

The origin, characteristics and Prospect of Metaverse

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Abstract: In 2021, the concept of Metaverse has gone viral. Decentralized virtual identity, immersive experience, unprecedented interactive function, mature economic system, arbitrary creation, continuous self-evolution and upgrading. Those are the six characteristics of the Metaverse. It shows great development potential and prospects in social, office, education, game and other fields. In the future, the Metaverse market can be prospered by improving the screening ability, clarifying the regulatory boundary, paying attention to value shaping and closely following the innovation of the times.

Keywords: Metaverse; features; prospect

1. Introduction

In 2021, Metaverse became the most heated topic in the Internet field. In the first year of Metaverse, Facebook changed its name to Meta, focusing on shaping brand value and redefining the new form of social media in the future. Roblox, the first stock in the Metaverse, successfully listed on the New York Stock Exchange, with a valuation of more than \$45 billion on the first day, up 10 times from a year ago. Tencent founder Ma Huateng said: the era of mobile Internet has become the past, and the era of the Complete Reality of Internet is the future, what he called the Complete Reality of Internet is the Metaverse. Affected by the new round of the Internet industry reshuffle and the global epidemic, emerging technologies such as 5G, AI and XR are eager to make breakthroughs in developing new products. Scene-based social networking, intelligent manufacturing and virtual community have also opened new commercial exports for capital. Therefore, technology giants such as Alibaba, Netease and ByteDance have upgraded the Metaverse infrastructure, actively laying out "the Complete Reality of Internet " outlet of digital economy and industrial chain extension. According to the report of Morgan Stanley, it is estimated that the potential market scale of Metaverse will exceed \$8 trillion . At the same time, in the process of its development, it will also stimulate and expand the market scale of other fields. From the perspective of industrial innovation, Metaverse will break the traditional physical rules that human beings are accustomed to and stimulate industrial technological innovation in a brand new way. It will lead the in-depth integration of different industries, and drive the transition and upgrading of relevant industries with new models and new formats. From the perspective of application scope, with the continuous improvement of Metaverse supporting technology and industrial maturity, it will contribute a great application prospect in social governance, public services and other fields in the future.

2. The origin, definition and scope of Metaverse

The term Metaverse originated from the *Avalanche* written by an American science fiction writer Neal Stephenson in 1992. It tells the combat between the federal government and private entrepreneurs in the face of the "avalanche" virus in the early 21st century. The author created a virtual world with parallel sharing and interactive experience with the real world. It is a new Utopian concept and social emotion trying to break the shackles of the times. Since then, film and television works such as *The Matrix*, *The three body problem* and *Ready Player One* have borrowed this concept and became popular all over the world in the next three decades.

In 2020, the epidemic at home and abroad entered the normal stage of isolation、prevention and control. However, the mutating strains of COVID-19, such as Delta and Omicron, brought new

challenges to daily life and office, thus virtually resulted in the whole society's online office and mutual entertainment. The online tools originally used in a short period of time have become our new normal, and have formed a good complementary role with the real world. With the large-scale injection of technological capital, users are more looking forward to the twin virtual world experience, which makes the boundary between online and offline more blurred, but the outline of the Metaverse plate clearer. Human beings are gradually migrating from the real world to the virtual world, becoming amphibious species combining reality and digital.

The real world is composed of three parts: the physical world, the human world and the information world. Virtual world is composed of artificial world and fantasy world. Metaverse is essentially the final form of the deep integration of the real world and the virtual world. In this paper, the Metaverse is defined as a digital mirror world with surreal, decentralized and immersive experience created by combining a variety of new technologies such as artificial intelligence, blockchain and digital twin. It is a digital living space with multi-content production, independent economic system and sustainable interactive circulation in a virtual integration environment.

3. Technical support and characteristics of Metaverse

Metaverse is known as the "next generation Internet". With the development of the digital world, the characteristics and mode of Metaverse are becoming clearer and clearer. The realization of the Metaverse world cannot leave the powerful support of technology. The application of big data, especially digital twin technology, is the most important carrier to form the Metaverse; The popularization and extension of 5G/6G technology with high rate and low delay is the communication foundation of Metaverse; Cloud storage, cloud computing and cloud rendering are the computing power basis of clients and servers; Expanding reality and artificial intelligence activate VR content ecology, which is the generation logic of the Metaverse blueprint.

Combined with the eight basic elements constituting the Metaverse, the characteristics of the Metaverse are summarized as follows:

(1) Unique: decentralized virtual identity. In the Metaverse, each user has one or more digital accounts. Different digital accounts record some of our personality characteristics or identity information. Each virtual identity is real and independent and can play different roles in different fields. In such a decentralized environment, there is no need for third-party management and everyone is completely equal. They can freely and openly formulate the Metaverse law, and continuously express their views and show themselves.

(2) Immersive: immersive experience in which true and false are difficult to distinguish. With the help of the Artificial Intelligence, virtual reality and other advanced science and technology, we can perfectly reproduce everything in the real world and realize the integration of digital twins and virtual reality. In the virtual environment, there is a multi-dimensional sensory experience similar to reality, and a virtual picture and image that is difficult to distinguish between true and false is constructed in the real environment. By constructing realistic scene communication and consumption scenes, users can stimulate physiological emotional reactions, express their joys and sorrows in the artificial ternary world in an all-round way, and experience life, old age and death.

(3) Connectivity: unprecedented user interaction. Social elements are the soul of the Metaverse. The interconnection between virtual world and real life is no longer limited by physical distance. Every user can access the digital world with the help of various forms of hardware equipment. Everyone can interact with each other and with computer, and information can flow fully. It is an unprecedented interactive experience that can communicate freely like friends, games, entertainment and consumer goods in any corner of the world.

(4) Economic attribute: there is a complete and mature economic system. The Metaverse ecosystem has a complete and mature economic system in the virtual environment as in the real world, including digital assets, markets and currencies. Digital goods created by code are valuable and can be traded fairly and equally. Professional teams and individual users are producers and

property owners of digital content. Digital currency based on blockchain can be circulated through digital asset trading platform and market trading system.

(5) Arbitrary: everyone can create a little bit of world . The elements of Metaverse are all inclusive and colorful, emphasizing multi-cultural complementarity and content application value. The content is the basic unit of the Metaverse. Human brain and intelligence are combined to produce a large amount of content materials, so that all participants can innovate and create at anytime and anywhere like building blocks, and expand territory in the fields they are good at and interested in, so as to become the creator and spokesman of a certain field.

(6) Endless: Sustainable self-evolution and upgrading. The rise of Metaverse is the product of human civilization and the development of science and technology. It has its own social relations, ethical rules, values and commercial civilization. At the same time, the Metaverse is eternal and evolutionary. With the joint creation of artificial intelligence and developers, the development of Metaverse is not stagnant, but has been innovating and upgrading, participating in production and life in new ways, bringing participants a higher dimensional experience.

4. Summary

The emergence of Metaverse is the result of economic iteration, social iteration, interactive iteration, media iteration and concept iteration. With the upgrading of consumption and the rise of digital Internet, the current Internet industry has fallen into a barren development in terms of content form, interactive experience and traffic propagation. The shopping of capital has not brought substantive changes and sustained growth to the Internet 3.0 era, but only unlimited Commercial inner volume and competition. The Metaverse of reality superimposed on virtual is born, which contains great opportunities for social, office, education, games and other scene changes, and opens up broad business potential and development prospects. The unique decentralized identity authentication, immersive experience with difficulty in distinguishing true from false, unprecedented user interaction and arbitrary content creation have all served the world market environment in an all-round way and broadened the Internet vision and social scope of young people.

However, it is undeniable that at present, the development of Metaverse is still in the initial stage, and its application scope is concentrated in man-machine interactive games, digital virtual currency and so on. It has not been really transformed into a mature model and business format with economic and social value. At this stage, the Metaverse has economic, privacy and monopoly risks. The financial harvesting of huge capital is easy to cause supervision out of control; The natural addiction of virtual immersion experience is also easy to cause a series of negative emotions and ethical problems.

The Metaverse is the product of history and times from its emergence and development to its current outbreak. For market investors, we should look at games in the short term, hardware equipment in the medium term and application development after the construction of the economic system in the long term. For technology developers, the Metaverse has absorbed the latest achievements of the information revolution, the Internet revolution and the artificial intelligence revolution, showing people the possibility of constructing a holographic digital twin world parallel to the real world. For national administrators, the Metaverse will promote significant changes in the mode of social production and social governance, effectively promote the construction of smart cities, enhance society's public service capacity and emergency handling capacity, and comprehensively improve the efficiency and level of social governance. For each participant, Metaverse will create a new production and living space for individuals, and will truly become an indispensable part of people's daily life.

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