



# A Virtual Reality—Metaverse and Its Trends

Kamya Sharma\*

## Abstract

*In 1992, the concept of a metaverse was first introduced to the public. Metaverse, as its name implies, is a mashup of the terms "meta" and "universe," where "meta" is Greek for "beyond". As a result, it means beyond our current understanding of the universe. It exists in the virtual world but feels just as real. In a metaverse, various virtual spaces are combined into a single, persistent, 3D environment. Metaverse enables users to experience immersive gaming, conduct business, socialize, buy and sell virtual properties, and enjoy immersive entertainment in a virtual world by interacting with their digital avatars. People can experience virtual and augmented versions of reality in metaverse. Basically, it means there is more to the universe than we realize. In recent news, Facebook announced it would rebrand its company family as metaverse-centered. Zuckerberg's press release brought it to the forefront of the public's attention. Literature has discussed metaverse technology since the 1990s, but this study presents an analysis of its bibliometric evolution. There has been tremendous attention paid to the metaverse in recent years due to a number of related technologies. There would be a realistic metaverse, where direct and physical interactions would be encouraged, with racial, gender, and physical disability concepts weakened, which would be highly beneficial to society.*

**Keywords:** Virtual reality (VR), augmented reality (AR), mixed reality (MR), metaverse, web real-time communication (WebRTC), digital avatars, online platforms

## INTRODUCTION

Several technology companies are racing to build the 'metaverse'. Facebook Inc. announced in October 2021 that it would restructure and assume the name Meta Platform Inc. Technology experts predict that metaverse will replace the internet where people will be able to do anything including shopping, studying, and attending meetings [1].

The concept of the metaverse was initially proposed by science fiction author Neal Stephenson in 1992, and it has now become a prominent feature in the video game industry. The metaverse offers virtual communities, events, and activities accessible through a unified platform, eliminating the need for multiple app logins. Within the metaverse, individuals can interact with both other people and digital entities within an always-on network of interconnected virtual worlds, represented by their virtual avatars. The metaverse, often referred to as the next generation of the internet, focuses on fostering

### \*Author for Correspondence

Kamya Sharma  
E-mail: kamyaaa28@gmail.com

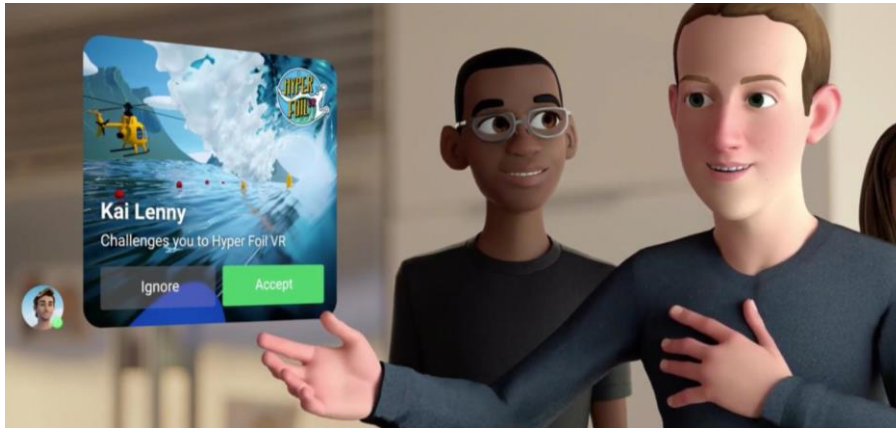
Research Scholar, MCA, Thakur Institute of Management Studies, Career Development and Research (TIMSCDR), Mumbai, India

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social interaction and can be described as a simulated digital realm that incorporates principles of social media, blockchain technology, augmented reality (AR), and virtual reality (VR). As India's online gaming sector has grown rapidly in recent years, metaverse has a significant role to play in India's economy [2]. While the current virtual reality market is largely focused on entertainment and gaming applications, it is crucial to demonstrate that this technology can also serve as a powerful tool for imparting essential insights about our identity, the people around us, and our place in the

universe [3]. In both technology and business, the metaverse is a work in progress. In addition, it represents an evolving style of experiences and services built on top of new technologies and a possible decentralized value creation and exchange model as shown in Figure 1.



**Figure 1.** Online gaming.

## METHODOLOGY

There are many experimental methods and techniques where Metaverse is used. These are as follows:

### Prospecting For Marketing Prospects:

One of the most pressing use cases is the potential to unlock their digital avatar with another participant in multiple activities as they are their digital avatars.

Within the metaverse, users have the ability to shop, socialize, and participate in a wide range of recreational and educational activities. This presents unique marketing opportunities for corporations to leverage across the virtual realms of the metaverse [4]. For instance, startups have employed advertisements to monitor real-time views within gaming environments on mobile and console platforms. Additionally, apparel companies can benefit from brand exposure by incorporating advertisements within games or featuring branded clothing worn by in-game characters.

### Blockchain Technology

The term "metaverse" describes a virtual environment built within the new internet using 3D technologies. This idea is strongly related to several technologies, including blockchain, non-fungible tokens (NFTs), augmented reality (AR), virtual reality (VR), and mixed reality. Some experts predict that non-fungible metaverse tokens will serve as the representation for virtual objects used in the metaverse. The creation of believable and immersive NFT marketplaces is just one benefit of the use of blockchain in the metaverse. These markets might develop into more participatory spaces where users can converse. Users can view NFTs in the metaverse, giving them the ability to make informed selections about what to buy as shown in Figure 2.

### Virtual Environment and Learning Spaces

Many employees working remotely were forced to do so because of the pandemic. Professionals across companies in different sectors became adept in Skype calls, Google Meet, and Zoom meetings during the pandemic. The metaverse presents many prospects for developing a virtual office space and learning environment [5]. The organizations has developed a hybrid of VR and a mixed-reality world with digital avatars. Team members could access different functionalities such as events, meetings, conferences, virtual training programs, and trade shows. Educational institutions have been using online platforms such as Minecraft and Second Life for improving the learning experience of students. VR and artificial intelligence (AI) simulations in the metaverse could help students in architecture and the VR world.



**Figure 2.** Metaverse techniques.

### **Virtual Tourism**

As a result of technological advances, one can travel without actually visiting a destination. A potential application that is poised to gain widespread acceptance and recognition within the developing metaverse is VR tourism. By combining the metaverse, VR, and AR, a virtual digital world can be created, offering an immersive and realistic experience for users [6]. Through this platform, individuals can explore various locations and receive a sense of actually being present there, stimulating their imagination and providing an engaging form of digital reality. Content hosting services like YouTube, popular video streaming platforms, and others are expanding their collections of 360-degree videos.

### **Web Real-Time Communication**

An example of a metaverse use case that transforms traditional methods of audio and video communication is the web real-time communication (WebRTC) protocol. WebRTC is an open-source initiative that enables real-time communication capabilities for mobile applications and web browsers without the need for intermediary servers [7]. This technology simplifies the process of defining new web communication standards within the metaverse. Additionally, WebRTC allows for the integration of multiple media streams, further enhancing the value of web real-time communication in developing virtual worlds.

### **Innovation in Healthcare**

Providing a forum for interaction between patients and healthcare providers, the metaverse has great potential. Through the use of virtual worlds in the metaverse, healthcare providers can communicate with patients in real time. Healthcare can benefit from the metaverse enhancing various areas of treatment just as it is enhancing e-commerce [8]. Not right now, but in the near future, a metaverse in healthcare will be able to take on the role of frontline workers, allowing them to save lives without putting themselves in risk. A metaverse can assist front-line healthcare workers in saving lives without placing themselves at risk.

### **TRENDS**

The global metaverse market was valued at \$61.8 billion in 2022. A compound annual growth rate of more than 39% is expected by 2030, making it a market valued at approximately \$824.53 billion.

### **Marketing through the Metaverse**

By combining the technology enablers of web 1.0 and 2.0, namely search engines and social media, marketing and advertising have the potential to fuel the mainstream adoption of web 3.0, also known

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as the metaverse [9]. Another channel of communication is the metaverse, which emphasizes one-to-one connections and customer experience.

Best Practices for Metaverse Marketing:

- Develop Your Own Branded NFT – Branded NFTs are an effective way to drive awareness of your brand in the metaverse.
- Own Virtual Real Estate for Metaverse Marketing – Create events for your business or lease your property to other brands. As long as this aligns with your offerings and the needs of your consumers, you can also sell this real estate to them.
- Promote Digital Goods for Avatars – Individuals seek to personalize their digital avatars. Numerous well-known brands have also employed this tactic and really benefited from it. Immersive, experiential technology is essential to the metaverse; whatever it looks like, it will be more interesting than the virtual worlds we are accustomed to. So, employing immersive technologies like VR, AR, and mixed-extension reality (MR/XR), we will engage with it in a variety of ways.

### **The Corporate Metaverse**

In the metaverse, the business will be done remotely, efficiently, and intelligently through platforms, tools, and entire virtual worlds. In the near future, the concept of the metaverse will be combined with that of the digital twin – a virtual simulation of a real-world product, process, or operation that can be used to test and prototype new ideas within a safe environment.

### **Web 3.0 and Decentralization**

The metaverse will eventually revolve around decentralization. Distributed ledgers are a key component, as a result of web 3.0 and blockchain technology, a new internet will emerge outside of corporate control, according to its proponents, with corporations no longer able to censor opinions they do not agree with or shut down someone entirely if they wish [10]. NFTs, which stands for non-fungible tokens, represent a distinct element of the decentralized metaverse. These tokens, residing on blockchains similar to non-unique tokens like Bitcoin, possess the ability to symbolize one-of-a-kind digital assets or commodities in the online realm.

### **Virtual and Augmented Reality**

Immersive, experiential technology is important in the metaverse – whatever it looks like, it will be more fascinating than the digital worlds we are used to. As a result, we will interact with it in a variety of ways, utilizing immersive technologies such as VR, AR, and MR/XR.

### **More Advanced Avatar Technology**

The metaverse is often envisioned as a digital world where we adopt avatars that represent us. Avatars within the metaverse function as the virtual representations of ourselves when we engage and interact with other users, akin to characters in video games or personas on social media platforms.

Avatars might resemble us or cartoon characters, or they might be totally fantastical things that you could never imagine! Avatars were initially very cartoon-like – and widely ridiculed – but Meta has since developed almost photorealistic technology to mimic how we look in reality.

## **RESULTS**

There is an evolving digital universe called the metaverse that extends beyond the world of today's internet. The vision for the future state of the web, encompassing the metaverse and its associated technologies, is causing a significant wave of transformation in various aspects, including social interactions, economic transactions, and the overall internet economy. Web 3.0 open virtual world crypto networks offer a glimpse of what the internet may look like in the future, but metaverse is still a

work in progress. It is possible that the metaverse could be worth over \$1 trillion in annual revenues, and that it could compete with companies that currently have a market value of \$15 trillion. Facebook has been drawn to the metaverse's possibilities, which might encourage other Web 2.0 tech behemoths and investors to do the same. A virtual economy could also be developed around customizing avatars in a metaverse. In the future, metaverse avatars may become the new social media profile that hides who you really are behind the scenes, perpetuating narcissism and contributing to mental health issues, and creating insecurity. Virtual economies might also develop around the customizations of metaverse 'avatars'. People may even start ignoring their real-world needs in favor of virtual interactions, according to some experts.

## CONCLUSION

A new generation of the internet called the metaverse is geared towards social interaction and group activities. Social interaction and group activities are key features of the metaverse, the latest development in internet technology. As a metaverse user, you are the center of attention.

A key advantage of the metaverse is the seamless access it offers to virtual communities, activities, and events without the need to sign into multiple applications. This user-friendly aspect serves as a crucial component of the metaverse, enhancing convenience and ease of use for individuals engaging with its virtual spaces. It is possible to sign up as a virtual avatar for your virtual office, take a break and speak to your friend in IT, or return to the game room for a game of foosball. A client can be met virtually all in one place – moving seamlessly into the next step without discrepancies. You can do all this while sitting in the warmth and comfort of your own home, without having to rely on the subway or drive two hours to work in full traffic circles. The COVID-19 pandemic has significantly restricted our ability to leave our homes for work and social interactions, but the metaverse takes this to a whole new level. Envision a scenario where you can engage in seamless cross-platform interactions with your friends and loved ones from different parts of the world within the immersive realms of the Metaverse. Cross-platform play is still relatively new even in the gaming industry metaverse will provide seamless virtual interaction across platforms, paving the way for seamless virtual interaction. If ventures within the metaverse are solely driven by profit motives, the potential benefits derived from such endeavors are likely to be limited in scope. However, the metaverse has great potential to revolutionize areas such as education and healthcare.

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