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Top Strategic Technology Trends for 2023: Metaverse

> Although very nascent, emerging metaverse technologies offer strategic opportunities for IT leaders to explore. With potential benefits not limited to virtual worlds, exploration should be focused around how the metaverse will transform the physical world as well.

Overview

Opportunities

- Organizations are planning to deliver more immersive collaborative experiences for employee onboarding, sales enablement, training and connection through the internal deployment of emerging metaverse technologies, which Gartner refers to as "intraverse."
- CIOs in higher education are exploring the use of emerging metaverses to enhance online learning experiences by creating "metaversity" locations.
- Retail and consumer packaged goods (CPG) organizations are looking at opportunities to introduce new tokenized products and services facilitated by metaverse and Web3 technologies.
- Metaverse is creating new models for communicating and supporting customers, employees, prospects, students and suppliers through a combination of digital humans and other metaverse technologies.

Recommendations

IT leaders driving technology innovation must:

- Bring groups of geographically diverse employees, students and customers together in virtual worlds to provide participants with the ability to engage together.
- Model the new revenue that can be created from innovative business models, based on tokenized assets, both digitally and physically, and use these projections to build stakeholder buy-in to metaverse opportunities.
- Build client, consumer and stakeholder trust in metaverse initiatives, by adding a human touch through the inclusion of chatbot and conversational AI initiatives to create digital humans.

Strategic Planning Assumption

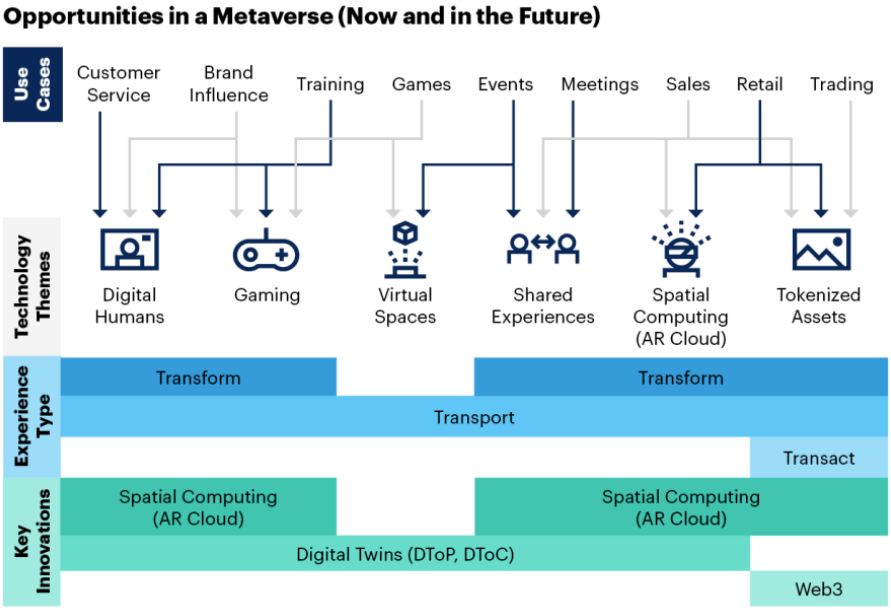
By 2027, over 40% of large organizations worldwide will be using a combination of Web3, spatial computing and digital twins in metaverse-based projects aimed at increasing revenue.

What You Need to Know

What's most important to understand is that a metaverse is not a single technology, but is made up of multiple emerging technologies. As a result, the idea of a single entity — "the metaverse" — is still several years away. However, in the meantime, we are witnessing many emergent metaverses come to fruition. Organizations should be careful when investing in a specific metaverse, as it is too early to determine which investments have long-term business viability.

Despite all of the hype, the adoption of underpinning metaverse technologies is nascent and fragmented. Nonetheless, organizations are looking to explore the strategic business opportunities that these sets of technologies offer. A sample of areas of opportunity, now and in the future, is represented in Figure 1.

Figure 1: Opportunities in a Metaverse (Now and in the Future)



Source: Gartner
DToP = digital twin of a person; DToC = digital twin of a customer
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These opportunities exist across six technology themes:

- **Digital humans** — interactive, artificial intelligence (AI)-driven representations that exhibit some of the characteristics, personality, knowledge and mindset of a human
- **Gaming** — creating experiences for both entertainment and training simulations
- **Virtual spaces** — engaging multiple senses and providing participants with the ability to immerse and engage with the space or other participants
- **Shared experiences** — bringing groups of people together for persistent or defined periods of time
- **Spatial computing** — providing digital enhancements and experiences to 3D physical spaces through technologies such as augmented reality (AR) or mixed reality (MR)
- **Tokenized assets** — digital assets that are secured, exchanged, traded or utilized for any defined purpose, leveraging Web3 technologies

These opportunities also exist across three different types of experiences or use cases:

- **Transport** — the ability to "go and immerse oneself" in a virtual world, that may be a 3D simulation and/or in virtual reality
- **Transform** — bringing digital to the physical world, which allows the user to have access to real-time information, collaboration and experiences in the physical world
- **Transact** — the economic foundation of a metaverse through the use of cryptocurrency, NFTs and blockchain

When considering exploring the use of emerging metaverse technologies, it is important to consider a metaverse across this wider scope, and not limit it to one area. Typically today, that is the perception that metaverse is all about transporting to virtual worlds.

Profile: Metaverse

Description

Metaverse is the next level of interaction in the virtual and physical worlds, providing innovative new opportunities and business models, by allowing businesses to extend digital business to be persistent, decentralized, collaborative and interoperable.

Emerging metaverses are fragmented. Be careful when investing in metaverse-specific technologies (e.g., spatial computing, digital humans and virtual spaces) because it's too early to determine which investments, in which metaverses, have long-term viability. Furthermore, the next one to three years will be a time of learning, exploring and preparing for a metaverse with limited implementations. The financial and reputational risks of early investments aren't fully known, and we advise caution.

Why Trending

Metaverse is a combinatorial innovation made up of multiple technology themes and trends. Individually, these trends are projected to provide new opportunities, and challenges, to organizations across a wide spectrum of industries and use cases.

The four key innovations that make metaverse a strategic technology trend include: Web3, spatial computing, digital twin of a person and digital twin of a customer.

Web3

Web3 is a new stack of technologies for the development of decentralized web applications that enable users to control their own identity and data. These technologies include distributed ledger (blockchain) as a trust verification mechanism, privacy-preserving and interoperability protocols, decentralized infrastructure and application platforms, decentralized identity, and support for applications like decentralized finance. These will eventually realize the vision of a decentralized web (see Hype Cycle for Blockchain and Web3, 2022).

Web3 and metaverse complement each other and will evolve independently. However, both are based on technologies for which the value is mainly in a community, or an ecosystem, where value in some form is exchanged between people or organizations — or a combination. Although Web3 and metaverse may exist separately, they are more impactful when combined.

Metaverses can benefit from tokenization as a mechanism to store and exchange value — especially in a purely virtual context — but Web3 should be seen as an optional part of a metaverse. Web3 consists of experiential and social capabilities, often referred to as immersive and 3D (i.e., metaverse), but some of these capabilities already exist in digital realms such as e-gambling, e-gaming, e-sports and even some social networks.

In the **metaverse equation** described in Figure 1, Web3 would encompass the **transact** experience, and from a theme perspective would mostly be concentrated in **tokenized asset** opportunities.

Spatial Computing

Metaverse will take advantage of spatial computing, which could be defined as a three-tiered technology stack, and as part of a metaverse, represents the transform experiences. (see Figure 2).

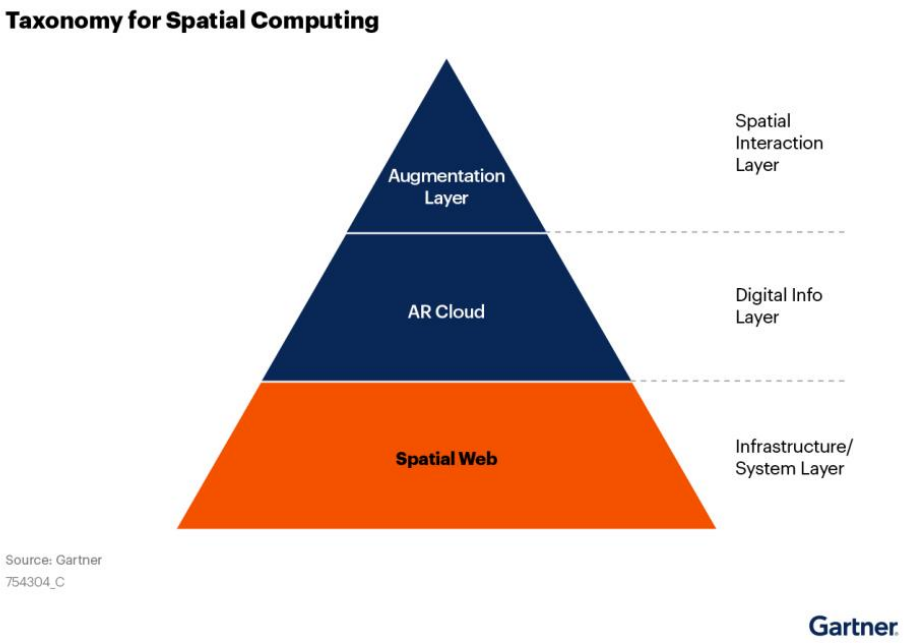
The top layer is the spatial interaction and augmentation layer. The layer encompasses the interface and includes innovations in applications, interactions and business models. This interaction layer is how users will experience the intersection of the physical and digital worlds.

The middle layer is the AR Cloud; it is the information layer. It serves as a digital legend in the form of a point cloud to annotate (augment) people, objects and places in the physical world. This includes innovations to sense and map the environment (people, places, things and processes) into point clouds, rendering and positioning digital content.

The bottom layer is the spatial web, which serves as a framework and foundation for spatial computing. This includes infrastructure and innovations at the system level, enabling core functionalities to create transform experiences. Functionalities include:

- Anchoring the digital to the physical
- Defining location and orientation of a digital object in a physical space
- Collaborating within a shared reference frame
- Using graphs to establish processes and relationships
- Providing protocols and registries to map ontologies and facilitate such interactions

Figure 2: Taxonomy for Spatial Computing



Metaverse hype has reignited interest in spatial computing, which in turn is an important aspect of metaverse interactions in the physical world.

In the **metaverse equation** described in Figure 2, the **transform** experience would encompass **spatial computing** opportunities.

Transform opportunities, powered by spatial computing, open up new opportunities by expanding the potential and monetization possibilities of physical and digital assets. To many, this is considered to be where the key benefits of a metaverse will be derived. Hype around the metaverse has driven further interest by introducing the potential for new business models and monetizing opportunities of physical-digital (phygital) interactions.

Digital Twin of a Person

A digital twin of a person (DToP) not only mirrors a unique individual, but is also a near-real-time synchronized multipresence, with the ability to be present in multiple places at the same time in both digital and physical spaces. This digital instantiation (or multiple instantiations) of a physical individual continuously intertwines, updates, influences and represents the person in multiple use cases, scenarios, experiences, personas and software tools.

DToP covers a broad spectrum of goals and drivers, including solutions developed for patient healthcare, finance and commercial services, as well as government and social services. These digital twins can tie into anticipated behaviors (for example, for total experience projects) based on past behaviors of other people in similar interactions (see Emerging Technologies: Revenue Opportunity Projection of Digital Twins).

In the **metaverse equation** described in Figure 1, DToP spans across experiences in both **transport** and **transform**, and from a theme perspective would be concentrated across **gaming**, **digital humans**, **virtual spaces**, **shared experiences** and **spatial computing** opportunities.

Digital Twin of a Customer

As a subset of DToP, a digital twin of a customer (DToC) is a dynamic virtual representation of a customer that simulates and learns to emulate and anticipate behavior. Customers can be individuals, personas, groups of people or machines.

DToCs help organizations of all sizes better understand their customers and anticipate their behavior. They increase efficiency and provide a personalized, empathetic service to customers, many of whose buying habits have changed during a period of upheaval (see Hype Cycle for Emerging Technologies, 2022).

In the **metaverse equation** described in Figure 1, DToC spans across experiences in both **transport** and **transform**, and from a theme perspective would be concentrated across **gaming**, **digital humans**, **virtual spaces**, **shared experiences** and **spatial computing** opportunities.

Implications

Think of metaverses as a combinatorial innovation, and not a single technology. Implications of emerging metaverse technologies will vary across industries.

It is a time of learning and exploration when it comes to metaverses; however, when breaking down the themes, trends and innovations that make one up, it is easier to see why there is so much interest in it:

- Retailers can expand and enhance their current businesses in unprecedented ways, opening up innovative opportunities as people enhance and/or augment their lives in digital and physical realities. Early examples include leveraging NFTs that augment physical products, creating virtual experiences on gaming platforms and enabling new forms of loyalty marketing (see Hype Cycle for Retail Technologies, 2022).
- Enterprises can expand and enhance their current businesses in unprecedented ways, opening up innovative opportunities. For example, JP Morgan has become the first bank to establish a presence in the metaverse, predicting a market opportunity of $1 trillion and eyeing virtual real estate. [1]
- Spatial computing, specifically the AR Cloud, will serve as an interoperable point cloud that supports localized (cloud and/or edge-based), persistent, collaborative, shared and multiuser interactions that mix physical and digital elements. Within an emerging metaverse, they will enable new interactions, business models and ways to monetize the physical world. This includes the ability for automobile dealerships to have limited stock on hand of particular vehicles, and to use spatial computing to seemingly change interior and exterior attributes digitally in real time.
- Metaverse-enabled immersive training and serious games will continue to grow in popularity at large enterprises. For example, a serious game may be created to train employees about how to handle hazards so they remain safe in hazardous environments.
- Companies seeking to create unique, personalized experiences are pursuing DToCs and digital humans to interact at a higher level with customers to aid in areas such as financial transactions, concierge shopping experiences or patient health monitoring.
- Virtual spaces increase reach to buyers and consumers who are unable or unwilling to join in-person engagements.
- Tokenized assets, through the use of Web3, offer the ability to authenticate/validate digital (and, in some cases, physical) goods. For example, OneRare is gamifying the food industry by offering an NFT environment to collect virtual food items and use them to purchase real meals at restaurants using metaverse technologies, Web3, gaming and tokenized assets. [2]
- Organizations are developing ways to provide better engagement, collaboration and connection to their employees through virtual workspaces and the use of internal metaverse experiences called intraverses.
- Virtual meetings, powered by metaverse technologies, are now a permanent — and prominent — fixture of work.

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Actions

- Explore opportunities where metaverse technologies could optimize digital business, or create new products and services.
- Build metaverse products and solutions through a pipeline of combinatorial innovation rather than trying to find a “killer app.”
- Identify metaverse-inspired opportunities by evaluating current high-value use cases.
- Develop technology strategies that leverage the built-in infrastructure of and participants in metaverse.
- Invest in specific emergent metaverses cautiously, as it is still too early to determine which investments will be viable in the long term.
- Protect your reputation by proactively establishing a data governance, security and privacy policy to protect customer and employee data.

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