



Waves Nx

VIRTUAL REALITY AUDIO



WAVES VIRTUAL REALITY AUDIO

THE FUTURE OF AUDIO REPRODUCTION AND CREATION

Today's entertainment is on a mission to recreate the real world. Just as VR makes us feel like we are walking in a 3D environment, 3D audio recreates real-world sound in a way that surrounds you with the music, the movie, the game or the VR world.

WAVES Nx - VIRTUAL REALITY AUDIO - USING ANY HEADPHONES

Waves Nx is the most flexible and powerful Virtual Reality Audio solution on the market, it can turn any set of headphones into a VR reproduction system. **Waves Nx** provides versatile solutions for Head Tracking that allow total auditory immersion using regular headphones, with no additional peripherals.

WAVES Nx – AUDIOPHILE SOUND QUALITY

Created by Waves, the Grammy®- winning innovator of state-of-the-art audio software, **Waves Nx** meets the standards of audio professionals and audiophiles who attest to the fact that it sounds so transparent and realistic many of them feel confident enough to use it in place of expensive studio monitors.





WHAT IS WAVES Nx AND HOW DOES IT WORK?

The perception of spatial sound in the real world is a complex phenomenon. It combines the interactions between the acoustic sound waves and the room or space, the interaction with our head and ears, the reaction of our middle and inner ear and the audio nerve, and finally our brain's cognition and interpretation of the acoustic scene.

All of these complexities are lost when content is reproduced using headphones, the drivers are mounted directly on top of our ears and the acoustic vibrations are transmitted directly into the ear drums. This eliminates the crosstalk between the channels, the effects of the listener's head and the room upon the audio signal and perhaps most importantly it impairs our brains ability to extrapolate the spatial image based on our own head movements. **Waves Nx** rectifies all of these problems.

Waves Nx simulates the effects of the user's head, the acoustic space, the physical properties of the sound source and the user's head orientation, all using the highest quality digital audio processors available, in order to create a sonically rich and fully authentic 3D audio experience that immerses the listener in a virtual audio reality.



THE IMPORTANCE OF HEAD TRACKING

Even the slightest nudge to our head causes the complete audio scene to shift in the opposite direction. Our brain, being highly sensitive to change, remembers where the sound used to be and where it is now relative to our head, combines this with its knowledge that it itself (and not the source) has moved, and uses this information to locate the static external source.

Waves Nx offers three distinctive operation modes: no head tracking, camera-based face tracking and 360° head tracking using head mounted inertial measurement unit.

1

No Tracking Mode

When operating in this mode **Waves Nx** maintains a static front-facing sound stage that doesn't correct for the user's orientation. This mode offers lessened auditory realism but can be used everywhere.

2

Camera based Face Tracking

In this mode **Waves Nx** uses face-detection algorithms that utilize the image stream from any user-facing camera to track the user's head orientation and adjust the soundscape accordingly. This mode is suitable for laptops and other devices that incorporate a user facing camera, but is limited in its ability to track the user's head when he is not facing the camera.

3

Head Mounted Inertial Sensory Mode

In this mode **Waves Nx** relies on Head Tracking data from inertial sensors mounted on the user's head, using either a dedicated peripheral, integrated headphones or head-mounted VR displays. This mode offers the most extensive and precise head tracking and can track the user's head orientation in full 360 degrees on all three axes.

END USER BENEFITS



With **Waves Nx** any pair of headphones will deliver the same listening experience a GREAT speaker system does.

Games, movies, live concerts and music all sound more authentic with **Waves Nx**! Experience all of your favorite content the way it was meant to be heard!

Reduces the inconvenience caused by listening through headphones over extended periods of time.

5.1 & 7.1 streaming over regular stereo headphones: enjoy fully immersive surround sound anywhere!

Waves Nx is the ideal framework for Virtual Reality audio, delivering convincing 3D soundscapes and a degree of auditory immersion never before experienced.



VR

FOR VIRTUAL REALITY

▼

Waves Nx takes the VR experience to the next level with fully realistic 3D sound that makes the virtual world feel tangible. The pinpoint accuracy and total auditory immersion brought forth by **Waves Nx** enhances any VR experience and creates a real sense of space.



FOR GAMING

▼

Give your customers the ability hear and not just see the exact location of all the elements within the game: the car creeping in from behind, the ball bouncing off the wall just outside the field of sight. **Waves Nx** finally puts players right inside the game.

END USER BENEFITS



FOR MOVIES

▶

Waves Nx turns any headphones into a top-of-the-line movie theater sound system, creating an immersive real surround sound experience. No longer are special headphones or costly surround speaker setups needed to experience movies the way they are meant to be heard.



FOR MUSIC

▶

Music heard over headphones is experienced in an incredibly narrow way, with sounds competing over limited sonic space. Not anymore: **Waves Nx** makes music sound the way it was intended to be heard, every little sonic detail heard with three-dimensional clarity.



FOR VOICE AND COMMUNICATION

Experience the benefits of **Waves Nx** in VOIP and conferencing scenarios: **Waves Nx** can be used to position speakers in the virtual space around the user, greatly enhancing the comfort and intelligibility of conversations.



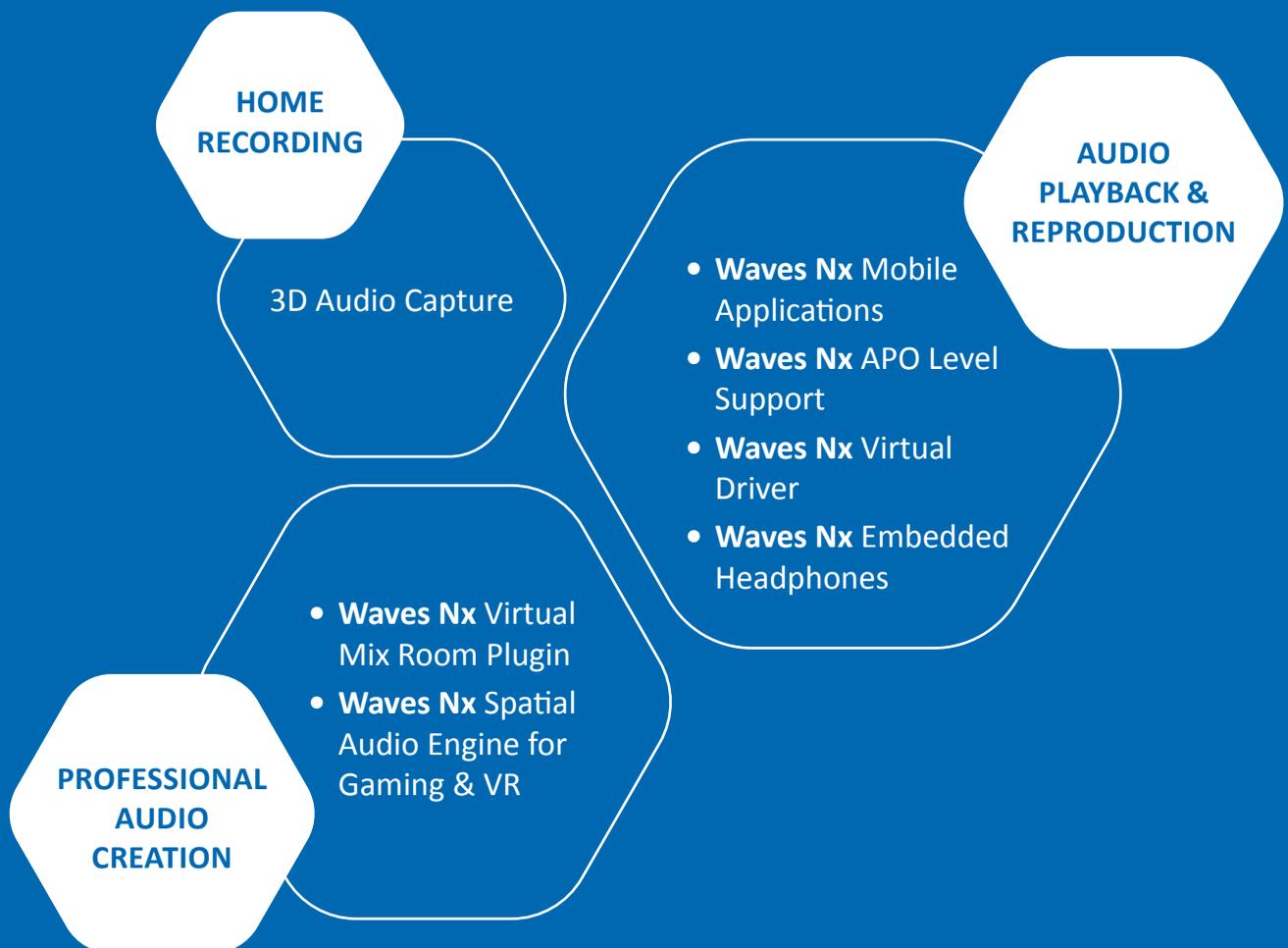
A COMPLETE 3D AUDIO INFRASTRUCTURE

Waves provides a complete end-to-end 3D audio infrastructure that allows 3D audio capture, editing and reproduction for consumers and audio professionals alike.

When it comes to flexibility and usability, Waves' 3D audio solutions are in a class of their own.

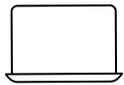
Waves Nx is a best-in-class binaural 3D-audio-over-headphones processor available on all mainstream platforms.

Learn more at: www.waves.com/nx



APPLICATIONS

Waves Nx is a comprehensive solution for a wide variety of devices and applications:



LAPTOPS



DESKTOPS



SMARTPHONES



HEAD MOUNTED
VR DISPLAYS



3D EMBEDDED
HEADPHONES



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