Virtual-reality goggles go beyond gaming

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The $300 goggles that Irvine, Calif.-based Oculus VR began shipping to software developers in March deliver a glimpse of a futuristic technology that's been long awaited by video gamers. They allow a player to step inside a computer-created virtual world.

What might be most eye-opening, though, is how the Oculus Rift goggles are finding their way into non-gaming applications.

Architects in Michigan have found ways to visualize houses that haven't been constructed yet. A manufacturer in Indiana sees a way to save

money by demonstrating its products without having to transport them across the country. NASA believes it could use virtual reality to let scientists, and the public, explore the landscape on the surface of Mars without setting foot in a spaceship.

The goggles themselves are still a work in progress. In its current version, the Rift delivers a relatively low-resolution experience that doesn't yet track the full range of human motion. As a result, some people get motion sickness.

"Many people find wandering around with a head-mounted display in a 3-D stereoscopic world disconcerting," said Walt Scacchi, research director at the University of California-Irvine's Institute For Virtual Environments and Computer Games. He's one of them. But Scacchi is confident that improvements in technologies such as increased screen resolution and less delay in image display "will bring us closer to consumer-ready, immersive 3-D stereoscopic displays."

Oculus is using $16 million in venture capital it raised in June to hire virtual reality experts to solve those and other problems. One of their tasks is to get feedback from users of the more than 35,000 developer kits they've sold to date. Oculus is also counting on those developers to write the software that puts people in other worlds once it becomes consumer-ready.

The Orange County Register asked several people who have tried the Rift in different industries to describe how they're using virtual reality - and what's holding the technology back.

WALKING ON MARS: Jeff Norris is a computer scientist leading the Mission Operations Innovation Office at NASA's Jet Propulsion Laboratory in Pasadena, Calif., a lab focused on projects that can change the way humans interact with and control spacecraft. Before that, he

worked on development of the Mars Curiosity Rover and the uplink system used to command it.

"One of the things we're investigating is the use of immersive displays for looking at data returned from spacecraft. We're looking at virtual reality technology as a way for our scientists and engineers to better understand the environment around a spacecraft and then better control that spacecraft.

"But we're also looking at these technologies as a way to share the journey of these missions with the public. The fact that (inexpensive devices like the Rift) are becoming more accessible to a broader audience helps both those goals.

"It's now conceivable to put these kinds of devices in the hands of a whole mission science team. It's also possible for us to imagine in the not-too-distant future millions of people in the public having these kinds of devices and being able to consume this data along with us."

One NASA demo takes information from the Curiosity Rover on Mars and turns it into panoramic views, as if you were sitting on the vehicle looking around. Another lets you move around the International Space Station, in 3-D, using an Xbox controller.

"If we put humans on Mars someday, we should have millions of people there with them standing beside them in this holodeck-like way. In 1969, the television was the most engaging and effective medium for bringing the world along. It was the perfect choice at the time. It's not the perfect choice now."

BACK TO SCHOOL: Matt Bell is CEO of a Mountain View, Calif., firm, Matterport, that has raised $10 million to build a camera that can make an accurate 3-D model of rooms and other interior spaces and then

share it online. Imagine redecorating your home virtually before pulling the trigger on any purchases.

"One of my favorite experiences with the Rift was when viewing a model of a preschool (whose images) we had captured. I had the idea to change the user height to be 3 feet so that I could experience the preschool as a preschooler. It brought a flood of memories back - masses of toys scattered across the ground, with posters on high walls and countertops out of reach.

"That was in July of this year. I've never been to the preschool itself; I've only experienced it online. We imaged the entire preschool, which consisted of several large rooms. It took about 90 minutes to capture everything. Processing the data into a 3-D model was fully automatic and took about 30 minutes."

LOSE THE TANKS: Jay Fuller works for Wessels Co., a company near Indianapolis that makes pressure vessels. Those are enormous containers, up to 12 feet across, that cost thousands to buy and might be used as part of a drinking-water or water-heating system.

"We do a couple large industry tradeshows a year, which involves shipping out some of our very large, very heavy tanks back and forth between convention halls. As you can imagine, that can get pretty expensive. So I thought, 'Wouldn't it be cool if we could bring around a virtual reality warehouse demo showcasing some of our larger tank models to some of these shows?'

"Because we model all of our tanks in 3-D using SolidWorks (a modeling software program), it was a relatively painless process of converting them into meshes suitable for the Unity game engine (a popular video game development toolkit that works with the Rift). We're planning to premiere the finished demo at our biggest tradeshow, the

AHR Expo (in New York) this coming January."

THE VIRTUAL ARCHITECT: Jon Brouchoud has a master's degree in architecture and is the lead developer at his consultancy firm Arch Virtual, based in Wisconsin. He was hired to make 3-D walkthroughs of buildings for Web browsers before the Rift came along, but now has a steady stream of projects for clients that include architects, real estate developers, corporations and universities porting the work to the fully immersive Oculus gear.

"We've been focusing on short and sweet experiences. We're finding that just putting an Oculus Rift on someone is enough all by itself to just blow people away. There's a bit of overhyping in terms of game development. It might just be because I'm not a game developer. I don't see people wearing this for extended periods of time playing long game experiences - first-person shooters, where they're running around.

"Most of the clients we're showing these projects, they've never been in the Oculus Rift before. We bring them in there and they're not prepared to spend 20 minutes walking around inside of it. Two or three minutes is about all they can handle. Luckily, that's all they really need. You want to stand inside the lobby of a new building that's about to be constructed you just stand there, look around, walk around, take the experience in.

"Almost every one of them is blown away. I'd say 1 in maybe 30 or 40 people just don't seem get it. We went around and did demos with architects all over Chicago and San Francisco - like 100 architects tried it on. Out of those there were maybe one or two that were like, 'eh.' "

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