FINLEY

UNDERSTANDING THE METAVERSE

ARE YOU READY FOR THE NEXT MAJOR SHIFT IN THE INTERNET?

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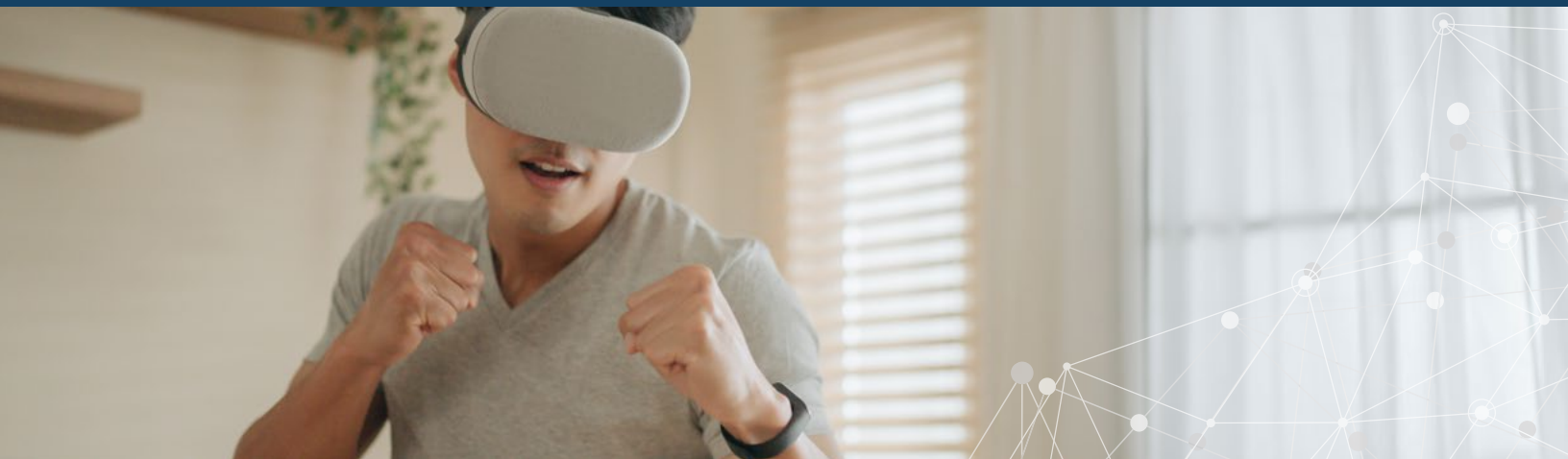


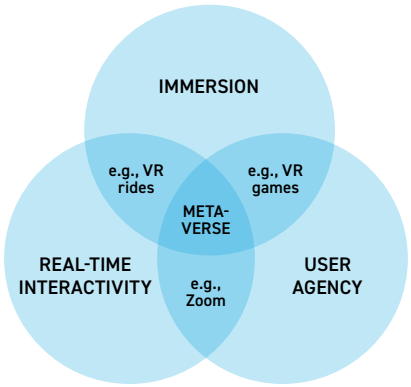
I.

WHAT IS THE METAVERSE?

Whether you know the term from science fiction, in reference to new technologies, related to Facebook's name change, or from somewhere else, it's likely you've at least heard of the metaverse. But what is it? The metaverse is a new internet-based technology that will allow people to interact online in a seamless 3D platform. McKinsey & Company recently defined the metaverse as having "three features: a sense of immersion, real-time interactivity, and user agency." These three attributes relate to each other in multiple ways, and each of them might be defined, first, by what they are not:

- **Immersion** as opposed to a two-dimensional view: The metaverse will offer a virtual reality experience, where you feel you are truly in the online world.
- **Real-time interactivity** as opposed to delayed communication. Email and texting offer interaction, but it's not in real time the way a phone call or an in-person conversation is.
- **User agency** as opposed to a passive experience. Something you watch—like a TV show or movie—may be immersive, but you can't change it. You have no agency.

You also might imagine a Venn diagram in which these three attributes meet at certain points but not in others:



The metaverse is an emerging technology and is, therefore, a concept that is still evolving. But the promise of the metaverse is to combine technologies we have now—virtual reality, internet-enabled personal interaction with anyone across the world, and the power to control your own setting, responses, and actions—for an experience that will put users in the driver's seat while feeling like they've stepped outside their physical world into something new.

II.

HOW THE METAVERSE WILL BE USED

The uses of the metaverse will only be limited by our imaginations. An exhaustive list of metaverse applications is impossible—and always will be—but multiple uses are at the forefront of current development:

- **Entertainment:** The book and movie *Ready Player One* offer one glimpse of the metaverse: a virtual reality world in which people will interact in an online gaming community as life-size avatars inhabiting a three-dimensional universe where you walk around, talk to other people, and compete against other players from around the world. This will undoubtedly be one use of the metaverse. The massive popularity of games like Fortnite and Minecraft has already proven the collective appetite for games played by millions of people simultaneously. Apps like Second Life allow you to create families and live in virtual homes with strangers. Currently, these games lack an immersive element—they do not exist in virtual reality. While you can change your avatar's "skin" in Fortnite, in the metaverse you will be able to change your own appearance. You'll walk around looking however you want to look, and you'll change your appearance at will. You won't press a button to run; you'll move your legs. The metaverse promises to revolutionize the world of online gaming.

- **Educational settings:** Imagine a virtual classroom that's not a grid of faces (like Zoom or Teams) but a 3D virtual space where students walk in, find an open seat, sit at desks, and look at their teacher. The teacher might write things—in their own handwriting—on a virtual screen, using virtual chalk. Rather than show an educational video to a class, the classroom might dissolve as the students are taken to a new virtual setting where they bear witness to any number of things: historical events, biological phenomena, real-life examples of mathematical concepts, and so on.

- **Business use:** The COVID-19 pandemic and subsequent lockdown instilled in all of us a love/hate relationship with video conference programs. They're vital for business, but frustrating to use. We forget to unmute ourselves, we interrupt each other when our connections lag, we all talk at once, and we see each other only in tiny squares. Meetings in the metaverse will offer the experience of sitting around a shared table and looking at each other. Product demonstrations and development using "digital twin" technology will allow users to touch and feel products, getting a sense of how they look in 3D. ABI Research estimates that commercial metaverse applications alone will be a $60 billion industry by 2030.

The promise of the metaverse is that much of what you can do both in real life and online will combine into a single setting. The examples above are only the beginning. The metaverse will also have profound consequences for personal interaction, the medical field and telehealth, customer service, counseling and coaching of all kinds, data backup and security, online commerce (imagine, for instance, trying clothes on your virtual self before you buy them), and much more.

III.

HOW BROADBAND PROVIDERS WILL POWER THE METAVERSE

If it sounds like the metaverse will require enormous bandwidth, you're exactly right. The demand for sufficient data is one challenge of making the metaverse a current reality. Inside Telecom puts it starkly: "The current computing and communications infrastructure is not yet ready for a fully-fledged Metaverse deployment." This is a challenge the broadband industry must meet head-on if we want to be prepared for the data demands of the multiverse.

Broadband providers will power the metaverse in multiple ways:

1. **Providing backbone technology for massive data needs.** Whether through direct fiber connections to homes and businesses or fiber-to-the-tower lines that drive 5G technology and the introduction of 6G in the next decade, telecom providers will be crucial to metaverse implementation. Estimates suggest that HD virtual reality video alone—which does not include interactions with other users—requires at least a 100 Mbps connection. Estimates of the speeds required to power the metaverse range from at least 1 Gbps (according to iceconnect) up to 5 Gbps (according to Light Reading) and beyond. Given that many multiverse users will access the multiverse via Wi-Fi or mobile connections, it's safe to assume our networks and the tools we use to connect will require profound enhancement before they are metaverse-ready.

2. **Reducing latency.** Related to point #1, the danger of insufficient connectivity is a metaverse that does not fulfill the promise of seamlessness. The metaverse will not succeed if it cannot offer users a smooth, latency-free experience. Latency is already an issue for gamers, and we've all been in virtual meetings where latency disrupts the flow of human interaction. Inside Telecom calls latency "the main obstacle to the proper 'Metaversial experience.'" Both upload and download speeds affect latency, so symmetrical speeds will be crucial

to the metaverse. Broadband providers can begin preparing for the demands of the future by offering symmetrical speeds today. Latency will be the difference between the broadband providers that make it in the metaverse, and those that don't.

3. **Enhancing cybersecurity.** EY puts it simply: "As we move into the metaverse, vast amounts of critical data will be processed." User privacy and security will be more important than ever when people are interacting in immersive online forums. Broadband providers that can ensure the safety of users' identities and data within the metaverse will be uniquely prepared for this next iteration of the internet.

IV.

SUMMARY

In October 2021, Facebook announced the formation of a parent company called Meta (short for metaverse). In doing so, Facebook—one of the most highly valued and farthest-reaching companies in the world—signaled its anticipation of and investment in the metaverse, a sure sign that the metaverse is on the way. CEO Mark Zuckerberg, in a "Founder's Letter," wrote: "In recent decades, technology has given people the power to connect and express ourselves more naturally. When I started Facebook, we mostly typed text on websites. When we got phones with cameras, the internet became more visual and mobile. As connections got faster, video became a richer way to share experiences. We've gone from desktop to web to mobile; from text to photos to video. But this isn't the end of the line. The next platform will be even more immersive—an embodied internet where you're in the experience, not just looking at it."

This statement encapsulates a strong vision for the metaverse. While the full realization of the metaverse is still years away, it is coming. "As connections got faster…" Zuckerberg writes, acknowledging the fact that enhanced online experiences are driven by superior networks, speed, and reliability. (Facebook itself published an article about the connectivity the metaverse will require.) The broadband companies that create the infrastructure necessary to prepare for the arrival of the metaverse will thrive in the new reality it brings. Our industry's adaptiveness, resilience, technological know-how, and creativity have enabled the internet to become a vital part of everyday life. Robust infrastructure coupled with a continued commitment to excellence and innovation will allow the broadband industry to forge the path into the future.