

Journey to the center of the metaverse

A perspective on the metaverse and what it means for telcos



Building a better
working world

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Into the metaverse

There is no question that the metaverse paradigm shift is now. If this is the “meta” moment, it is safe to assume that many companies are wondering what the metaverse is and whether they should be a part of it.

For businesses to navigate any new space, it is crucial to frame the landscape, find inspiration around the art of the possible and then determine when and how they want to find value in it.

The future is already here, although not yet evenly distributed. There are countless companies shaping the landscape. The entertainment and gaming space leads the way. Major console and PC gaming titles, such as *World of Warcraft* and *Fortnite*, habituate a generation of young people to play and socialize together in virtual settings from remote locations. Newer gaming platforms, such as Roblox, allow people to create and play across immersive 3D worlds, often monetized by users. Other key companies enable development to accelerate 3D, augmented reality (AR) and virtual reality (VR) content creation. As anticipated, social media companies create a connective tissue between individuals and groups of people, which increasingly will include a more visual fabric and expression.

But the opportunity to lean into 3D virtual worlds is not just a consumer phenomenon. From training future surgeons and retail associates to rolling out product demonstrations, there are plenty of business

applications that allow the immersive environment of the metaverse to take business use cases to the next level. With post-COVID-19 hybrid- or remote-working environments, many of these virtual experiences are likely to become even more relevant to how companies connect with their people and customers.

Nevertheless, it is also expected that the metaverse will see its share of polarization and controversy, much like social media is today. The proponents of the metaverse see it as a vehicle to further enable society, while its opponents remain skeptical and highlight the adverse effects that it brings with it – from the ensuing psychological impact on users, cybersecurity and privacy to the new forms of risks that did not exist outside the metaverse.

When a new form factor for human experience emerges, a few companies typically lean in fast and lead the way, offering inspiration to others and often taking disproportionate risk. But it is those companies that stand to benefit the most and set themselves on a path of sustainable growth for decades to come.

In this perspective, we lay down the foundation to help the trailblazers shape their thinking and initiate their journey to the center of the metaverse.



What is the metaverse?

Today's digital experiences are largely static — except chatting and audio or video calling — and 2D in nature, with users, customers or businesses interfacing with each other from the outside.

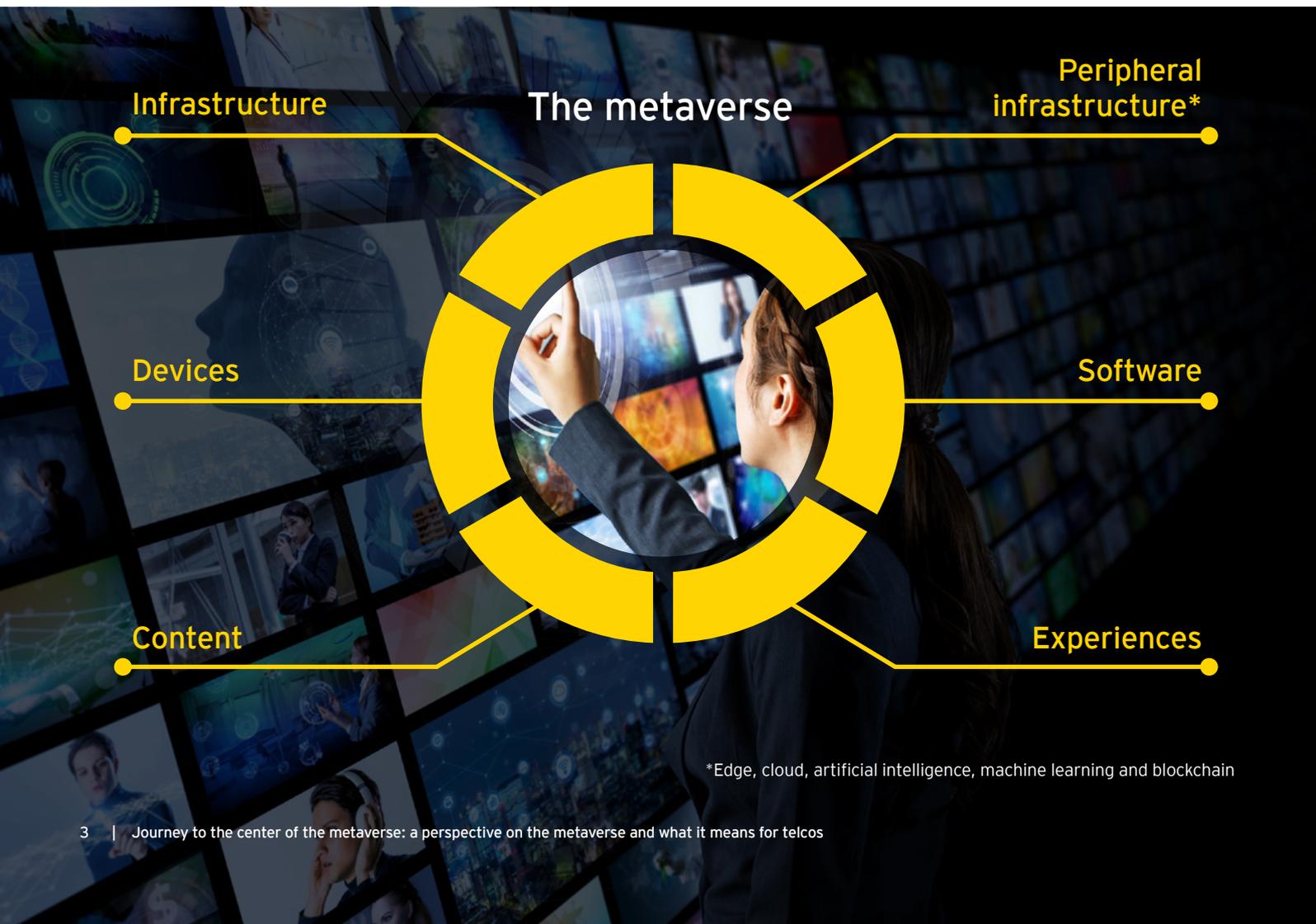
On the other hand, the metaverse brings about the 3D experience, fully immersive and dynamic, enabled by VR, AR or extended reality (XR) and a network of always-on environments. It is an internet that the user exists in, rather than interacts with from outside.

In this world, many people can interact with one another and with digital objects while operating virtual representations – or avatars – of themselves. Furthermore, consumers and businesses will be able to interact, entertain and conduct business. It is heralded to be the next generation of the internet.

Simply put, the metaverse includes any digital experience on the internet that is persistent, immersive, 3D and virtual.

The metaverse creates a new frontier for people and businesses to interact, trade and play. At this frontier, constraints of the physical world will subside, and new levels of efficiencies and productivity can be reached. Just as was the case with all the major revolutions before it, those who do not join in are at risk of getting left behind.

But before we dive deeper into the metaverse, is all this hype warranted?



*Edge, cloud, artificial intelligence, machine learning and blockchain

Hype or reality?

The metaverse is where the physical world connects with the virtual world — or a collection of virtual worlds.

Today, we see a lot of the technology components coming of age. 5G commercial launches are accelerating across the globe, driving enhanced mobile broadband experiences with increased speeds, capacity, ultralow latency and greater support of connected devices – key attributes for the metaverse.

Edge clouds are bringing businesses and content closer than ever to the point of consumption, enabling better availability and responsiveness, and developments in AI and machine learning continue with no sign of abating.

Hardware in the form of AR or VR devices and a myriad of Internet of Things (IoT) sensors keep thriving, with future iterations promising to bring the technology to the masses in a user-friendly way while also addressing some of the challenges around the side effects of the technology.

Gaming engines – the birthplace of virtual worlds – have transformed their business models to become virtual world builders (e.g., Unreal and Roblox), enabling efficient virtual-world building with more advanced lifelike interactivity.

In conclusion, all trends are converging toward the metaverse, coupled with several big names making long-term commitments toward it.

The first iterations will likely start by acting as an extension to the world we know today – the first websites of the internet revolution were used as digital billboards – but in time, and as the metaverse becomes more immersive and consumes more time in our life, new business models will certainly emerge.

So, the question is not if, but when. If the internet revolution has taught us anything, it is that if you are not ready to adapt, you will be left behind.



The future of industries reimaged



As established earlier, the metaverse looks set on a trajectory to become the next big thing. So, the real questions are: how big could this be, and what does it mean for the various sectors of the economy?

Sizing the metaverse

Depending on who you ask, the metaverse – estimated today at around US\$48b – can grow to around US\$800b over the next few years, according to Bloomberg Intelligence. Ultimately, it can create an addressable market worth US\$6t-US\$10t, according to Morgan Stanley. To put things in perspective, that is roughly 10% of the world economy in 2021, and it impacts almost all sectors.

What does it mean for sectors?

The promise that the metaverse offers to all sectors is a combination of factors such as:

- ▶ Access anywhere: further reducing the need for physical proximity by providing improved access from across geographies to both companies and customers looking to interact (e.g., for education, expert consultation, or sales and customer care)

- ▶ Offerings reimaged: enabling the creation of a new breed of products and services tailored to the metaverse (e.g., digital content, digital experiences, digital services)
- ▶ Operational efficiency: unlocking new avenues to efficiently run operations through better planning, simulations, and trainings, among other things, and enabling strategic reductions in expenditures by eliminating some physical-world property rental needs (e.g., stores, office space), managing inventory more efficiently (e.g., just-in-time) or reducing travel budgets

Use cases vary by sector, and some will stand to reap more benefits than others. Below, we provide a snapshot of what some sectors could unlock on their journey.



Health and life sciences
Medical training simulation, virtual prevention or awareness, diagnosis and treatment



Education
Virtual campuses or classrooms



Government
Virtual offices for service delivery and spaces for citizen engagement



Real estate
Virtual real estate services, metaverse plot sales and development planning



Energy
Virtual workforce training, VR-based health and safety simulations, planning simulations and optimizations



Retail and consumer
Metaverse-based experiences for purchasing physical goods or purchasing virtual goods (e.g., Nike filing for patents for virtual goods and acquiring a company called RTFKT that creates virtual sneakers and collectibles for the metaverse), virtual shops and malls with product interaction and virtual assistant engagement



Advanced manufacturing and mobility
Production process simulation and optimization, and product design socialization (in the manner of YouTube with content)



Financial services
Virtual branches for service delivery and customer care, public relations and recruitment spaces to engage with stakeholders

Case study: shopping on Fifth Avenue

To put the metaverse further into perspective and bring the concept to life, below is an example of what a shopping journey could look like in the metaverse – an experience that is universally relevant to consumers around the world.



The role of telcos

The metaverse has the potential to impact all our lives in an unprecedented way and bring about behavioral change. Industry verticals could be completely transformed in less than a generation. We may see societies function differently and businesses operating in fundamentally different ways.

Over time, we will likely see the emergence of technologies and inventions that will exploit the behavioral changes that the metaverse will enable.

For telecom operators specifically, the metaverse presents two distinct roles: an ecosystem for them to participate in and an ecosystem for them to enable.

1 An ecosystem to participate in: from “digital first” to “virtual first”

Telecom operators stand to benefit immensely by taking part in the metaverse. Through this virtual environment, they can enhance the customer experience, monetize investments through adjacent services and increase operational efficiency.

Access anywhere: offer a superior customer experience in the metaverse

The strategic importance of a positive customer experience is unquestioned in the telecom industry today. The customer experience has become a key differentiator among telecom operators, as consumers expect the high-quality, digitally driven experiences that they encounter in other industries to be matched by their service providers.

The guiding principles of a superior customer experience will also hold true in the era of the metaverse and will be within reach more than ever. Operators can provide immersive experiences in retail stores, flagship experience centers and within customers’ homes to better showcase new products, facilitate customer interactions and enhance personal support – for both business-to-consumer (B2C) and business-to-business (B2B) customers.



- ▶ Provide immersive experiences in retail stores and experience centers
- ▶ Employ avatar-based virtual assistants
- ▶ Deliver a virtual customer journey



- ▶ Develop new solutions and services (e.g., gaming and AR- or VR-based immersive experiences)
- ▶ Monetize metaverse-related adjacent services and drive revenue uptake



- ▶ Offer remote site monitoring and troubleshooting
- ▶ Give virtual network operations center (NOC) assistance
- ▶ Organize remote training for the field force

Offerings reimagined: monetize investments through tailored services for the “next internet”

Today’s telecom market can be characterized by stagnating growth rates and increasing competition, where many telecom operators face flat or even decreasing revenues. To ensure that they reap a fair return on their investments in next-generation technologies such as 5G and fiber, operators must think holistically about the monetization opportunities and go beyond charging consumers for faster connections or more data.

The next generation of the internet creates the potential for entirely new service offerings, use cases, business models and revenue streams that operators can capitalize on.

For instance, operators in a metaverse could reimagine their existing services and propositions and tailor them for a B2C, B2B or business-to-business-to-X (B2B2X) audience. Some of the services that could gain commercial success are hologram-based calling, immersive events, AR- or VR-based entertainment or gaming services, TV and video viewing, education – the list is endless. While it is difficult to ascertain at this stage how much revenue metaverse-related services will generate for telcos in the long term, it will be an opportunity that operators should not ignore.

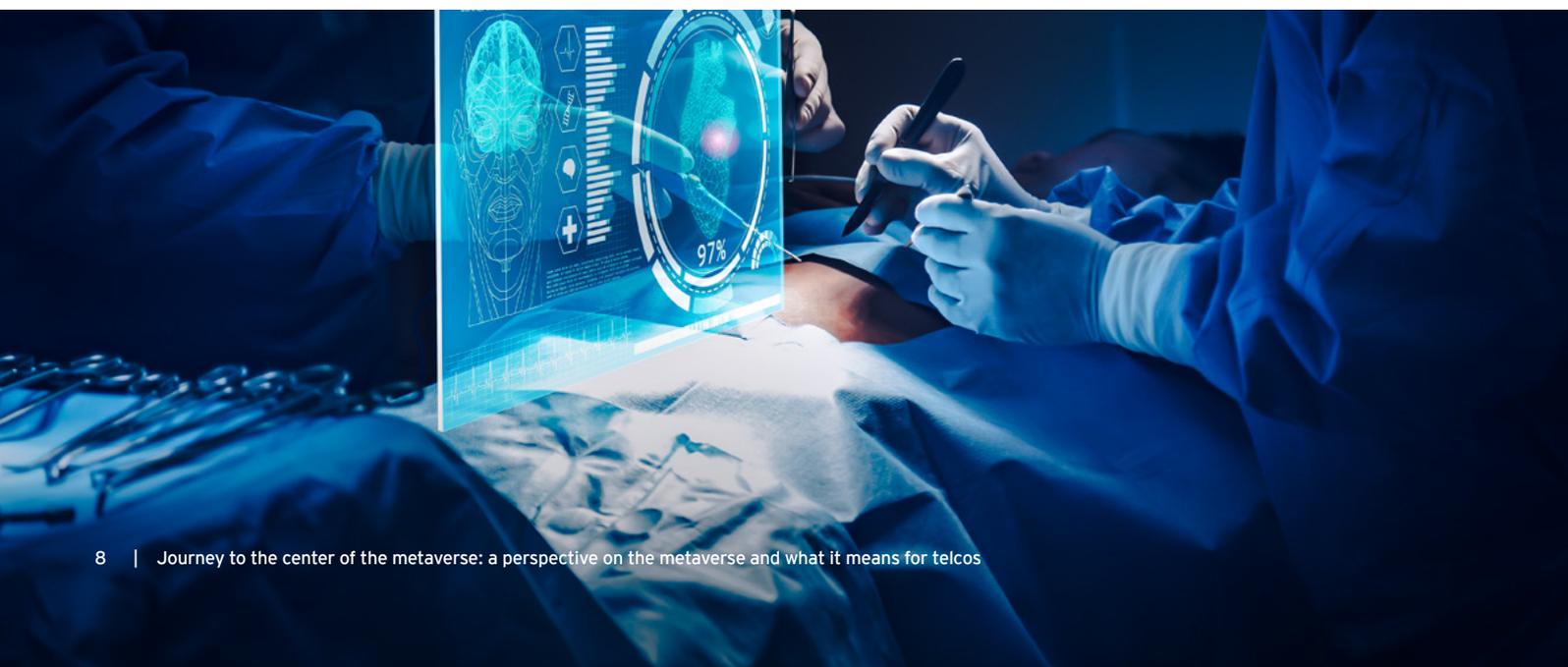
We already see leading operators experimenting in this field. Service providers in the US, South Korea, China, Japan and other markets are developing AR- and VR-based services while bundling headsets with 5G tariffs to open up this nascent market.

Operational efficiency: increased efficiency enabled by the metaverse

While telcos have risen to the challenge of withstanding a surge in network demand during the COVID-19 pandemic, pressure to maintain infrastructure resilience and reach has emerged as the primary sector challenge. Hence, the proper functioning of the telecoms network is of major importance – not only to consumers, but also to enterprise customers. It is a known fact that it is often much more economical to prevent a failure than to correct its consequences. The advent of the metaverse is likely to aid operators in increasing operational efficiency.

Over the years, telecommunications networks and equipment have become increasingly complex, a trend that is expected to continue into the future (e.g., open RAN). As a result, inspection and troubleshooting require highly skilled professionals who have been specially trained to handle sophisticated hardware and software. The challenge of arranging an inspection of telecom equipment can be resolved using AR or VR. Instead of bringing the inspector to the equipment, it brings the equipment to the inspector. The equipment can be viewed remotely, and the appropriate consultations can be given to the field personnel.

The metaverse will also expedite the training experience. AR and VR enable businesses to deliver accelerated training that is efficient, effective, sustainable and economical. Operators can create an exact simulation of their operations with the equipment that they use. Field force engineers can then gain expertise through simulation and experiment. Even if they make mistakes, the consequences will only be felt in the virtual world of the simulation.



2 An ecosystem to enable: from connecting to powering the journey to the metaverse

The metaverse – as we envisage it today – will evolve substantially, with several major players moving across the value chain, new players entering and building strong positions, and some former leaders losing market position.

In the future, no single company is expected to run the metaverse. It will be an embodied internet operated by many different players in a decentralized way, ultimately creating an industry ecosystem.

Position telcos as co-creators, rather than as participants

Given this paradigm shift, operators can play a more assertive role in the metaverse value chain, leveraging emerging technologies such as 5G, edge cloud, analytics or AI to build on their intimate knowledge of local markets and their proximity to their customers.

As a result, telcos will no longer be relegated to the role of a pipe provider and can pave the way to become a co-creator of the metaverse.

Recognizing the business potential, telcos across the globe are building platforms based on VR or mixed reality. They are gradually venturing into the metaverse value chain, alongside technology giants and online game developers, to build the next internet that could resemble a blend of today's social media and e-commerce.

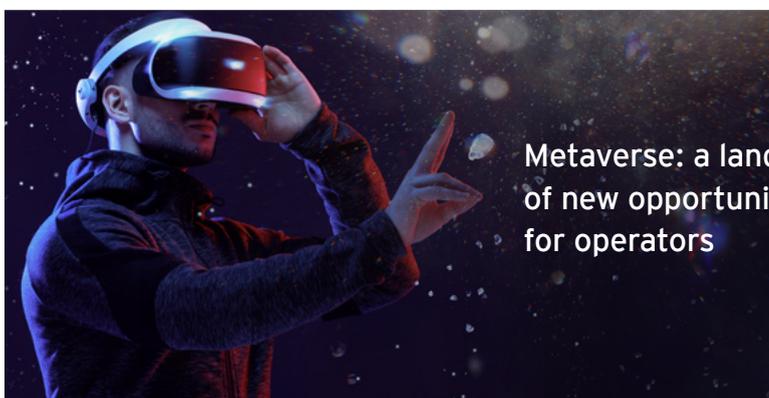
Drive the development of human interface hardware

Devices such as AR and VR headsets, gaming consoles and smartphones will be used by humans to interact with the metaverse. These devices will act as a gateway to virtual worlds.

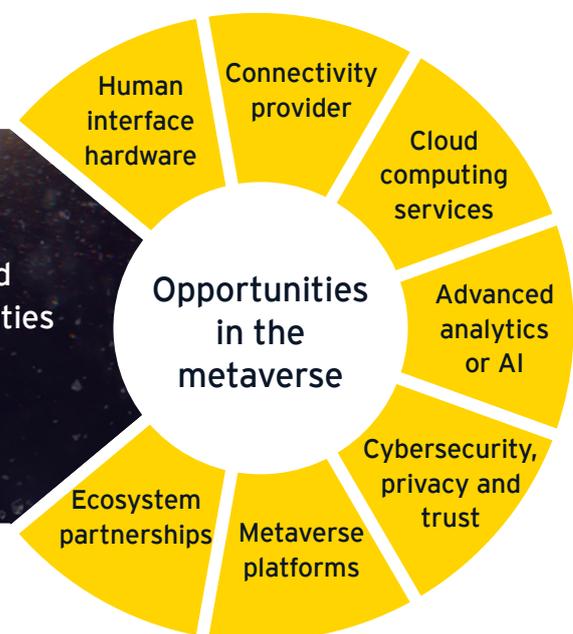
While VR technology is not new, it is less popular among consumers when compared with smartphones. Current VR technology needs to be improved around areas such as portability, resolution, responsiveness and field of view to bring it into the mainstream.

The metaverse will no doubt act as a catalyst for these devices, and operators can seize this moment to collaborate with device vendors to drive their adoption, for example through selling bundled VR devices and connectivity services to consumers. However, operators will have to unlock value from these devices by adopting an end-to-end (E2E) "device lifecycle management" approach.

Opportunities for telcos in the metaverse



Metaverse: a land of new opportunities for operators





Operators can also invest in device innovation as well as execution of key levers to drive profitability, such as securitization, re-commerce and insurance.

Become the lead connectivity provider

The development of the metaverse and the broadening of virtual worlds are directly tied to connectivity.

5G services are meant to deliver higher multi-gigabits-per-second (multi-Gbps) peak data speeds, ultralow latency, more reliability and a uniform experience. As 5G networks are commercially deployed, 5G will help both consumers and businesses enter the metaverse.

As we approach 2030, the telecom industry is expected to witness another generational shift in wireless technology toward 6G services. 6G data transfer speeds will be higher, and latency will go down – providing further impetus to the metaverse.

The development of the metaverse will also be fueled by fiber connectivity, which delivers high-bandwidth speeds. Going forward, the off-loading of wireless traffic through Wi-Fi 6 – the latest generation of Wi-Fi – will help address network capacity- and efficiency-related challenges.

In turn, these network innovations will provide operators with opportunities to differentiate their services – by offering higher levels of security or network slicing, for example – unlocking new commercial revenue models that offer higher returns compared with legacy services.

Be positioned to provide edge computing services

The metaverse will require huge amounts of computing power, real-time rendering and AI computing capabilities. The requirements for the underlying computational power are hundreds of times higher than what we have today.

Given the rise in computing requirements, edge computing will be another essential building block in the metaverse. In the future, when millions of people are having continuous virtual experiences in real time, the cloud will not be able to centralize and store all the resources involved.

Due to latency requirements, this data will need to be distributed and made available closer to the point of consumption. This puts operators in a prime position to provide edge computing services and unlock more efficient data transfer, enhance perimeter security, relieve network congestion, and diversify their revenue streams in the process. To succeed, operators should align their edge cloud strategies with their legacy cloud initiatives and ensure they have the right partnerships in place with specialist cloud providers.

Enhance advanced analytics and AI capabilities to bolster revenues

The metaverse will involve collecting large amounts of data. Determining how this data can be collected, stored and repurposed will be crucial.

The historic need to extract insights from call data records (CDRs) means that telcos have long had greater access to big data insights, compared with other industries.

In the metaverse, operators will have many advantages, when it comes to repurposing data to improve decision-making and create new demand scenarios.

A wealth of product, customer and asset data will reside with telecom operators within the metaverse, while their legacy retail and distribution capabilities will also provide a range of customer- and operations-related insights.

As a result, telecom operators should pay special attention to fostering the right analytics and AI capabilities and define potential monetization avenues to further bolster their revenues.

Put cybersecurity, privacy and trust at the heart of metaverse services

As we move into the metaverse, vast amounts of critical data will be processed. With enterprises and telecom operators coming together in new ways, it is critical that both privacy and security are prioritized.

Today, consumers and businesses are ever more concerned about their digital footprint and the integrity of their personal data. Interestingly, operators have a unique advantage to address these concerns, since they tend to be more trusted by consumers as data custodians, compared to other types of TMT provider.

Identity authentication and management will become more important as virtual worlds become more sophisticated. Operators should leverage their existing customer relationships to position themselves as identity management experts as the metaverse takes shape.

Develop metaverse platforms

Many companies are launching their own metaverse platforms and success is expected to depend on drawing as many subscribers as possible. The key will be to create interesting, themed experiences and events that make everyday users spend more time there, as well as offering customized services for businesses and consumers.

Initially, the metaverse platform will be developed by gradually combining a series of large and small virtual worlds based on the real world. However, in the medium to long term, after several years of development, a super virtual world will eventually be formed.

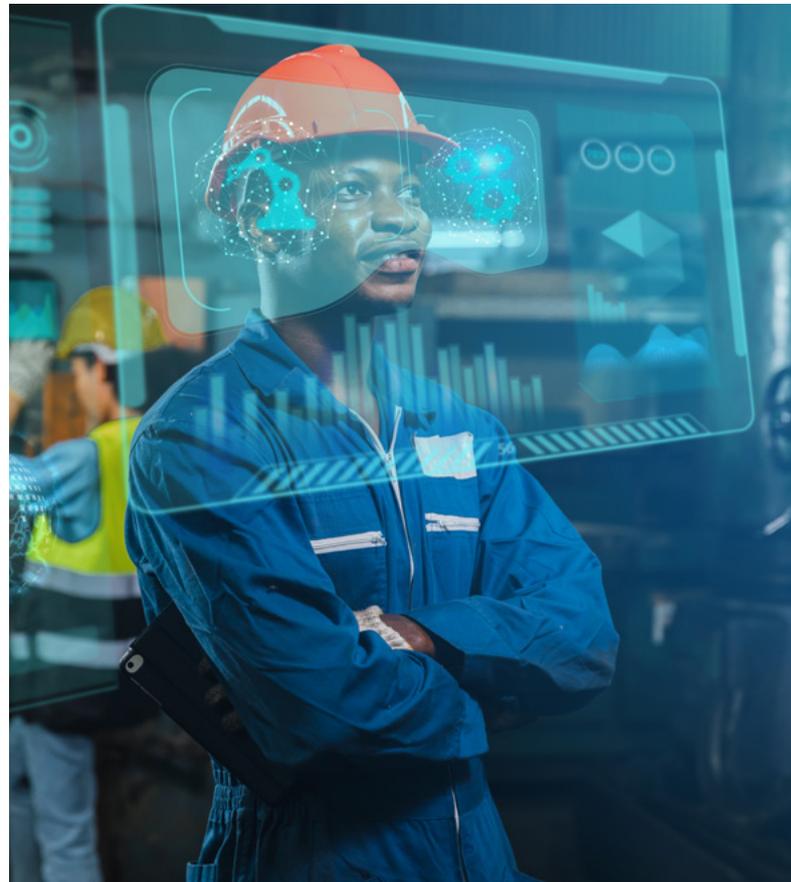
In order to take advantage of this gradual evolution, operators should be prepared to invest in emerging metaverse platforms. This will help them build a deeper understanding of the demand scenarios and technical competencies shaping the long-term opportunity.

Be a key orchestrator of the ecosystem

As operators further refine their strategies to engage with the metaverse, they should form new partnering frameworks to unlock growth.

To achieve this, closer relationships with different participants in metaverse ecosystems is essential. Relationships with device manufacturers and technology platform providers should pivot toward the long-term opportunities afforded by virtual and augmented reality.

Meanwhile, relationships with industry vertical customers can also be strengthened by identifying new collaboration opportunities. Discussion with policy-makers will also help operators position themselves as orchestrators of the metaverse ecosystem.



What are the implications for telcos?

For telcos to unlock the full spectrum of opportunities on their journey to the metaverse, they must build on their traditional communication service provider (CSP) business and expand toward new capabilities and services. The way they create and capture value also needs to transform if they are to remain relevant and deliver in the metaverse.

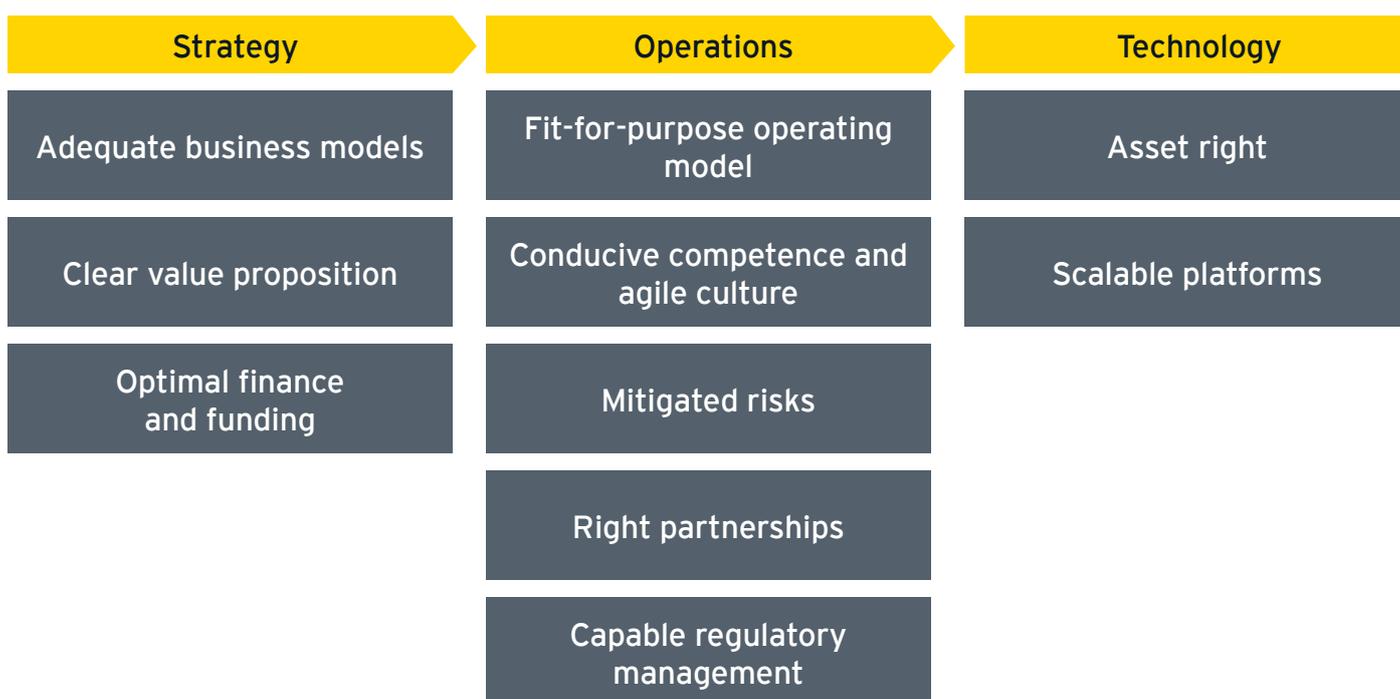
Telecom operators are not new to the challenges of the metaverse. Along with the big technology players, telcos are among the first ecosystem players to start exploring. In some developed markets, they have already started to delve into metaverse-based platforms that combine multiple technologies – especially 5G – to bring the internet to life.

This exploration, however, needs to expand beyond technological proofs of concept and cover the full spectrum of a telco’s organization, starting from its business model and value chain coverage, through to its value proposition and service offerings, partnership

models, competence and culture, to reimagining its technology stacks and asset base.

In future publications, we intend to delve deeper into the strategic choices facing telcos as they move further toward becoming B2B2X disruptors. In essence, this transformation journey and the path it follows will be specific to the respective telco’s context, including market environment, competitive position, competency and asset base, and existing partner and customer base.

Dimensions of change



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EYG no. 002782-22Gbl
BSC no. 2202-3976589
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