

Review

Expanding metaverse market: New opportunities and challenges for the content industry

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Abstract: The metaverse is expanding from a simple technology or service into a platform-centric industrial ecosystem. Initially discussed in the context of infrastructure networks, such as computer communication networks, it has since broadened to include content and services related to virtual reality, such as games and films. Recently, the scope of this expanded ecosystem has further widened, linking various types of content through content-based platforms. In this metaverse market, the content market plays a crucial role. This paper aims to examine the current state of the content market within the metaverse market and explore its future development directions. We will analyze various aspects of the content sector utilizing the metaverse both domestically and internationally, investigating how the use of the metaverse is evolving from mere entertainment to a productive market with applicable business models.










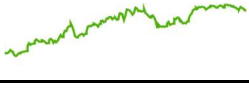
Keywords: metaverse; content-based platforms; platform-centric industrial ecosystem; games and films; business models

1. Introduction

The metaverse (METAVERSE) represents a transcendent (META) world (VERSE) where virtual and reality converge, expanding human and societal functions beyond physical constraints while remaining grounded in our current reality and space. This paper has evolved into a leading keyword within the content market ecosystem, growing into a massive platform that exerts influence across various content domains [1–3]. The metaverse serves as a digital frontier, facilitating new forms of interaction and engagement that redefine traditional boundaries of communication and commerce.

Recent analyses utilizing big data reveal a significant shift in social discussions surrounding the metaverse. In the 1990s, the focus was primarily on technology; by the 2000s, the discourse evolved towards services related to virtual worlds [4–6]. Since the 2010s, this discussion has expanded to encompass an industrial ecosystem that includes both content and platforms. The metaverse thus represents a transition in social perspectives, evolving from technology to services and ultimately to an ecosystem comprising content and platforms. Initial discussions were rooted in infrastructure networks, including computer communication networks, but have since broadened to include content and services related to virtual reality, such as games and films [7,8]. Recently, these discussions have also linked to the Fourth Industrial Revolution and the mobile ecosystem, highlighting the metaverse's role in shaping future societal structures [9].

Table 1. Top metaverse project by market cap.

List	Name	Genre	Price	Market Cap	Last 7 days
1	 Axie Infinity AXS	Breeding Card Game Metaverse	\$6.3	\$932,381,685	
2	 The Sandbox SAND	Metaverse	\$0.34	\$784,245,262	
3	 Decentraland MANA	Metaverse	\$0.35	\$660,393,879	
4	 Illuvium ILV	RPG Auto Battler Metaverse	\$76.43	\$509,362,382	
5	 Enjin Coin ENJ	Metaverse	\$0.2	\$330,319,727	

¹ <https://chainplay.gg/genre/metaverse/>.

The COVID-19 pandemic has accelerated the imaginative applications of the metaverse across various content fields, including film, television, gaming, and entertainment. This growth has been particularly influenced by technological advancements that characterize the ongoing digital revolution [10,11]. As a result, the significance of the metaverse is increasingly expanding within these industries, providing novel experiences and opportunities for user engagement [12–14]. The metaverse is not only a platform for entertainment but also a transformative space for education, retail, and finance, indicating its multifaceted potential [15,16].



Figure 1. Metaverse market map.

As of July 2024, an analysis of the metaverse market reveals that platforms like Axie Infinity firmly hold the top position, as illustrated in **Table 1**. Various subsequent content platforms spanning multiple genres are actively expanding their market presence [17]. The growth of the metaverse market has manifested across various sectors (see **Figure 1**), including gaming, social media, entertainment, education,

shopping, finance, and real estate [18,19]. Notably, the gaming sector has been particularly active in applying metaverse technologies, offering immersive experiences that transcend the boundaries between reality and virtuality, garnering significant popularity among users [20–22].

In the educational sector, the metaverse is facilitating the establishment of virtual learning environments that leverage its capabilities, providing equal opportunities for learners regardless of their physical constraints [23,24]. The retail sector is introducing metaverse showrooms, allowing users to browse and purchase products within virtual spaces, while the finance sector is utilizing metaverse applications to facilitate virtual investments and digital asset transactions [25,26]. The real estate market has embraced metaverse technologies to offer virtual property tours and enable transactions of virtual real estate, underscoring the expansive influence and potential of the metaverse in reshaping various aspects of human interaction, consumption, and economic activity [27,28].

The metaverse is particularly evolving as a content-based platform, continuously expanding its domain through integration with various types of content and growing into a space that offers diverse experiences. It is essential to examine the current state of the content market within the metaverse and explore potential future development directions. Understanding the various developments in the content sector utilizing the metaverse, both domestically and internationally, is crucial. There is an expectation that the use of the metaverse will evolve beyond merely enjoying content to encompass diverse opportunities for expanding into new business models.

2. The changes of metaverse market

2.1. Global metaverse market trends and projections

In 2023, the metaverse market garnered significant attention worldwide, demonstrating rapid growth. According to global market research firm Market.us, the global metaverse market size was valued at 94.1 billion USD in 2023, with projections estimating it to surpass approximately 2346.2 billion USD by 2032, reflecting a registered compound annual growth rate (CAGR) of 44.4% during the forecast period from 2024 to 2032 in **Figure 2** [29].

The growth of the metaverse market can be analyzed through two primary factors. First, the expansion of non-contact culture due to the COVID-19 pandemic has heightened interest in the metaverse, which blurs the boundaries between reality and the virtual world, coinciding with advancements in technologies such as virtual reality (VR) and augmented reality (AR) [28,30]. Second, there has been a notable increase in global IT companies entering the metaverse market. Major firms, including Microsoft, Meta (formerly Facebook), Google, and NVIDIA, have actively engaged in building and investing in metaverse platforms, driving market growth [28,30].

The metaverse market's expansion is evident across various fields, including gaming, social media, entertainment, education, shopping, finance, and real estate. In particular, metaverse technology is being actively applied in the gaming sector, where immersive experiences transcend the boundaries between reality and the virtual world, gaining significant popularity among users. Additionally, social media companies are striving to create platforms that enable users to navigate freely between the real world

and the online realm through the metaverse. The entertainment sector is also witnessing the introduction of concerts, movies, and dramas utilizing metaverse technologies, while virtual learning environments leveraging the metaverse are being established in education. Furthermore, metaverse showrooms are emerging in the shopping sector, allowing users to explore and purchase products in virtual spaces. In finance, virtual investments and transactions involving digital assets within the metaverse are becoming increasingly active, and the real estate sector has seen the emergence of virtual property tours and transactions facilitated by the metaverse.

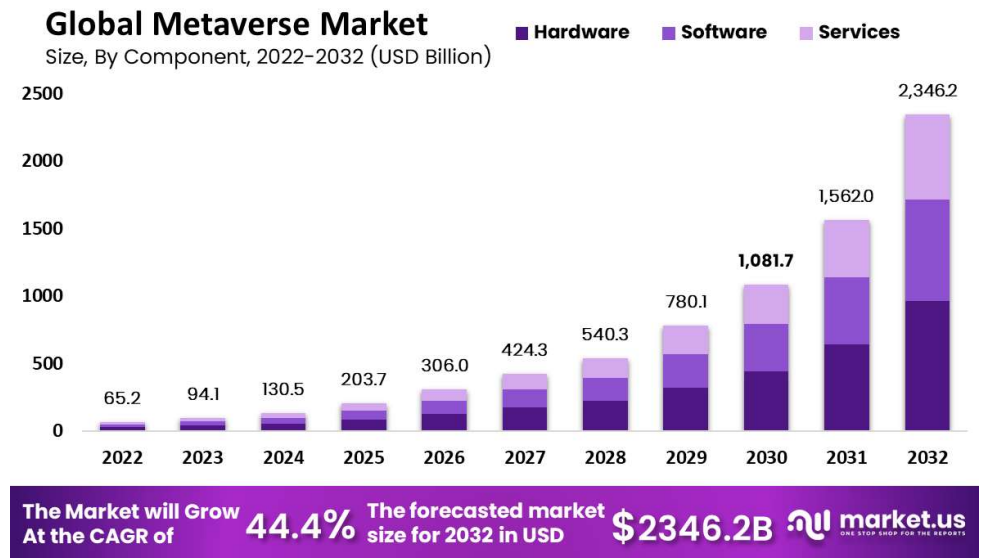


Figure 2. Global metaverse market.

2.2. Regional developments in the metaverse market

The metaverse market is rapidly growing in South Korea. As of 2022, the size of South Korea's metaverse market reached 12.4 trillion won, representing a growth of over 20% compared to the previous year. The country is actively engaged in the development and investment of metaverse technologies, with the government formulating policies to promote market growth while companies pursue various businesses utilizing these technologies [31].

In the United States, the metaverse market size was valued at 27.31 billion USD in 2023 and is anticipated to reach around 1303.42 billion USD by 2033, poised to grow at a CAGR of 48.3% from 2024 to 2033. This rapid growth underscores the increasing significance of the metaverse in shaping economic and social interactions across various sectors [32].

2.3. The interconnection between the metaverse and the content market

As depicted in **Figure 3**, interest in the metaverse reached its peak in 2021, largely driven by Facebook's rebranding to Meta [33]. Although there has been a slight decline in public interest due to various external factors, experts predict that the metaverse will experience further growth, with potential third and fourth waves of development in the coming years (as indicated by the black dotted line in **Figure 3**). This growth is contingent on resolving current technological and environmental challenges.

The Metaverse Hype Cycle

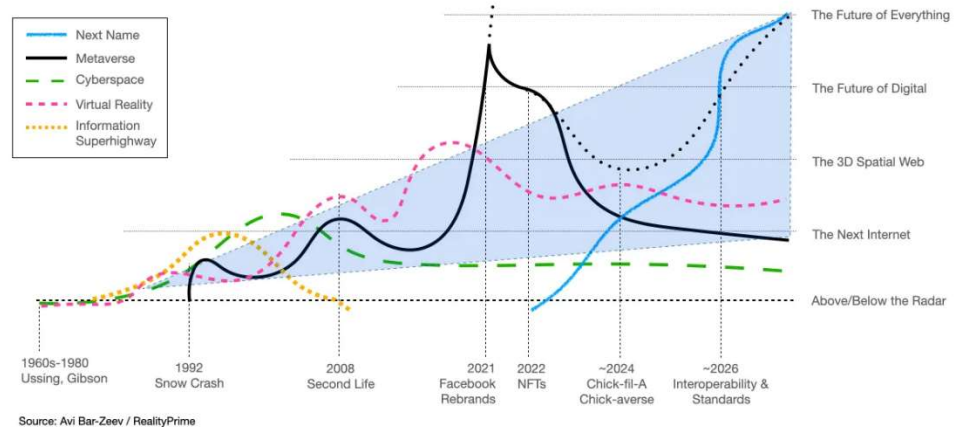


Figure 3. The metaverse hyper cycle: Past, present, and future.

The metaverse and the content market are inextricably linked. The metaverse has established itself as a novel platform for both the provision and consumption of content, creating new opportunities for business models that leverage metaverse technologies. This interconnection is fostering new productive activities, where content creation and user participation are seamlessly integrated within the metaverse. Thus, the metaverse is not only a space for play but also a hub for creativity, production, and economic interaction in a newly integrated digital landscape.

3. Status of metaverse in the content market

3.1. Evolution of metaverse content across platforms







The content in the metaverse market has experienced rapid growth and popularity across a wide range of genres and platforms [34,35]. **Table 2**, as of July 2023, provides a summary of popular metaverse content from the past three years, categorized by year [36]. The year 2020 marked a turning point in the potential of metaverse gaming, largely driven by the success of Fortnite. This game, well-known in the battle royale genre, became a cultural phenomenon by integrating real-world events into its virtual platform. Fortnite hosted live concerts and events featuring famous celebrities and athletes, offering an innovative blend of reality and virtual interaction. These events demonstrated how gaming platforms could evolve into multifaceted entertainment hubs, offering not just gameplay but immersive social and cultural experiences. In 2021, Roblox established itself as a leading sandbox game and a metaverse pioneer. Roblox's defining feature lies in its high level of user creativity and freedom. Players are empowered to create, share, and monetize their own games within the platform. By 2021, Roblox had exceeded over 1 billion monthly active users globally, emphasizing its widespread appeal and the power of user-generated content.

The year 2022 saw the rise of Zepeto, a social metaverse platform that strengthened its social interaction capabilities. Zepeto allows users to design personalized avatars and interact with friends in a virtual world. The platform has gained immense popularity, especially in South Korea, amassing over 200 million

monthly active users globally. Zepeto's growing social functions blurred the lines between virtual and real-world relationships, contributing to its widespread success.

In 2023, Mirrorverse emerged as a major player, offering immersive experiences using VR/AR technologies. The game enables users to wear VR/AR headsets, seamlessly transitioning between the real and virtual worlds. This advanced technology allows for deep immersive engagement, giving players experiences that push the boundaries of traditional gaming. Additionally, the classic game Minecraft regained popularity by integrating VR support, providing a refreshed and immersive experience for its large player base.

Table 2. The features of metaverse-based contents.

Year	Game	Genre	Platform	Feature	Image
2020	Fortnite	Battle Royale	PC, console, mobile	A game where you collect resources, build buildings, and battle other players	
2021	Roblox	Sandbox	PC, mobile	Sandbox game where users can create and share their own games	
2022	Zepeto	SOCIAL	mobile	Social games where you can communicate in the virtual world	
2023	MirrorVerse	VR/AR	PC, VR, AR	Game that leverages VR/AR technology to provide a more immersive experience	
2023	MineCraft	Sandbox	PC, mobile	Classic game that grows popular with VR/AR support	
2023	The Sandbox	Sandbox	PC, mobile	A simulation game that creates and manages your own world	

3.2. The Role of the metaverse in various industries

The application of metaverse technology has expanded into numerous industries, driving innovation in broadcasting, entertainment, music, and sports. This section explores the various ways industries are leveraging the metaverse to create immersive experiences and new business models. The metaverse is rapidly expanding its influence across various content sectors and industries, from gaming and entertainment to fashion and music. With continued technological advancements in VR, AR, AI, and blockchain, the metaverse's role as a content hub and a platform for new business models will only grow stronger. These developments underscore the potential of the metaverse not only as a space for entertainment but also as a transformative platform for economic, social, and cultural interaction.

3.2.1. Broadcasting and entertainment

In the broadcasting industry, metaverse platforms are being used to deliver immersive news and entertainment experiences. For instance, CNN has established a news studio within Roblox, allowing users to engage with news broadcasts and interact directly with news anchors. Similarly, MBC in South Korea has produced the variety show “Hangout with Yoo? Top Ten” on the Zepeto platform. This show features famous celebrities in virtual environments, expanding the possibilities for entertainment production in the virtual space. These examples highlight the transformative role of metaverse platforms in enhancing viewer engagement and providing unique content experiences [37].

3.2.2. Music industry and metaverse integration

The music industry is also undergoing a profound transformation through the integration of metaverse technologies, as well as other innovations such as AI, AR, VR, XR, and blockchain. These technologies are reshaping how music is produced, distributed, and consumed. The convergence of metaverse platforms and MusicTech is enabling the creation of new music content that transcends traditional formats [38]. Leading companies, often referred to as the Big 4—HYBE, SM, JYP, and YG—are embracing future technologies like non-fungible tokens (NFTs) and blockchain to explore new revenue streams and intellectual property (IP) opportunities [39]. These companies have integrated metaverse platforms into their business strategies, using virtual spaces to create interactive fan experiences, such as virtual concerts and meet-and-greets with artists. Starting in late 2021, these companies have announced various initiatives combining their music IPs with NFTs, which has revolutionized the fan experience by allowing fans to own unique digital collectibles tied to their favorite artists.

3.2.3. Fashion and cultural expansion

Zepeto has emerged as a significant platform in the fashion industry, serving as a global augmented reality avatar platform where users can purchase and showcase virtual fashion items. Zepeto’s success can be attributed to its integration with K-Culture, a key driver of global interest in Korean music, fashion, and entertainment. Collaborations with international fashion brands and entertainment companies have further bolstered Zepeto’s position as a cultural hub, expanding beyond traditional media to merge music, fashion, and user-generated content (UGC) [39]. The platform allows users to sell items, engage in activities, and create virtual content that resonates with younger generations, especially the MZ generation.






3.2.4. Sports industry and the metaverse

The sports industry is exploring new ways to engage fans through metaverse platforms. For instance, the National Football League (NFL) has introduced a virtual sports game on Roblox, allowing users to experience NFL games in a digital setting. This not only provides fans with immersive experiences but also opens up new monetization opportunities by offering virtual merchandise and exclusive access to virtual events. As metaverse platforms continue to evolve, sports organizations are expected to expand their presence, providing fans with even more interactive experiences [37].

4. Business models from metaverse content

The rise of metaverse platforms has opened up unprecedented opportunities to develop new business models, primarily through the integration of immersive content and virtual economies (in **Table 3**). The content industry has become a leader in advancing metaverse technology, offering not only innovative entertainment experiences but also entirely new economic systems that blur the boundaries between the real and virtual worlds. These developments are especially prominent in the gaming sector, where metaverse technologies have reshaped how users interact with virtual environments, assets, and economies. This section outlines the progression of business models in the metaverse, focusing on Create-to-Earn (C2E), Play-to-Earn (P2E), and the use of blockchain technology.

Table 3. The features of metaverse company and contents.

List	Company	Contents	Feature	Image
1	Fortnite	Battle Royale	350 million users, In-App Various events and collaborations	
2	Roblox	Sandbox	More than 500 Million Users, Approximately \$10 Billion Revenue	
3	Nexon	Maple Story Worlds	C2E registration of paid products for content creators	
4	NCsoft	Minibus	Anyone creates a 3D space and monetizes user-created content (NC-based Roblox)	
5	Netmarble	Everyone's Marble 2: Meta World	Provides blockchain-based real estate/board games	

4.1. Economic systems in metaverse platforms

The metaverse has enabled a new level of immersion and interaction, creating opportunities for users to engage in virtual economies. Roblox and Fortnite are prime examples of metaverse platforms that have pioneered new business models in gaming. In Roblox, users create their own avatars, design games, and sell in-game items, generating substantial revenue. In 2021 alone, Roblox generated \$10 billion in revenue and attracted over 500 million active users globally [40]. Similarly, Fortnite, with over 350 million active users worldwide, has created a thriving virtual economy, where players can purchase in-game items, skins, and even virtual real estate. These platforms exemplify how metaverse technology facilitates the convergence of real-world economics and virtual experiences, leading to significant revenue generation for both developers and users.

The economic success of these platforms can be largely attributed to the Create-to-Earn (C2E) model, where users are empowered to create content and monetize it. For instance, Roblox has enabled over 1.27 million developers to earn income through the sale of user-generated games, contributing to the platform's rapid expansion [41].

Similarly, Nexon and NCSoft, two major players in South Korea's content industry, have adopted the C2E model in their respective platforms. Nexon has introduced MapleStory World, where users can create and sell paid items using the intellectual property (IP) of the popular MapleStory game, while NCSoft's Miniverse has expanded the application of metaverse platforms to corporate and educational sectors, further highlighting the versatility of metaverse-based business models [42,43].

Alongside the C2E model, Play-to-Earn (P2E) games are becoming increasingly popular. These games, which integrate blockchain technology, allow users to earn real money through their in-game activities. Games like Axie Infinity, ArcheWorld, and MIR4 are pioneering this space, offering users the ability to generate income through gameplay. Axie Infinity, in particular, has gained widespread attention for enabling players to breed, raise, and trade virtual pets called "Axies", which can be sold or traded in a blockchain-powered marketplace. This integration of non-fungible tokens (NFTs) and cryptocurrency creates new revenue models that extend beyond traditional gaming [44].

Netmarble's Everyone's Marble 2: Meta World offers another example of a metaverse-driven economic system. In this game, players can acquire virtual real estate and Meta Cash, which can be converted into cryptocurrency and cashed out. This business model illustrates the synergy between blockchain technology and the metaverse, providing players with financial incentives to participate in virtual worlds [45]. The incorporation of blockchain and NFTs into metaverse platforms allows users to take ownership of virtual assets, further reinforcing the appeal of metaverse-based business models across various sectors.

4.2. Expanding metaverse applications beyond gaming

While gaming is at the forefront of metaverse business model innovation, other industries are also exploring its potential. The education sector has adopted metaverse platforms to create virtual classrooms, allowing for immersive learning experiences. For instance, Skype has introduced metaverse-based virtual classrooms, offering new ways for students to interact with course materials and teachers in a virtual setting. Additionally, the healthcare industry is experimenting with virtual hospitals, where patients can consult with doctors and receive medical advice in a metaverse environment, offering a glimpse into the future of telemedicine.

In the entertainment sector, companies like Universal Studios have developed virtual amusement parks, allowing users to enjoy rides and attractions from the comfort of their homes. These virtual parks provide an immersive experience that not only entertains but also opens up new avenues for digital tourism and virtual real estate [25]. This shift towards virtual experiences is particularly significant as it allows entertainment companies to expand their audience reach while offering innovative content consumption methods.

4.3. Emerging business models and the future of the metaverse

The metaverse is not only a platform for content consumption but also a catalyst for new business models across various industries. The application of NFTs and blockchain technologies has further expanded the scope of economic activity in virtual

environments. For example, the ability to trade in-game assets, virtual real estate, and NFTs has introduced a new layer of ownership and economic value to the metaverse, making it a space where real-world wealth can be generated.

Looking ahead, the development of Augmented Reality (AR) and Virtual Reality (VR) technologies will continue to drive the growth of the metaverse. As more companies adopt the metaverse for business applications, it is expected that new Create-to-Earn (C2E), Play-to-Earn (P2E), and Learn-to-Earn (L2E) models will emerge, offering users new ways to engage with content and monetize their activities. The seamless integration of VR/AR technologies will likely result in more immersive and diverse experiences, further expanding the commercial viability of the metaverse.

5. Discussion and future direction

The metaverse market is experiencing rapid growth, with the content industry playing a crucial role in driving this expansion. This growth is expected to continue, positioning the content industry as a key leader in the future development of the metaverse. The evolution of content in the metaverse can be emphasized through three key aspects: immersive user experiences, industry-wide innovation, and job creation. To support and sustain this growth, several practical policy recommendations and strategic guidelines are proposed.

5.1. Expanding immersive experiences and strengthening legal frameworks

The metaverse offers users experiences that transcend the boundaries between the physical and virtual worlds. However, to ensure the sustained creation of high-quality content, it is necessary to establish new regulations and legal frameworks that address challenges related to intellectual property (IP) rights and copyright protections. Current laws must evolve to accommodate the unique aspects of virtual ownership, user-generated content, and digital goods in the metaverse.

- Introduce comprehensive IP protection policies for digital assets and content within metaverse platforms.
- Establish clear copyright and content ownership regulations for creators to protect their rights while allowing platforms to flourish.
- Encourage international cooperation for cross-border regulation to ensure seamless operation in the global metaverse economy.

5.2. Fostering innovation across industries

The metaverse is not just a platform for entertainment but a driving force behind innovation in various industries such as gaming, social media, entertainment, education, shopping, finance, and real estate. To fully capitalize on this potential, industry stakeholders must focus on developing sustainable and productive business models that go beyond entertainment.

- Promote public-private partnerships to explore how the metaverse can enhance sectors like education, healthcare, and urban planning.
- Develop funding mechanisms such as tax incentives or grants to encourage

startups and established companies to invest in metaverse technologies and explore new service models.

- Create industry guidelines that ensure metaverse platforms are accessible and inclusive, fostering broad user engagement while mitigating potential ethical concerns around privacy, data protection, and user safety.

5.3. Stimulating job creation and developing talent

As the metaverse ecosystem grows, so will the demand for new skills and talent across various fields, including metaverse technology development, content creation, and service operation. The expansion of the metaverse is expected to drive significant job creation in fields such as software engineering, 3D design, virtual event management, and digital marketing.

- Establish specialized training programs and certification courses focused on metaverse-related skills, such as virtual environment design, VR/AR development, blockchain integration, and AI-powered content creation.
- Create national talent cultivation policies to nurture experts in metaverse technologies and related disciplines, with a focus on STEM education.
- Offer scholarships and funding for students pursuing careers in metaverse-related fields and collaborate with private companies to create internship opportunities that provide real-world experience in the metaverse industry.

5.4. Creating a virtuous cycle ecosystem

The success of the metaverse relies on the synergy between devices, platforms, and services. For South Korea to elevate its global competitiveness in this field, it is essential to create a virtuous cycle ecosystem where content creation, technological innovation, and business services support and reinforce one another.

- Continuous technological development: The government should prioritize research and development (R&D) in emerging technologies such as 5G/6G, AI, VR/AR, and blockchain, which are fundamental to the metaverse.
- Regulatory improvements: It is critical to streamline and modernize regulatory frameworks to remove barriers to cross-platform integration, device compatibility, and data interoperability across different metaverse platforms.
- Supporting specialized companies: Governments should identify and nurture small and medium-sized enterprises (SMEs) specializing in metaverse-related services and content creation. This includes offering financial support, business incubators, and export assistance to help companies scale and compete in global markets.

5.5. Global competitiveness and strategic initiatives

To become a global leader in the metaverse industry, South Korea must take proactive steps to position itself as an innovation hub for metaverse technologies and services.

- Establishing international collaborations: South Korea should partner with leading global tech companies and research institutions to drive collaborative innovations in the metaverse. These collaborations could also help set global

standards for metaverse development.

- Launching national metaverse initiatives: South Korea could benefit from a national metaverse strategy that outlines clear objectives for technological development, industry support, and international leadership in the field. This strategy should focus on creating a thriving environment for both metaverse startups and established firms.
- Prioritizing sustainability: As the metaverse expands, it is essential to consider the environmental impact of data centers, energy consumption, and digital infrastructure. Governments and industries should collaborate to promote sustainable practices in the development and operation of the metaverse.

6. Conclusion

In conclusion, the metaverse offers immense potential for transforming industries, creating new economic opportunities, and fostering innovation. However, realizing this potential requires concerted efforts from both the public and private sectors. By implementing robust intellectual property protections, encouraging industry innovation, fostering talent development, and building a sustainable metaverse ecosystem, South Korea can position itself as a global leader in this emerging field. The metaverse is not just the next step in digital evolution; it is a transformative platform that has the power to redefine the way we live, work, and interact with the world.

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