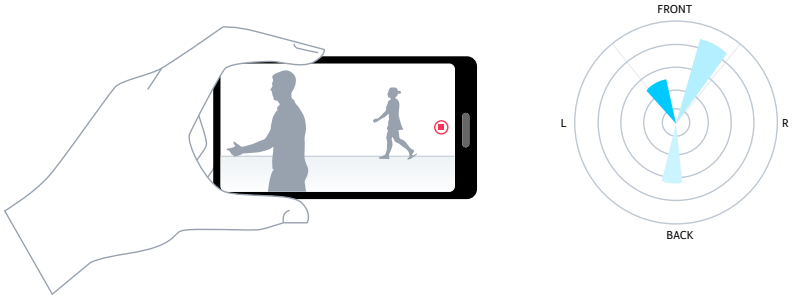
Audio Source Tracking works like your own eyes and ears. Just as you attribute a face and voice to those you know well, Audio Source Tracking makes it possible to attach sounds to their sources and use Audio Zoo to follow them in and out of shot.

This opens up unprecedented storytelling possibilities, ensuring that you hear who or what needs to be heard without background noises intruding.

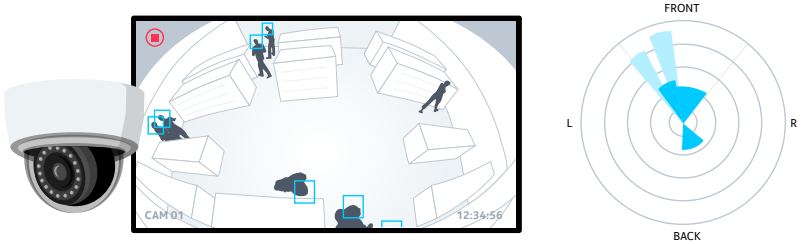


Follow audio sources in and out of shot

Audio source can be automatically matched to a face and followed out of shot.



Continue automated audio focus even when source is facing away from camera



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Intelligent Noise Reduction

Experience sounds naturally

Intelligent Noise Reduction (INR) makes captured audio sound more natural. INR preserves the spatial audio cues in recordings and helps the listener to concentrate on the sounds that matter most.

Highly automated noise reduction performance adapts to the recorded content and acoustic environment. This content adaptation is especially effective with recorded music and helps retain all nuances of the original performance.

Audio Windscreen

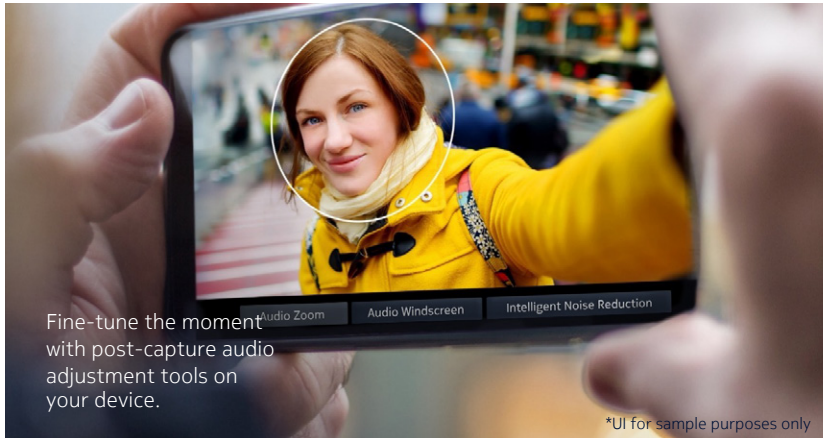
Clear the air with crisper audio

Audio Windscreen lets users capture crystal-clear audio quality in less-than-ideal conditions. Sophisticated wind detection algorithms identify and automatically adjust suppression processing to suit the wind noise conditions. It ensures audio remains clear even when conditions are not.

Audio Tune

Sound just right

Audio Tune lets users fine-tune the audio soundscape of their smart device content with post-capture explore, edit and export capabilities.. Creative freedom means limitless possibilities.

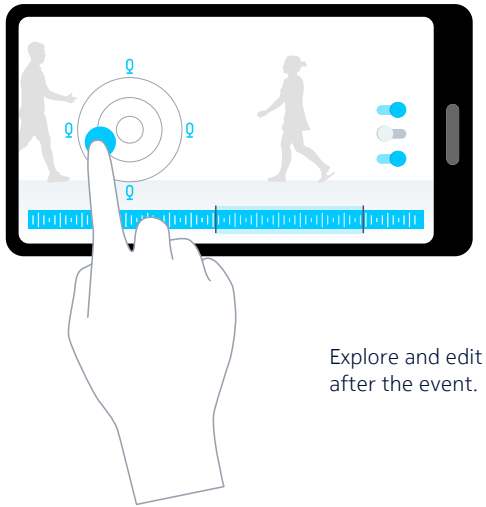


Fine-tune the moment with post-capture audio adjustment tools on your device.

*UI for sample purposes only

Fine tune the moment with post-capture audio adjustment tools

- Explore, edit and export audio post-capture.
- Users can finetune soundscapes with any OZO Audio features (e.g. Audio 3D, Audio Zoom and Audio Windscreen).



Explore and edit audio after the event.

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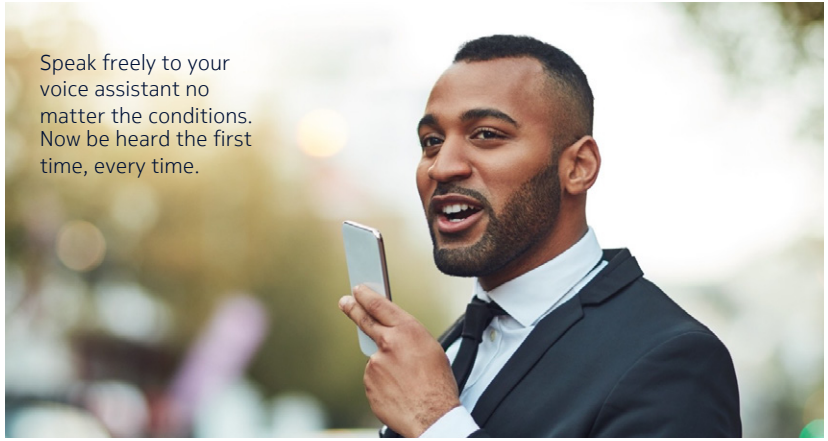
Audio Detect

Give assistance to voice assistants

Audio Detect gives voice assistants the capability to perform in real-world conditions. Enhance speech recognition with powerful wind noise reduction and audio capture enhancement.



Motor Noise Reduction

Specialized device form and functionality, such as retractable cameras, require internal servos that create unintended motor noise and interfere with audio capture.

Motor Noise Reduction introduces creative new features to overcome audio problems from motor-related product innovation. Ensure motorized innovations are seen and not heard with Motor Noise Reduction.

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OZO Playback features

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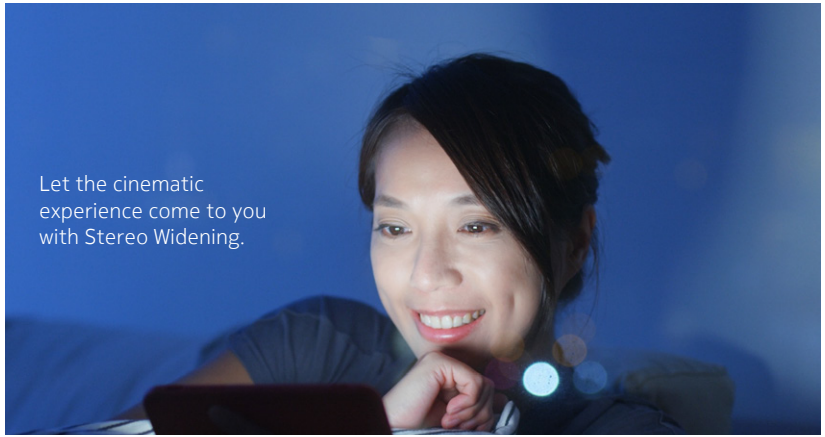
Stereo Widening

Open yourself up to new discoveries in mobile audio

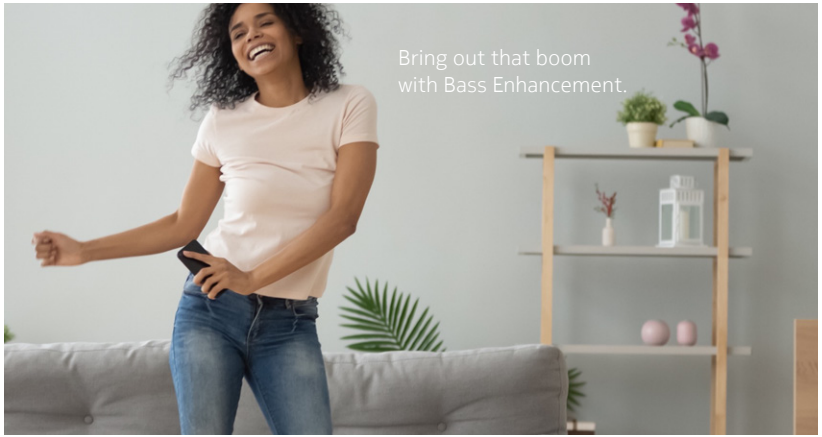
The expectations we place on home cinemas can now be applied to our mobile devices with the help of OZO Playback's peerless Stereo Widening technology. By using intelligent processing that broadens the sound field, OZO Playback adds depth to your listening experience while also looking after your ears to prevent listener fatigue.



Bass Enhancement

A low end that packs virtual weight

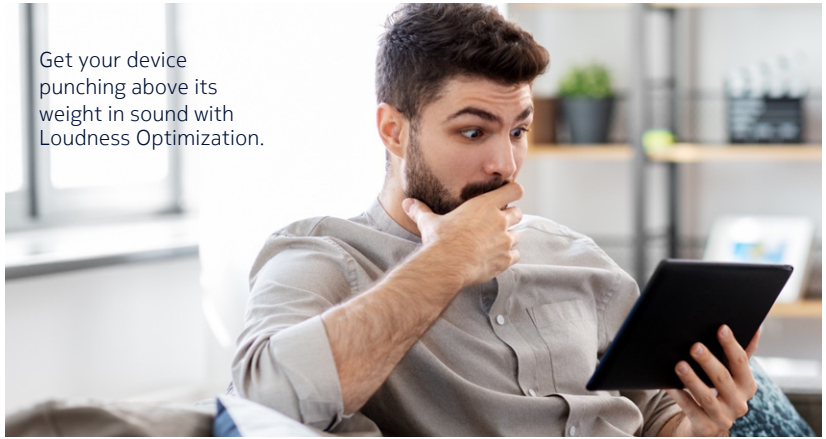
Gone are the days of tinny speakers that make the bass of your favorite tunes sound like a damp squib. OZO Playback's bass enhancement generates virtual low frequencies to create the sense of a playback experience that belies the size—and often price—of the device producing the sounds.



Loudness Optimization

Live life loud

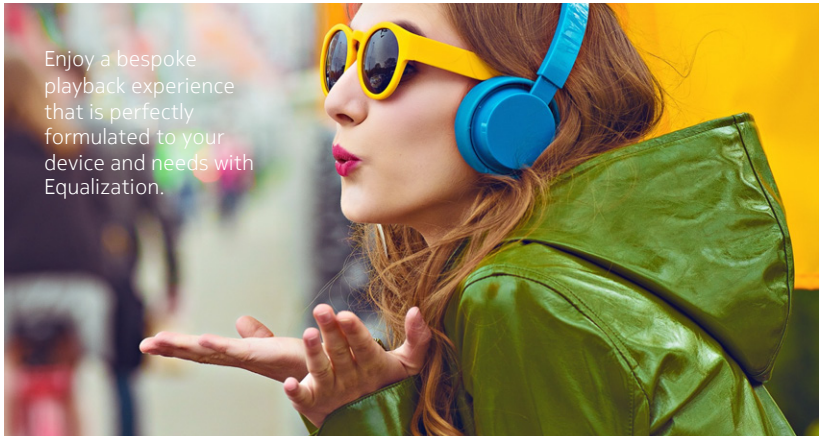
OZO Playback allows you to experience the full might of the virtual world you are entering. Every last ounce of device hardware—often well above what you might expect—is utilized to create a sound that makes you feel like you are in the heart of the action.



Equalization

A made-to-measure listening experience

OZO Playback doesn't sound this good by itself. A world-class team of engineers work hard in the lab to equalize the playback and make audio as crisp and clear as possible. These parameters are then utilized when OZO Playback software is running. This allows listeners to have multiple presets which they can then select according to preference.



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OZO Audio Optimization

Travel to the heart of your OZO Audio experience

OZO Audio and OZO Playback work in synergy to provide a listening experience that transcends what is normal in smart devices. When the user listens to OZO Audio-created content, special audio metadata enables the listener to feel like they are right in the center of the action. This is the essence of OZO—you don't want to miss out.

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