

Will VR go from niche to mainstream? It all depends on compelling VR content

Applications that capitalize on virtual reality's unique capabilities will be key to enabling VR to enjoy a significant growth rate.

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IF YOU DON'T yet know anyone who has a *Meta Quest*, *HTC VIVE*, or *Sony PlayStation® VR*, check in again at the end of the year. Deloitte Global predicts that the virtual reality (VR) market will generate US\$7 billion in revenue globally in 2023, an impressive 50% increase over 2022's US\$4.7 billion. Ninety percent of that revenue will come from headset kit sales, of which 14 million units averaging US\$450 each are expected to sell in 2023. The remainder, generated by the much smaller software market, will consist mostly of VR content—principally games, but also some enterprise applications—which will see revenues of

approximately US\$0.7 billion. We further predict that the installed base of actively used VR headsets will reach 22 million in 2023, almost 50% higher than that of mid-2022.

VR's success will depend on doing what other devices can't

When Deloitte first sized the VR market in 2016,¹ it stood at US\$1 billion for hardware and software combined, so a US\$7 billion year represents quite the growth rate over the years. This growth is being

catalyzed in part by improvements in the underlying technology, including greater processing power, better screens, and richer audio. 2023's headsets should offer higher frame rates, higher-resolution displays, and enhanced spatial audio (which enables users to better discern the direction of sounds, such as a speaker's voice), enabling an even more realistic immersive experience. Better ergonomics, including lighter weight and better ventilation, would also assist.

That said, in terms of numbers, VR has a long way to go to catch up with other digital devices. Smartphones alone count almost 5 billion users worldwide,² and billions also use PCs, tablets, and TV sets. Even smart speakers, a relatively new device that launched in 2017, will likely boast an installed base of more than 500 million units by the end of 2023.³ At an active installed base of just 22 million in 2023, VR will therefore remain relatively niche for the time being.

VR's future growth will hinge on creating applications for consumers and enterprises that take full advantage of the immersive medium and encourage repeat usage. Advances in social VR games, next-gen storytelling, remote travel and education, and enterprise training and collaboration could all help drive adoption. However, if VR use cases overindex on its novelty, or if applications are hard to scale or simply work better on other devices, it's unlikely to reach the adoption rate of other consumer devices. VR hardware and software providers understand this: In 2023, we expect the industry to progress greatly in identifying the specific consumer and enterprise applications for which VR is optimal, able to address needs not currently being met by other devices or, indeed, by real-world experiences.

The most suitable use cases will be for immersive applications that do not require frequent, precise control, like entering text. These applications would mostly track a user's hands, and increasingly their eyes and bodies, as input. Games can also

access inputs from game controllers or steering wheels. Because VR users who are moving around risk bumping into real-life objects or people, VR experiences are more fit for dedicated spaces rather than communal settings. Headsets and positional tracking devices can model the physical spaces in which users don headsets and even track their body movements.

Due to current battery limitations for untethered headsets—and fatigue for some users—VR will also be more appropriate for uses that last for tens of minutes at a time rather than hours.⁴ For some users, too, the heat generated by a headset may cause dryness of the eyes.⁵ This means that they won't use VR for a full day—but again, they may not need to for it to be useful.

Games are likely to be one of VR's major applications in the consumer space, particularly in immersive genres such as first-person shooters, racing games, and simulators. VR's big advantage for these types of games is its much higher degree of immersion. While big TV screens and monitors offer an ever-larger field of view, VR views have no edges at all. With *Sony* launching its second-generation VR headset in early 2023,⁶ and roughly 20 major games likely to launch for VR or with a VR option in 2023,⁷ more gamers may be tempted to try VR. One limitation, however, may be that even leading VR multiplayer games are often limited to just 10 players together in a session, while many of the most popular 2D games on consoles and PCs can host multiplayer experiences with up to 150 players simultaneously. For VR to convert more multiplayer gamers, it may need to have stronger synchronization supported by next-generation networks.⁸

Other consumer VR content may include genres such as horror that use immersion to intensify the experience.⁹ Remote travel and education uses will also serve some niche consumer experiences. Additionally, VR is likely to be increasingly used for mindfulness, with users donning a headset to be

transported to a tropical rainforest minus the humidity, or to gaze at the northern lights without the cold.

For enterprise uses, VR's opportunity lies in simulating work experiences, visualizing enterprise and industrial-scale systems, and overcoming the challenges of distance. For example, 2023's VR systems are likely to excel at hosting meetings for small teams that are unable to gather in person. Some may find VR-enabled virtual meetings superior to a "traditional" 2D video call, as VR makes it easier to see and hear who is speaking at any given time. VR avatars could also prompt better engagement with meetings by attendees who might otherwise, in a 2D video call, be tempted to turn off video and read email or play games on their phone.

VR can also be used for immersive training and work simulations alongside in-person and 2D video classrooms. Workers can train using virtual interfaces and machine models, run customer simulations, and practice emergency response drills without risk of failure. Such simulations can leverage the use of digital twins—virtual 3D models of physical systems connected to real-time data sensors—ranging from digitized 3D models of machinery to entire factories or towns recreated as functioning digital objects.¹⁰ Enabling users to "touch" and manipulate digital models directly would contribute to the emergence of the enterprise metaverse, which seeks to bring remote collaborators together into virtual spaces where they can interact with 3D objects, assemblies, and systems.



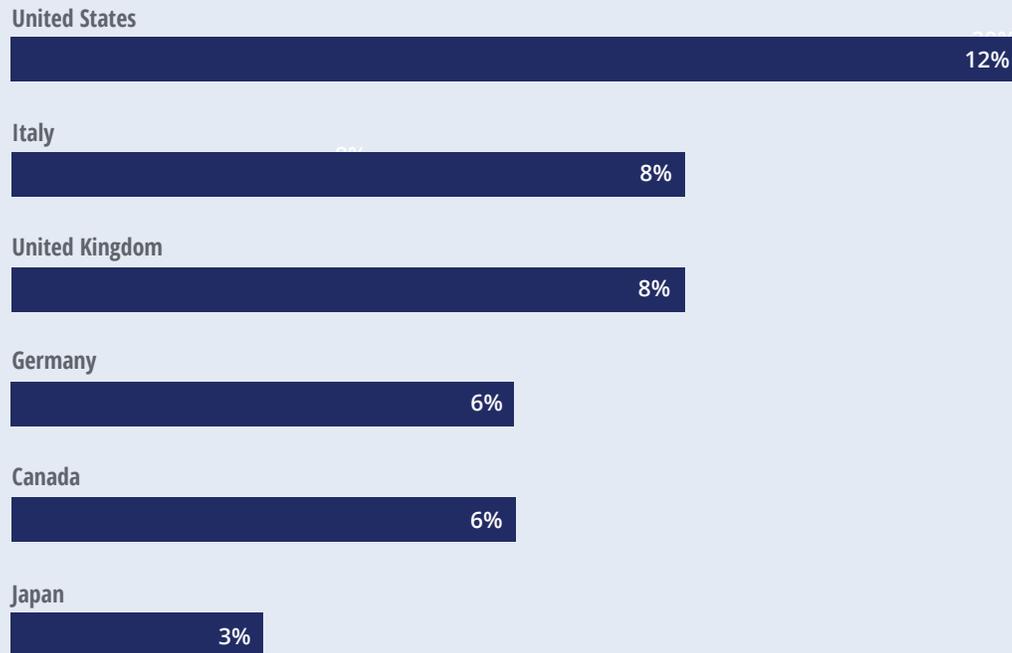
THE BOTTOM LINE

Encouraging greater usage, especially among consumers, relies on both the quality and the quantity of VR content. Devices such as smartphones, tablets, and connected TVs have thrived on the availability of millions of apps. For VR to thrive, dedicated VR apps will need to see greater amounts of innovation. As of mid-2022, VR apps only numbered in the low thousands.¹¹ Moreover, consumer VR today competes for attention with phones, tablets, consoles, and PCs—a fiendish set of rivals—further demanding high-quality innovation from VR developers.

FIGURE 1

Relatively few people own virtual reality headsets today

Percentage of respondents who owned or had access to a VR headset in 2022



Sources: Data from *Digital Consumer Trends*, Global Edition, Deloitte, April–July 2022; other Deloitte sources.

For enterprises, leaders should be very clear about which applications are uniquely or best suited to each device, bearing in mind that the scope of business applications is likely to be limited in the near term. It's worth remembering in this regard that the first smartphones were used predominantly for email before expanding to their plethora of other uses; VR may follow the same trajectory. Enterprises should carefully track the success of their VR deployments and identify which applications gain traction versus those that employees abandon after a few uses. Some may be reluctant to use VR, finding the idea of being strapped into an apparatus that controls their field of view overwhelming, and occasionally nauseating, rather than exhilarating. Businesses may also need other capabilities to support VR's use, including technical support, connectivity, security, and even potential compliance support for data collection or deployment in critical use cases. For example, some VR headsets enable eye-tracking, which represents a new personal data set that will need to be controlled.

Despite challenges like these, the VR market has plenty of momentum for continued growth. Putting on a VR headset, there is an undeniable moment of awe and a sense of being in an actual "place". The challenge is what to do next. If consumer and enterprise applications become more useful and more widespread, people should use VR headsets and peripherals more and more, and be more and more apt to buy content to run on them. The hardware and software markets could then feed off each other in a virtuous cycle of growth, taking VR beyond niche at last.

Endnotes

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