

3M helped make virtual reality headsets smaller. Next step? More consumer demand

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David Ylitalo imagines one day opening this newspaper, scanning for a story and having the text pulled right up to his eyes for easy reading. There is no paper, however, just a virtual reality app that mimics the real

thing.

"We're right on the precipice of this becoming the next way people consume [visual information](#) from a computer," Ylitalo said. "Content that supports all these different uses—that's what's going to make it the next big thing."

Ylitalo is vice president of R&D for 3M's Display Materials Division, which has been supporting VR headset makers for a decade.

3M's "pancake optics" help shrink the size of headsets while improving display quality, both key product improvements for VR's quest to get more consumers to buy into the tech.

As Minnesota-based 3M prepares to spin off its health care business and reposition the remaining company for growth, the industrial giant is embedding its materials and technology in a number of next-big-things: electric vehicles, industrial automation, climate tech and virtual and augmented reality.

Sales have slowed for traditional consumer electronics like phones, TVs and computers—a core business segment for 3M that typically generates more than \$3 billion in yearly sales. Electronics revenue is down 23% for the first half of the year amid weak consumer demand, especially in China.

Meanwhile, numerous market reports predict a multibillion-dollar spike in VR hardware sales over the coming years.

"Much like our customers, we're waiting for this to really take off, and we're already working on the next generation and the next-next generation of this technology," Ylitalo said.

A Citi report last year said that by 2030 there could be trillions of dollars spent on and in the metaverse, which the bank defines broadly as a highly immersive internet across a wide variety of devices.

"We believe that the metaverse will eventually help us find new enhanced ways to do all of our current activities, including commerce, entertainment and media, education and training, manufacturing and enterprise in general," the report said.

The promise of the metaverse has been touted for years, drawing more attention during the pandemic as workplaces and communities explored new ways to interact online. Lately, though, it's faced setbacks from tech company layoffs and resources shifting to artificial intelligence.

"It goes through its own hype cycles, like a lot of industries do," said Nick Roseth, Minneapolis chapter president of the VR/AR Association trade group. "The two biggest issues are: There aren't enough devices on the market, and content is still expensive."

The release of Apple's Vision Pro this summer was seen as a breakthrough moment—but for \$3,500 it will be used mostly by developers to continue pushing the boundaries of what the tech can be used for, Roseth said.

He expects it will be another 18 to 24 months before real progress is made on affordability and accessibility for consumers.

"I have to remind myself that 90% of the population doesn't realize this technology exists," Roseth said. "It's a slow burn."

It took five years for 3M to find ways to improve VR headsets after being approached by companies at the Consumer Electronics Show in 2013.

"They simply asked us if we could make their headsets smaller," Susan Kent, R&D lab director at 3M, said earlier this year. "We shortly realized that we could and make the image quality ... better and look less cartoony."

After 3M combined pancake lenses with its patented reflective polarizer technology, headsets could bring screens closer to a user's face, making them smaller while also enabling crisp text.

3M has also developed optical films for heads-up-displays—like digital data displayed on a car windshield. That type of augmented reality, as opposed to a fully immersive virtual headset, has already seen wide adoption.

"We're already living with augmented reality on our phones," Roseth said, pointing to Pokemon Go, Ikea Place and fashion try-on apps. "That blends information with the real world."

Headsets, heads-up-displays and more were on display last month at the 3M Open in Blaine. As the golf tournament's sponsor, 3M's fan experience tent focused on how its technology is connecting the physical and digital worlds—a hands-on look at all things "phygital."

The golf games—including an augmented-reality putting tool—were especially popular.

"From here, it's about doing this at a large scale," Ylitalo said, "at a volume and cost that allows our customers to put these on not millions of faces but hundreds of millions or billions."

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