Virtual reality enters a new dimension

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World freediving champion Stig Severinsen holds his breathe underwater for a total of 5 minutes, 35 secs to demonstrate the functionality and accuracy of the Masimo SET pulse oximetry device, at the Consumer Electronics Show, January 8, 2015

Welcome to "The Matrix"? Not quite, but new technologies are pushing ultra-convincing virtual realities out of the realm of science fiction and into the now.

Some of this new tech was displayed at the Consumer Electronics Show

in Las Vegas this week, including Crescent Bay, the latest prototype headset from Oculus Rift.

"We really try to trick all of your senses into believing that you're there," said Nate Mitchell, co-founder of Oculus, a startup acquired last year by Facebook.

Considered among the most promising developers of virtual reality gear, Oculus says its next generation is even more immersive.

The new headset has improved ergonomics, optics and audio quality, and software that enables better head tracking to follow the user's movements.

With the headset on, you find yourself in a world with dinosaurs or extraterrestrials that seem real enough to touch. The image follows your movements when you look up, down or behind.

Hearing is believing

Another key to the virtual world is enhancements in 3D sound, Mitchell told AFP.

"We have 3D audio in all these demos where you can hear sounds not only 360 degrees around you, but above you and below you," he said.

"After visual, audio is actually one of the major senses that humans use to perceive the world around them."

Some other exhibitors at CES were showing equipment for 3D sound, which according to developers goes far beyond normal stereo quality.

People gesture in front of Intel's RealSense technology cameras, showing 3D renditions of themselves at the Consumer Electronics Show, January 8, 2015

"For me to feel that something is real, you need more than just sight," said Dimitri Singer, co-founder of the French startup 3D Sounds Lab, which was showing its 3D audio headphones.

"Sound is what bring emotion."

By giving sounds that seem to come from different dimensions, startups like 3D Sounds Lab hope to provide a new immersive cinema-like experience for people watching films on a tablet or smartphone.

Singer said this technology can also bring immersive sound to other applications such as gaming.

Virtual reality treadmill

Another virtual reality experience seen at CES was the treadmill designed by the startup Virtuix. The system uses an Oculus headset and special connected shoes, an enables the user to walk or run through the virtual world, on the belief that virtual reality cannot be experienced sitting down.

Virtuix spokesman Lorenzo Adams said the treadmill game "is just the tip of the iceberg," and that the technology can be used in applications such as medical or military training.

Christian Martin runs on the Virtuix Omni virtual reality treadmill that enables

natural movement in 360 degrees in VR, wearing Oculus VR googles at the Consumer Electronics Show

Nate Mitchell at Oculus also sees many potential applications for virtual reality technology.

It can be used for virtual face-to-face teleconferencing in a sort of "Skype on steroids," he said.

Education can benefit from this as well, he said.

"That's how your children will learn about the dinosaurs," he said.

"Being able to go hands on and travel to these different places and see these different things and perceiving that they are real and mapping them into your memory is a very powerful thing."

But one element is still missing from the virtual reality puzzle, according to Mitchell: the hands.

With the current virtual reality systems, "you can't see your hands," he said.

"You're interacting a little bit with the world using your head, but you want to reach out, not only touch but you want feel what you're touching. That's been one of the key barriers for VR."