

The Metaverse

STRATEGIC INTELLIGENCE BRIEFING

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Contents

3	Executive summary
4	1 Latest insights
4	1.1 Current perspectives
7	2 Strategic context
7	2.1 Origins of the Metaverse
8	2.2 Gaming and the Metaverse
8	2.3 Setting Rules for the Metaverse
9	2.4 Foundational Elements of the Metaverse
10	2.5 Working in the Metaverse
10	2.6 Entertainment and Commerce in the Metaverse
12	3 Further exploration
13	About Strategic Intelligence
15	Contributors
15	Acknowledgements
16	References

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Executive summary



Explore the interactive version online

The next version of the internet may be a far more immersive virtual experience. The concept of the “metaverse” has received renewed attention, though many of its basic elements - like virtual and augmented reality, or cryptocurrency transactions - have been under construction for decades. By essentially making the internet a virtual twin of the physical world, this digital do-over could enable novel ways of working, buying things, learning, and socializing. No single company will own or dominate the metaverse, and the race is on to stake out territory within it.

The key issues shaping and influencing The Metaverse are as follows:

Origins of the Metaverse

The concept may seem new, but it has been under construction for decades

Gaming and the Metaverse

Games are widely viewed as the most likely entry point for many people

Setting Rules for the Metaverse

Establishing a safe, welcoming environment will be essential for expansion

Foundational Elements of the Metaverse

This virtual world will rely on real technologies and emerging behavioural patterns

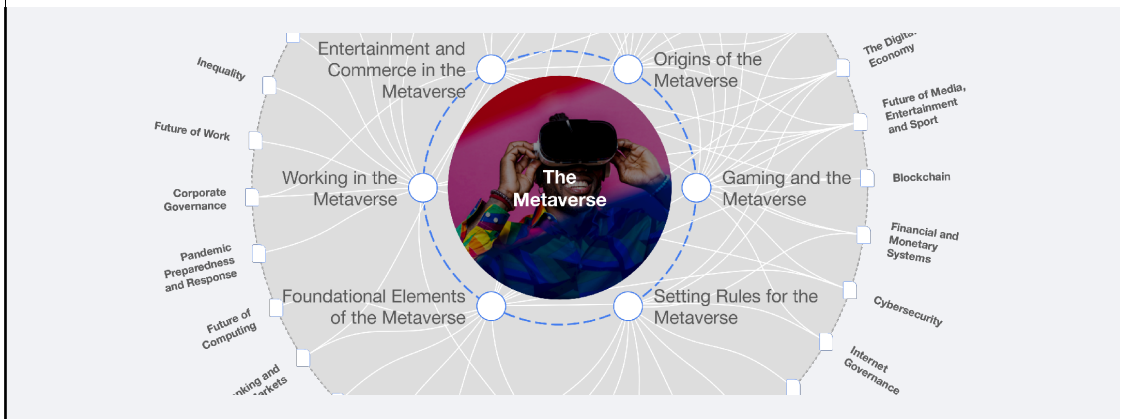
Working in the Metaverse

It could help us collaborate and learn, and it could also fundamentally reshape work in unsettling ways

Entertainment and Commerce in the Metaverse

From media consumption to sporting events and NFTs, buying and selling things may become a lot more virtual

Below is an excerpt from the transformation map for The Metaverse, with key issues shown at the centre and related topics around the perimeter. You can find the full map later in this briefing.



1

Latest insights

A synthesis of the most recent expert analysis.

Below are your latest updates on the topic of The Metaverse spanning 8 different sources.

1.1 Current perspectives



VoxEU

'Ecosystem' theories of harm in digital mergers: New insights from network economics, part 1

05 June 2023

The traditional antitrust analysis of acquisitions by large digital conglomerates relies on a handful of mechanisms to leverage market power from one narrow market into another. Yet large digital conglomerates often own fungible assets, and capabilities that can be deployed across markets. This first in a series of two columns argues that we need new approaches to articulate how an existing constellation of assets and capabilities may matter to the analysis of a deal.



Brookings

The US government should regulate AI if it wants to lead on international AI governance

22 May 2023

On Tuesday, May 16, the U.S. Senate held a hearing on regulating AI, with a focus on ChatGPT. Whether and how the U.S. regulates ChatGPT—and AI more generally—will help set the tone globally for AI regulation and how to address AI risks without stifling innovation.



World Economic Forum

How immersive technology is transforming education, healthcare and beyond

02 June 2023

How immersive technology is transforming education, healthcare and beyond

Immersive learning methods can increase engagement. Image: Freepik.

Explore and monitor how Virtual and Augmented Reality is affecting economies, industries and global issues

Get involved with our crowdsourced digital platform to deliver impact at scale



The Conversation

We're using VR to help find the next generation of basketball stars

15 May 2023

Golden State Warriors point guard Steph Curry is one of the world's leading basketball players and unquestionably the greatest shooter of all time. The video below may look like it's on a loop, but it's actually Curry sinking 105 three point shots in a row – that's five minutes of the same precise and highly-skilled action, without a single miss:

Curry is 6'2". In the real world he is tall, fast and strong, but in the NBA, where players average height is about 6'6" (198cm), he is on the small side. Many previous basketball superstars were first scouted as freakishly tall teenagers, but his game instead relies on clever movement, smooth dribbling and that famous pinpoint shooting.



The Conversation (Spanish)

Tres lecciones de Aristóteles sobre la amistad

31 May 2023

Una ruptura con un amigo íntimo puede ser tan dolorosa como una ruptura con una pareja. ¿Qué consejos daba Aristóteles para tener y conservar amigos?

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The Conversation (French)
Génération Z : un style vestimentaire hors des sentiers battus

31 May 2023

La génération Z bouscule tous les codes vestimentaires établis..

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The Science Breaker
Sensorimotor wandering: leading spontaneously early human development

26 May 2023

Have you ever seen a newborn baby seemingly aimlessly move their arms and legs? Even though babies at this stage have little understanding of the world or how to control their own bodies, babies wander and pursue various sensorimotor experiences by moving their limbs. This “sensorimotor wandering” contributes to early development in terms of learning the basis of how to control one’s own body.



World Economic Forum
The metaverse has the potential to be truly inclusive. Here’s how to achieve it

03 May 2023

The metaverse has the potential to be truly inclusive. Here’s how to achieve it

Inclusivity in the metaverse should be the starting point, not an afterthought. Image: Freepik.com

Explore and monitor how The Metaverse is affecting economies, industries and global issues



The Conversation (Spanish)
Cómo Erdogan ha logrado aferrarse al poder y qué implica para el futuro de Turquía

30 May 2023

Turquía necesitaba desesperadamente un cambio de gobierno y un soplo de aire fresco. Pero nada ha cambiado. Ahora es probable que la asfixia social, política y económica empeore.

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The Conversation (French)
Réforme des retraites : le recours au « distanciel » peut-il freiner les mobilisations étudiantes ?

24 May 2023

Les blocages ont été fréquemment contournés par un nouveau dispositif : l’enseignement en ligne.

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UNICEF
What you need to know about cholera | UNICEF

02 June 2023

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The Conversation
Children have been interacting in the metaverse for years – what parents need to know about keeping them safe

26 April 2023

The metaverse sounds like it could be a scary place. Recent headlines have highlighted the dangers to children of the metaverse – a generic term for the range of online virtual worlds, developed by different tech companies, in which users can interact. Children’s charities have raised concerns about its potential for harm.

Recently, Meta – Facebook’s parent company – announced that teenagers would be able to use its VR Horizon Worlds app in North America. In this online environment, users are represented by avatars and spend time in virtual worlds, making use of virtual reality (VR) headsets.



The Conversation (Spanish)
Cómo las empresas de internet deducen nuestra ideología política y otra información personal sin preguntarnos

30 May 2023

La inteligencia artificial analiza nuestras pautas de comportamiento, preferencias culturales y patrones de consumo ‘online’ para atribuirnos una religión, una ideología, una clase social o cierto estado de salud. Pero no siempre acierta.

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UNICEF
How to protect children from extreme heat? | UNICEF

10 May 2023

Climate change is leading to an increase in average global temperatures and in the frequency, intensity, and duration of heatwaves.

For infants, young children and pregnant women, greater heat stress is increasing the risk of adverse birth outcomes, chronic health issues and infant deaths. The most at-risk are the most deprived. Therefore, it's important to B.E.A.T. the heat for children:

Be aware of heat stress

Easily identify the symptoms

Act immediately to protect



[The Conversation \(French\)](#)

Comment les Français choisissent-ils leurs médias ?

22 May 2023

Les internautes déclarent consulter des médias en lesquels ils ont confiance et dont ils partagent l'orientation politique. Une étude montre que ces deux facteurs influencent peu leur choix effectif.

[Try translating with Google](#)



[The Conversation](#)

Social media now trumps traditional family networks in Libya – my Facebook survey reached 446,000 women

24 April 2023

When I told my family and friends I intended to pursue a PhD researching HIV awareness among married women in Libya, my home country, the reaction was not encouraging: "You'd be lucky to even get members of your family to respond," said one.

They weren't being unnecessarily pessimistic but rather managing my expectations, considering I was not only researching HIV awareness in a conservative country often perceived oppressive, but I was also looking to recruit women.

Historically, Libyan women have been placed under severe social and cultural constraints that rendered them difficult to reach. Libya is shaped by and works within a patriarchal society where simply approaching women on such a taboo topic as HIV/Aids – which in Libya is often associated with immoral practices such as pre or extra-marital sex, substance abuse and homosexuality – made the research even more complex.

I knew that the lack of confidentiality and the fear of being stigmatised were going to be a problem.

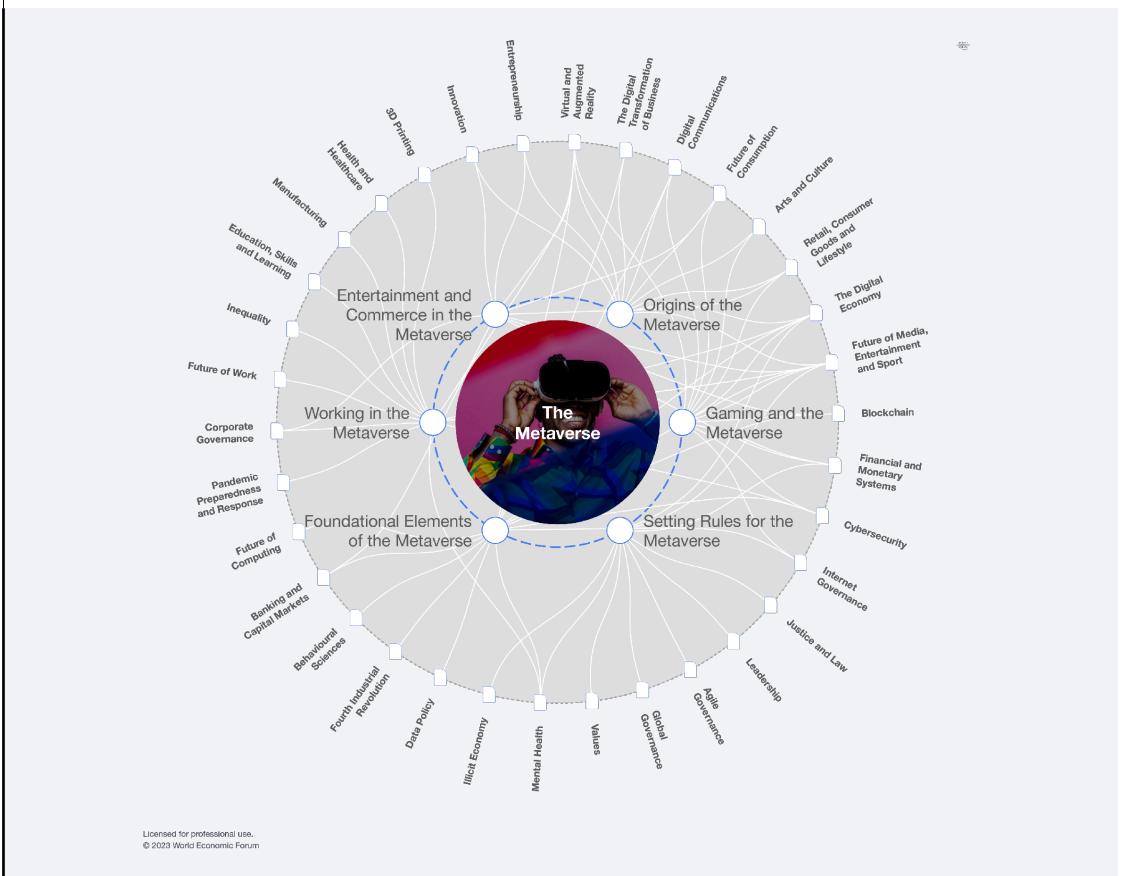
2

Strategic context

The key issues shaping The Metaverse.

The following key issues represent the most strategic trends shaping the topic of The Metaverse. These key issues are also influenced by the other topics depicted on the outer ring of the transformation map.

FIGURE 1 Transformation map for The Metaverse



2.1 Origins of the Metaverse

The concept may seem new, but it has been under construction for decades

The newest (potential) version of the internet actually has a history stretching back decades - at least, in terms of conception. The 1935 short story "Pygmalion's Spectacles" is widely credited with an initial description of what we now think of as virtual reality, via the depiction of a film where "you are in the story," which "is all about you." The "Sensorama Simulator," a virtual reality machine that enabled users to watch films in a personal viewing cabinet meant to give them a sense they were doing things like driving a dune buggy by deploying blowing wind, aromas, and vibrations, was patented in the early 1960s. The machine's inventor also patented the first head-mounted display, a precursor to the headsets expected to serve as a

bridge between users and the metaverse. In 1992, the science fiction writer Neal Stephenson published the novel “Snow Crash,” which is credited with coining the term “metaverse.” In that novel, it is described as a “computer-generated universe,” which one of the characters, Hiro Protagonist, is frequently “drawing onto his goggles and pumping into his earphones.”

In 2003, the game “Second Life” was released. It enabled players to create avatar versions of themselves in a virtual world, where they simply went about their virtual lives by meeting people, watching films, and buying things - a digital existence in many ways so mundane and familiar that some struggled with the idea of calling it a game. Facebook soon had billions of people having these same sorts of experiences online, albeit while using (at least in theory) their own names and images. The first Bitcoin was minted in 2009, and the virtual, decentralized currency pointed to a future where a number of cryptocurrencies (organized via digital ledgers built on blockchain technology) would be used to buy things both real and virtual. NFTs, or non-fungible tokens that are unique, blockchain-based assets, are widely expected to play a key role in the metaverse - one example might be a pair of digital shoes designed to be worn in virtual worlds. While the trade in fraudulent NFTs has flourished, adequate regulation and authentication tools could enable broader (and safer) use.

Related topics: [Innovation](#), [Entrepreneurship](#), [Virtual and Augmented Reality](#), [The Digital Transformation of Business](#), [Digital Communications](#), [Future of Consumption](#), [Arts and Culture](#), [Retail](#), [Consumer Goods and Lifestyle](#), [The Digital Economy](#), [Future of Media](#), [Entertainment and Sport](#)

2.2 Gaming and the Metaverse

Games are widely viewed as the most likely entry point for many people

In many ways, video games have long been delivering the same types of experiences anticipated in the metaverse. Now, gaming is expected to serve as a primary means for new users to delve into this forthcoming iteration of the internet. “The Sims,” a popular life-simulation game, was first released in 2000 - about 18 years after the author Neil Stephenson is believed to have coined the term “metaverse” in his 1992 novel “Snow Crash.” The game enabled players to conduct digital characters through relatively mundane, true-to-life situations like dating, buying a home, or finding a new job. Microsoft’s Xbox Live enabled players to compete against each other online in 2002, and the popular game Fortnite has people engaging their personal avatar in combat with other avatars. Because digital activity like events, search, and shopping are expected to increasingly take place within games, the format may lend itself well to serving as a metaverse gateway. If the daily active users of the game platform Roblox were to form a country, as of early 2022 it would be more populous than Spain or South Korea.

According to Activate Consulting, the top-earning game titles encourage players to interact with each other through social features and in-game rewards - rewards distributed for doing things like inviting others to join in. Many players have a tendency to participate in non-gaming activities once they are within games; some of the most popular are watching in-game films, and live, in-game concerts. From there, it may seem like a short distance to a full metaverse-like experience. One potential benefit of this experience could be an ability for players to eventually take the items they can acquire in one game across to others within the metaverse, binding games together into a sort of single economy. However, while it has become increasingly popular, the gaming world has also become rife with the same sort of content moderation issues plaguing social media services - and the metaverse will likely require clear rules to help avoid creating a toxic environment. In one reported incident, for example, attendees at a demonstration in Lisbon of a virtual world encountered a virtual persona spewing health misinformation about vaccines.

Related topics: [Retail](#), [Consumer Goods and Lifestyle](#), [Blockchain](#), [Financial and Monetary Systems](#), [Arts and Culture](#), [Future of Media](#), [Entertainment and Sport](#), [Cybersecurity](#), [The Digital Economy](#), [Internet Governance](#), [Digital Communications](#), [Future of Consumption](#), [Virtual and Augmented Reality](#)

2.3 Setting Rules for the Metaverse

Establishing a safe, welcoming environment will be essential for expansion

There is some concern that the metaverse will channel the same misogyny, misinformation, and generally shameful behaviour rampant on the current version of the internet - albeit in a more immersive format. In late 2021, Meta (formerly Facebook) opened up access to its Horizon Worlds virtual-reality social platform, widely seen as its first significant foray into what may become the metaverse. One beta tester of the platform

reported that she was groped by another avatar, and “there were other people there who supported this behaviour” (it was later determined that she hadn’t made use of available safety features - though that publicized determination drew recriminations). In February 2022 Meta introduced a “Personal Boundary” feature for Horizon Worlds, which prevents avatars from coming within a certain distance of one another - as a means of more easily avoiding unwanted interactions. The feature built upon an existing measure that makes an avatar’s hands disappear if they encroach on another avatar’s personal space. In a statement, Meta said the steps should help people interact more comfortably, though “there’s still much more work to be done.”

Many aspects of commerce in the metaverse will likely also require new sets of rules and regulations in order to flourish. The concept of ownership in this virtual world promises to be more nuanced than might be the case in the real world, and it is not yet clear whether, for example, laws that govern the buying and selling of real estate in the real world (such as protections for people who need to take out loans from banks and other lenders) would apply to the purchase of virtual real estate in the metaverse. Given that sales of virtual real estate had already reportedly topped \$500 million in value by early 2022, the need for related regulations is quickly becoming less theoretical. Some experts have suggested that the metaverse risks gaining a reputation as a successor to “Silk Road,” the dark-web marketplace that sold a mix of legal and illegal goods such as drugs before it was shut down by the authorities in 2013. While a trans-national authority might be best suited to oversee the metaverse, experts say that would likely be difficult to implement.

Related topics: [Justice and Law](#), [The Digital Economy](#), [Leadership](#), [Agile Governance](#), [Financial and Monetary Systems](#), [Global Governance](#), [Values](#), [Future of Media](#), [Entertainment and Sport](#), [Mental Health](#), [Illicit Economy](#)

2.4 Foundational Elements of the Metaverse

This virtual world will rely on real technologies and emerging behavioural patterns

Ultimately, there will be no metaverse without the chips and software required to power it. After Meta, the parent company of Facebook, announced plans in late 2021 to move aggressively into developing virtual reality and the metaverse, shares of chipmaker Nvidia hit record highs. Nvidia designs chips and graphics cards that generate high-resolution, 3-D images, as well as software that can be used to design virtual worlds. Other pieces of hardware required for participating in the metaverse include controllers that register hand and finger movements to interact in a virtual environment, and headsets. Some headsets currently available can cost thousands of dollars, though many are available for a few hundred dollars. According to an estimate published by eMarketer, the number of virtual-reality headsets in use globally should increase from 35 million in 2022 to 70 million by 2026. However, the company has also noted “pain points” for users that include the fact that headsets can be hot and uncomfortable, especially difficult to use for people who wear glasses, and suffer from poor battery life. Efforts are underway to develop alternatives to headsets for gaining metaverse access.

Other basic elements likely to feed into the early versions of the metaverse include the burgeoning use of cryptocurrencies. Just as the initial versions of the internet disrupted industries that rely on transferring information (like the news media), cryptocurrencies are disrupting industries that transfer value - like video games, or banking. The expansion of the metaverse will likely rely heavily on trading in such virtual currencies and assets, underpinned by blockchain technology. Other “metaverse activities” already proliferating, even as this next version of the internet remains theoretical, include shopping at virtual stores, watching films and TV shows, completing jobs for real money, and attending live concerts all within games. Roblox, a game platform first released in 2006, has players create avatars that can chat with others in the virtual world, earn virtual currency (“Robux”), or host parties. One Roblox executive said in a published interview that much of the platform’s appeal is due to its emphasis on “unstructured play,” at a time when many children are now more restricted when it comes to real-world activities than previous generations.

Related topics: [The Digital Transformation of Business](#), [The Digital Economy](#), [Future of Media](#), [Entertainment and Sport](#), [Internet Governance](#), [Data Policy](#), [Fourth Industrial Revolution](#), [Behavioural Sciences](#), [Banking and Capital Markets](#), [Blockchain](#), [Mental Health](#), [Future of Computing](#), [Cybersecurity](#), [Virtual and Augmented Reality](#), [Digital Communications](#)

2.5 Working in the Metaverse

It could help us collaborate and learn, and it could also fundamentally reshape work in unsettling ways

COVID-19 has already made many people a lot more comfortable with the concept of virtual meetings and interaction with colleagues than they have ever been before. A fully-functional metaverse could mean that even in non-pandemic times, virtual work will become much more the norm - with colleagues sitting beside you at “meetings” in avatar form rather than in windows on a screen (though for some that is a less-than-welcome concept). Meta (previously Facebook) had reportedly been using its Horizon Workrooms virtual-reality tool for internal collaboration prior to the company’s announcement in 2021 that it would invest heavily in the metaverse. Professional training could also take on new dimensions. Surgical training is already being administered using virtual reality technology; in theory, making other types of physical training available in a single, accessible digital sphere could empower people who might otherwise be isolated from such opportunities either geographically or due to cost. Administering healthcare remotely, including to more remote regions, may also become more tenable. Events and presentations, too, could become far more immersive experiences by utilizing virtual-reality imagery.

The ways that we make things could also be affected. Nvidia, for example, already offers technology that can be used to collaborate virtually on everything from the design of products to automated, factory-floor production. Such tools for rendering and simulating 3D virtual products are generally expected to proliferate if the metaverse takes hold. Eventually, the metaverse could reshape the ways we work even more fundamentally - particularly if more people are drawn to the concept of eking out a living by playing virtual games that provide rewards that translate into real money. Such “play-to-earn” games have already gained in popularity; some people in the Philippines have reportedly begun playing Axie Infinity, a blockchain-based game where digital tokens can be won and cashed out in local currency, as their full-time, relatively-well-paying jobs. Experts have raised concerns about health risks associated with extensively immersing people in a virtual world in order to work (or do anything else) - and potentially exposing them to even more dramatic versions of the anomie and sleep disruption that have affected many remote workers during the pandemic.

Related topics: [Pandemic Preparedness and Response](#), [Corporate Governance](#), [Mental Health](#), [Future of Work](#), [Inequality](#), [Cybersecurity](#), [Education, Skills and Learning](#), [The Digital Economy](#), [Manufacturing](#), [Future of Media, Entertainment and Sport](#), [Virtual and Augmented Reality](#), [Health and Healthcare](#), [3D Printing](#)

2.6 Entertainment and Commerce in the Metaverse

From media consumption to sporting events and NFTs, buying and selling things may become a lot more virtual

In the US, the National Basketball Association has been offering virtual courtside seats accessible via headset. One reporter described the experience at a game as being very authentic, though he spent a good amount of time helping another avatar in the virtual audience deal with what seemed like a bad connection. As businesses including entertainment companies scope out new ways of drawing audiences and making money in the metaverse, many such experimental virtual-reality forays are likely to proliferate. Activate Consulting has noted a link between people who engage in sports betting (which is expected to reap \$14.4 billion in revenue in the US by 2025) and those who participate in other online gaming activities - such as those that may flourish in the metaverse. Meanwhile the global esports audience is projected to grow to 725 million by 2025, from 557 million in 2021, and many consumer brands are expected to pursue partnerships and collaboration with esports companies. As the metaverse expands, it may be host to a growing number of physical esports competitions, such as virtual cycling races.

In terms of commerce in the metaverse, the concepts of both digital ownership, and ownership of real items with a digital twin, will likely be fundamental. One example of this is Nike’s purchase in 2021 of digital design studio RTFKT, which was expected to enable the athletic footwear company to develop virtual wearables a person can put on their avatar, complementing real-world offerings they can put on their own feet. In many ways, popular games have already begun shaping the consumer behaviour expected to underpin much of the metaverse. The results of a survey in the US published in late 2021 showed that 85% of gamers in the country between the ages of 13 and 45 were aware of “skins,” the digital add-ons that can be used to adorn game characters - and that 81% of these gamers wanted to trade skins for real-world money. NFTs, or unique, non-fungible tokens, are expected to play a key role in authenticating the ownership of virtual goods in the metaverse. However, trade in counterfeit NFTs - created without the authorization of creators of

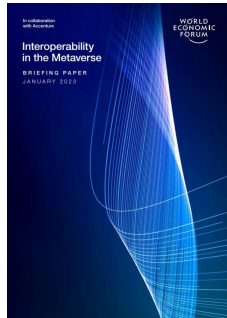
underlying digital creations - has flourished.

Related topics: [Retail](#), [Consumer Goods and Lifestyle](#), [Entrepreneurship](#), [Future of Consumption](#), [Blockchain](#), [Banking and Capital Markets](#), [Virtual and Augmented Reality](#), [Future of Media](#), [Entertainment and Sport](#), [Innovation](#), [Financial and Monetary Systems](#), [Corporate Governance](#)

3

Further exploration

Explore the latest World Economic Forum reports related to The Metaverse.



18 January 2023

[Interoperability in the Metaverse](#)



About Strategic Intelligence

Our approach

In today's world, it can be difficult to keep up with the latest trends or to make sense of the countless transformations taking place. How can you decipher the potential impact of rapidly unfolding changes when you're flooded with information - some of it misleading or unreliable? How do you continuously adapt your vision and strategy within a fast-evolving global context? We need new tools to help us make better strategic decisions in an increasingly complex and uncertain environment.

This live briefing on The Metaverse, harnesses the World Economic Forum's [Strategic Intelligence](#) platform to bring you the very latest knowledge, data and context from our 300+ high quality knowledge sources. Its aim is to help you understand the global forces at play in relation to The Metaverse and make more informed decisions in the future.

Each day, our Strategic Intelligence platform aggregates, distills and synthesizes thousands of articles from around the world. We blend the best of human curation with the power of machine learning to surface high-quality content on over [two hundred global issues](#) to our one million users globally. Our hand-picked network of [content partners](#) from around the world means that we automatically exclude much of the noisy clickbait, fake news, and poor quality content that plague the Internet at large. We work with hundreds of think tanks, universities, research institutions and independent publishers in all major regions of the world to provide a truly global perspective and we are confident that our data are well positioned when it comes to the intrinsic biases inherent to open text analysis on uncurated content from the Internet. For further context on our approach, you may be interested to read [Strategic trend forecasting: anticipating the future with artificial intelligence](#) and [These Are The 3 Ways Knowledge Can Provide Strategic Advantage](#).

↓ A leading expert presenting a transformation map at our Davos Annual Meeting



Transformation maps

Our [Transformation Maps](#) are dynamic knowledge visualisations. They help users to explore and make sense of the complex and interlinked forces that are transforming economies, industries and global issues. The maps present insights written by experts along with machine-curated content. Together, this allows users to visualise and understand more than 250 topics and the connections and inter-dependencies between them, helping in turn to support more informed decision-making by leaders.

The maps harness the Forum network's collective intelligence as well as the knowledge and insights generated through our activities, communities and events. And because the Transformation Maps are interlinked, they provide a single place for users to understand each topic from multiple perspectives. Each of the maps has a feed with the latest research and analysis drawn from leading research institutions and media outlets around the world.

At the centre of each map is the topic itself. This is surrounded by its "key issues", the forces which are driving transformation in relation to the topic. Surrounding the key issues are the related topics which are also affected by them. By surfacing these connections, the map facilitates exploration of the topic and the landscape within which it sits.

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Content Providers featured in this briefing

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The Conversation (Spanish)

The Science Breaker

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