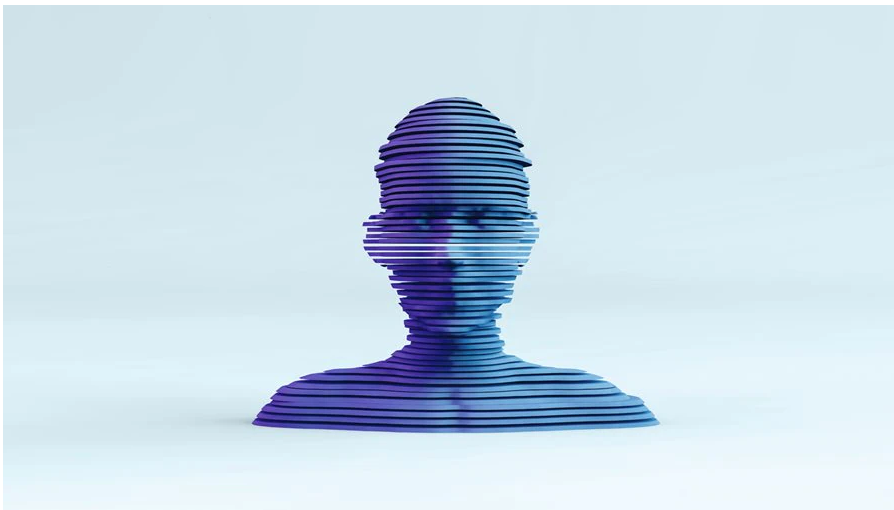


What is the metaverse?

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These emerging digital spaces use virtual reality, augmented reality, and other technologies to allow for lifelike experiences online.



While the **metaverse** is a comparatively new concept, it's attracting increasing interest from business and consumers. Is the metaverse a digital playground for

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interact virtually—in a highly realistic way—with one another in any context (for social or recreational purposes, business transactions, et cetera). And the “enterprise metaverse” may coalesce in a way that unlocks even more opportunity, beyond simply serving as a virtual place where people interact. For all the buzz around the metaverse, its future is up in the air, to some degree, as people and companies explore the possibilities.

Advanced AR headsets—together with new and enabling technologies such as [5G technology](#) and semiconductors capable of delivering mega volumes of data—are helping the metaverse deliver a level of virtual digital experience that is more realistic than the online gaming platforms that have been around since the early 2000s (and were the early forebears of the metaverse), where people could create avatars through which they could have semi-lifelike virtual experiences.

In the words of [futurist Cathy Hackl](#), “Much of what we’ve read about the metaverse from sci-fi has been pretty dystopic, but I do think we need to envision what it will look like so we can build toward a more positive view of the future.” And where might that lead? “We don’t want to escape reality but rather embrace and augment it with virtual content and experiences that can make things more fulfilling and make us feel more connected to our loved ones, more productive at work, and happier people,” says Hackl.

What are AR and VR?

Simply put, AR, or augmented reality, uses technology to add or augment a person’s view of reality with a computer-generated image. If you’ve tried *Pokémon GO* on your

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Virtual reality (VR), on the other hand, doesn't include a physical-world component (besides the handset or other equipment such as a helmet or sensor-laden gloves). In VR, users enter a computer-generated simulation but can interact with it in a way that seems real. You might be familiar with videogames that use VR, but the technology is used in a variety of other ways that go beyond recreation.

Here are some examples of how AR and VR can be used:

- in immersive ideation for [product development](#)
- during [design-to-value \(DtV\)](#) exercises
- in the "[creative economy](#)" (art, journalism, music, et cetera), by offering opportunities to create transformative experiences by promoting new feelings, skills, and understanding
- [in sports and entertainment](#) (fans might watch 360-degree AR replays, for example)
- [in retail for "experience design"](#) (creating a "wow" factor in retail, beyond just shopping)

Mixed reality, or MR, is a term you might also see used. That generally refers to situations that combine elements of both AR and VR.

What does gaming have to do with the metaverse?

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Indeed, the metaverse is expected to [go beyond “gaming 2.0.”](#) One example that illustrates the momentum: the amount of money spent on in-game, virtual goods. In 2015, spending on these was roughly \$5 billion; in 2021, that figure reached \$60 billion or \$70 billion, even excluding [nonfungible tokens \(NFTs\)](#).

Why the uptick? Beyond technological advances (in broadband penetration, latency, and graphics processing units), broader cultural shifts are afoot, says [technologist and author Matthew Ball](#). “This idea that we’ve thought of for decades is now a little bit more tangible, even if in the virtual sense,” Ball notes. “There are hundreds of millions of people connecting to these environments every day. There are many of the most storied companies on earth building a presence, and we have commerce in the tens and soon to be hundreds of billions of dollars.”

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What will the metaverse look like?

The pandemic fueled an increase in the acceptance of virtual interactions, and the metaverse is geared to extend commerce beyond physical and virtual worlds to connect them better. The [emerging metaverse in fashion and retail](#) is where brands are launching stores, games, and digital events. The [future metaverse](#) may be much broader, including virtual shared spaces for people to interact, work, and take classes. It could showcase virtual products fueled by e-commerce and allow testing to support the R&D of physical

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New metaverse applications will allow customers and enthusiasts to gather virtually around brands and products. Car companies can offer virtual test drives of their vehicles. New ecosystems will enable the sharing community in which people may be able to use each other's cars and other property. And manufacturers that now use digital twins to monitor physical factories virtually may be able to tap the metaverse for even more realistic and effective experiences.

And that's just the beginning. In the words of metaverse expert Ball, "I believe absolutely that the advent of graphics-based computing and 3-D environments is going to change many of the technologies, standards, conventions, and monetization models." That impact could be lasting, he says. "It's going to have profound generational change. And, most importantly, it's going to reach many of the categories we've long hoped would be altered by mobile and the internet and yet haven't been."

While there are questions about decentralization, the metaverse's ultimate structure may be familiar, in Ball's estimation. "We're likely to see a structure similar to that of what we see today: a roster of horizontally and vertically integrated platforms, which are either primarily software based or primarily hardware based and are likely to concentrate all of the things we consider valuable, such as data, social graphs, spend, advertising, and so on."

Are there any real-world metaverse examples for today's use cases?

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- For entertainment, you might [attend a virtual concert](#) or event: Lil Nas X performed in the Roblox gaming metaverse during the pandemic, for example.
- [Commerce is shifting](#) as we head into virtual spaces and shared experiences. Virtual-to-virtual commerce, for instance, when a *Fortnite* player uses V-Bucks to make an in-game purchase, is fairly common. Physical-to-virtual transactions are also being explored; toy company L.O.L Surprise! developed card packets with QR codes that can be scanned to unlock NFTs and virtual experiences.
- In [healthcare](#), AR displays were recently used to perform surgeries on live patients at Johns Hopkins, helping the neurosurgery and spinal department to execute tasks better than ever.
- [Educational providers](#) are creating coursework and materials that give teachers new ways to express and participate in classrooms; imagine that instead of building a papier-mâché model of a volcano you could virtually experience being the magma that's ejected into the atmosphere?
- In [heavy industries](#) and other contexts, VR is being applied to help teach people new vocational skills, like repairing trucks or other equipment—in some cases shortening training time considerably. And in field operations, people are using AR for remote assistance, which could be even more interesting as organizations begin to use the data generated from this process.
- In [fashion and luxury](#), brands have made inroads. Take, for instance, the Gucci Garden in Roblox, which saw 19 million visitors. Or consider new business models for virtual fashion—for instance, built around technology allowing for online showrooms.

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- Metaverse concepts could also help build [more efficient and productive operations](#). Take the example of BMW, which has an all-electric vehicle production line that ran as a simulation for six months. Virtual cars were built on a one-to-one scale in the metaverse before the factory's final layout was determined.

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What's the business case or economic opportunity for the metaverse?

A lot may come down to exactly how the metaverse is defined and evolves. Estimates vary, and many are watching the hype cycle closely.

[As Ball observes](#), "We're going to see more brands, more investment, more M&A, and more users in all things 3-D and real-time rendered. These are all trends that have been going on for multiple decades, and there's no reason to believe that time spent online, the number of smartphones in use, and the criticality of digital to our economy are going to reverse."

But the transition toward mainstream acceptance of the metaverse may take longer. "We should expect some sort of backlash to the metaverse as a theme, as an investment case, and as a point of shareholder prioritization," Ball says, "because the narrative, at least in my perspective, has outstripped the products and the revenues that we see."

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way, and you can make the impossible happen?” says McKinsey expert [Richard Ward](#). “Those types of things really offer people more efficiency and productivity.”

Are there metaverse risks?

Even as the concept of the metaverse gains steam, there will be risks to watch for. Some of the concerns around the metaverse involve:

- keeping [data and privacy](#) issues, along with regulatory standards related to [user rights](#), top of mind
- ensuring that the metaverses being built are [equitable, safe, and sustainable](#), keeping talent and diversity, equity, and inclusion issues in clear sight while also minimizing biases related to technology
- addressing and stamping out [abuse, harassment, and misinformation](#)

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What metaverse questions do business leaders need to answer?

Here's counsel from metaverse experts on what executives and other business leaders can

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- Get educated on the metaverse. And don't forget to pass along that knowledge to staff and teams.
- Be strategic about how you respond to or approach the metaverse. If you've set up a marketing activation, for instance, you might need to take a step back to consider a holistic strategy.
- When it comes to talent, look internally. Consider who, within your organization, has the experience that's needed now to think about the metaverse and start building teams. That might include innovation teams that have developed AR and VR for years, and that know how to think spatially and in 3-D. It could also involve rising leaders who are "crypto natives": "Sometimes the smartest person might be the youngest person in the room," says Hackl.

Matt Ball's thoughts include:

- For brands, the biggest challenge may be in moving from communicating a message or telling a brand story to creating an immersive environment that people choose to engage with on an ongoing basis.
- You can't intellectualize your way through the metaverse. Exploring the space is necessary. Build an understanding of the metaverse and start testing within it.

Richard Ward suggests:

- One no-regrets move? Tap into people at your company who draw for a living: think graphic designers, marketers, product designers, and process engineers. They may

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- Start trying things out by experiencing the technology. “If you’ve got kids and they’ve got a VR game, especially a multiplayer game, go along for the ride and see what all the hoopla is about. Evaluate it from a systems perspective, asking questions like: What are the choices people make in the games? Why are people deciding to do this? How are they evaluating these problems and communicating about them?”

How could the metaverse affect Gen Z?

An analysis that imagined Indonesian customers’ possible futures offers one potential scenario for [how Gen Z might embrace the metaverse](#):

- They might spend most of their time online in a virtual shared space that is a global community.
- They could connect to several different “verses” for work, school, social interaction, or shopping.
- They might engage with or buy virtual versions of physical products (enhanced for life in the metaverse).
- They might test concepts or prototypes, released by manufacturers, to provide feedback and reactions to new products before they’re put into production.
- They might use purely digital versions of goods or services, such as personalized games or furniture in virtual homes.
- They could make digital do-it-yourself products that spread broadly.

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