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Metaverse: Its Concept, Development & Challenges and Usage in Healthcare Sector

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Abstract
Information & Communication Technology has completely transformed every aspect of our existence. It has affected how people handle the current circumstances in their day-to-day lives, both inside and outside of their homes. A network of three-dimensional virtual worlds called the "Metaverse" is an emerging concept that permeates all aspects of our life. The healthcare industry, which is made up of companies that offer medical services, produce pharmaceuticals or other medical equipment, offer health insurance, or otherwise help patients receive healthcare, has also begun to use the Metaverse. This article focuses on the idea of the metaverse and how it is being used globally and nationally to tackle the situation.

Keywords: ICT, Wearing Technology, Metaverse, Healthcare Sector

1. Introduction

It is well known that with the invention and the availability of the information and communication technology at cheaper rate, human beings tried to link computers together across this network, which is now called the Internet, in order to benefit from resource sharing and group cooperation. However, it was first used in the United States military as the ARPANET in 1969 when SRI International and the University of California, Los Angeles (UCLA) connected two network nodes.

It was noted that by 2021, there were 7.9 billion people on the planet, and around 63% of them was regularly using the Internet. Even more startling data comes from industrialized nations, where 90% of the population regularly uses the Internet (Chen *et al* 2023) [12]. Chen continues, "With the ongoing growth in demand for e-commerce, remote collaboration, social networking, and entertainment on the Internet, the new generation of the Internet with its immersive, real-time, and digital technology is the path of future development in the 2020s." After then, Microsoft changed its name to Meta and subsequently Metaverse, which has grown in popularity and begun to be viewed by academics from all backgrounds.

2. What a Metaverse Actually Is?

The prefix "Meta" and the suffix "verse" combine to form the word "Metaverse." Greek word "meta" is frequently employed as a prefix to denote after or beyond. For instance, the term "metadata" frequently refers to something other than data, particularly when it has a self-referential meaning. The word "universe" is shortened to "verse." Motivated by this, the term "Metaverse", is contended that is a portmanteau, could be understood as a virtual environment created by computers that exists outside of the cosmos. If true, the Metaverse's essence ought to transcend the cosmos as well (Dionisio and Gilbert, 2013).

The concept of the metaverse, a virtual world where users interact with one another through avatars, has a lengthy history dating back to the early 1900s. In his 1992 science fiction novel "Snow Crash," Neal Stephenson coined the term "metaverse" to depict a worldwide, immersive virtual environment made possible by augmented reality (AR) and virtual reality (VR) technologies (Canavesi, 2022). Stephenson employed the term to allude to a virtual reality-based Internet substitute system. It is perceived by users of Neal Stephenson's metaverse as an urban environment centered on a 100-meter-wide thoroughfare called the thoroughfare that surrounds a featureless, perfectly spherical planet with a circumference of 216 kilometers. Virtual real estate can be bought and used to construct buildings; it is owned by the Global Multimedia Protocol Group, a fictional branch of the real Association of Computing Machinery. Users have two ways to enter the metaverse: Either through personal terminals that project a high-quality virtual reality display onto user-worn goggles, or through public terminals in booths that

display a grainy black and white image. Users see it firsthand. Stephenson (https://virtualand.technology/Virtualand-w.pdf) claims that there is a subculture of individuals who would rather have a constant connection to the metaverse.

The internet's creation in 1983 and the introduction of Mesh, the first web browser, in 1993 are among the earlier turning points in the history of the metaverse concept. Important advancements like the creation of Proof-of-Work in 1993, the introduction of Second Life in 2003, and the rise of blockchain technology and cryptocurrencies in the late 2000s have all contributed to the metaverse's expansion.

Table 1 lists the important achievements in the field of Metaverse and its projections by 2040.

Table 1: Development of Metaverse

Year	Metaverse Phase	Description
2014	Dejaverse	Observing things that we have previously witnessed, like Second Life. Roblox has also existed for a long time. Facebook's Meta is not new; it's just repackaged.
2020	Transverse	Businesses collaborate to create standards. There is a push to standardize and increase the privacy of our identities.
2022	Exoverse	Businesses like as Google and Niantic are already developing such. One example is Google Maps. The goal is to map the external environment. Niantic also discusses a metaverse that exists in real life.
2022	Esoverse	Technological exploration of our inner selves. With meditation applications, you can start to see some of that.
2023-2030	Holiverse	Combining each of these elements. It is the culmination of these elements together.
2040	Fully Immersive Metaverse	Considerably more sophisticated, completely immersive, and functional part of everyday life for at least half a billion people worldwide is anticipated.

Companies like Microsoft and Facebook (now Meta) entered the metaverse as technology developed; in 2019, Meta Platforms introduced Facebook Horizon, a social VR environment. Notwithstanding the excitement surrounding the metaverse, worries about user addiction, privacy of information, and safety have surfaced, reflecting larger issues in the social media and gaming sectors.

With the creation of three-dimensional immersive settings and the incorporation of blockchain technology and non-fungible tokens (NFTs) for asset ownership, the metaverse's journey has advanced significantly in recent years. Although the concept of the metaverse is still developing, its potential is to build a virtual world experience matrix that facilitates platform continuity and interoperability. As the metaverse expands, it will signal a major shift away from traditional online experiences and toward immersive virtual worlds that will profoundly impact how we collaborate, communicate, and work in the digital age.

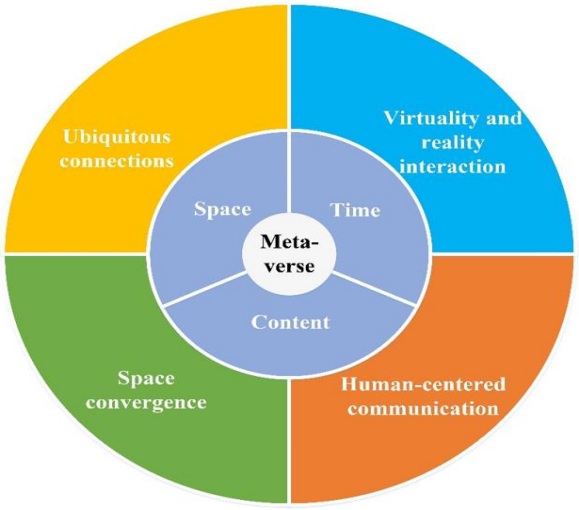

Fig 1: Four Pillars of Metaverse

3. Four Pillars of Metaverse

There are four pillars, which largely contribute to the great immersion in the Metaverse. Based on Shi (2023) [8], each pillar is discussed below:

3.1 Ubiquitous Connections

The term "ubiquitous connection," sometimes known as "ubiquitous connectivity," refers to the fact that connections between hardware and software are so pervasive that they can be found in every aspect of our lives. Numerous tasks could be accomplished by creating ubiquitous connections between things, people, and objects in both physical and virtual settings. For instance, trades may be made in an orderly manner regardless of different time zones, and people can converse without obstacles even if they are thousands of kilometers distant. The ubiquitous connections enable the dismantling of spatial-temporal constraints and create the groundwork for the Metaverse's eventual emergence.

3.2 Space Convergence

An overwhelming confluence between mental, social, physical, and cyberspaces arises as a result of the ongoing development of ubiquitous connections; this convergence could be referred to as General Cyberspace. The Cyber-Physical System (CPS), Cyber-Physical-Social System (CPSS), and Cyber-Physical-Social-Thinking hyperspace (CPST) are constantly convergent and will undoubtedly break down spatial barriers. This opens up new opportunities for interactions between virtual and actual worlds. Put differently, the methods of space convergence will play a significant role in the growth of the Metaverse.

3.3 Virtuality and Reality Interaction

The relationships between virtual and actual space are significant because the Metaverse portrays a digitalized realm where human bodies are still in real, physical space. Immersion user experiences in the Metaverse may be greatly

enhanced by the creation and optimization of diverse forms of content through virtuality and reality interaction approaches. Richer contents could be expanded with the aid of VR, AR, and other interactive technologies without taking into account spatial or temporal limitations.

3.4 Human-Centered Communication

From the earliest face-to-face communication to written letters, wired and wireless communication, and instant messaging today, human-centered communication has evolved. Instant messaging techniques have made life much more convenient for people. It makes it possible for communication to transcend temporal and spatial barriers and receive a response quickly. With the development of instant messaging, human-centered communication is no longer restricted to physical space but is instead progressively moving into virtual cyberspace. One example of this is the fact that electronic screens are still the primary medium for most online social communication. Instant communication allows two parties to stay in touch by text, voice, and video, but it could not be more immersive.

4. Technological Foundations of Metaverse

Jayaraj (2022) [3] states six foundations technologies that power the Metaverse. These include AR/VR Hardware; Cloud infrastructure; Chipsets processors, Low latency networks (5G); Design tolls & SDKs and Blockchain & cryptocurrencies. These are shown in Fig 1 (based on Jayaraj, 2022) [3].

However, more commonly following 03 technologies are the foundations of any Metaverse.

4.1 Virtual Reality (VR) and Augmented Reality (AR)

Virtual reality (VR) submerges users in an entirely virtual world and frequently calls for specialist headsets like the HTC Vive or Oculus Rift. In order to enable users to navigate and interact with digital areas, these gadgets capture movements of the head and hands.

While, Augmented Reality (AR) modifies the user's experience of reality by superimposing digital information over the real world. This merging of the real and virtual worlds is made possible by gadgets like Apple's ARKit and Microsoft's HoloLens, as well as smartphones with augmented reality capabilities.

4.2 Blockchain and Cryptocurrency

The foundation for digital transactions in the metaverse is provided by blockchain technology and cryptocurrencies like Ethereum and Bitcoin. They make it possible for decentralized, transparent, and safe financial transactions—all essential for virtual economies.

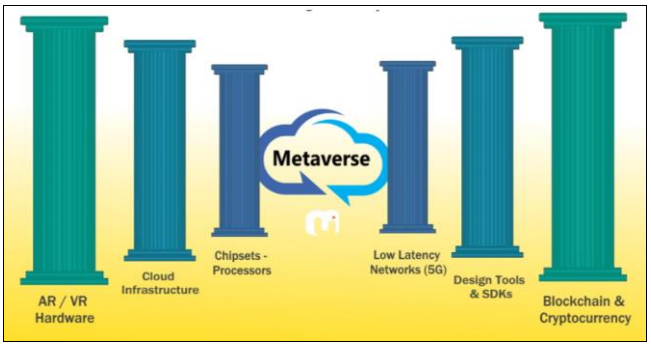

Fig 1: Stages of Foundations of Metaverse

4.3 Networking and Cloud Computing

To enable interactions between millions of users in real time, the metaverse needs strong networking capabilities. developments in cloud computing services with 5G technologies from businesses like Amazon Web Services (AWS) and 5. Metaverse's Broad Applications and Consequences.

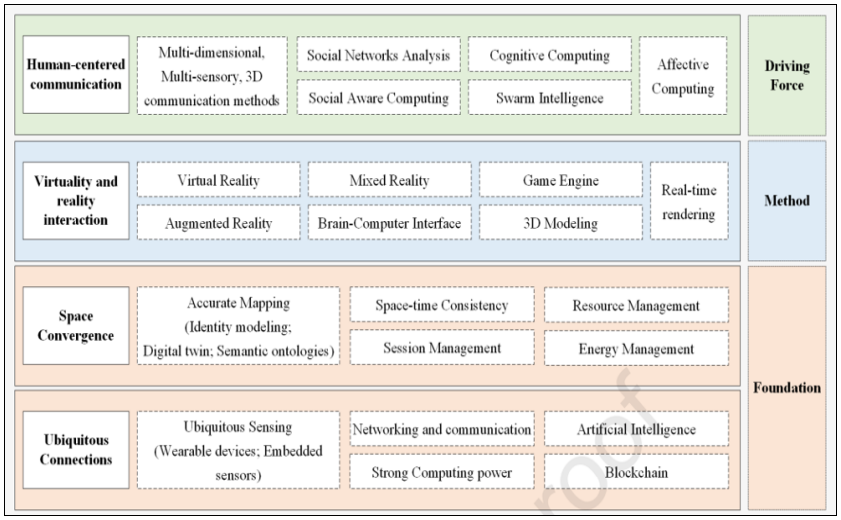

Fig 3: Technical Framework Corresponding to the Four Pillars Metaverse

The suggested Metaverse technology structure for each of the four pillars is shown in Fig 3. It is clear that the strategies of space convergence and ubiquitous connections provide strong bases for getting around the spatial-temporal limitations, and the strategies of virtuality and reality interaction help people interact with the Metaverse and connect with one another. Furthermore, virtuality and reality interaction approaches have the potential to enhance the immersive experiences and narratives within the Metaverse. Besides, human-centered communication strategies function similarly to the Metaverse's engine (Shi *et al*., 2023) [8].

5. Usage of Metaverse in General

The metaverse promises to revolutionize various sectors. Some of the sectors where it can be used successfully (based on Meta, 2021; Microsoft, 2022; Epic Games, 2020) [4, 5, 2] as

given below:

5.1 Entertainment and Social Interaction

The metaverse provides new platforms for interaction with events like social meetings, movies, and virtual concerts. Large-scale virtual events are possible, as seen by the millions of people that Fortnite's virtual concerts have attracted.

5.2 Employment and Learning

The metaverse has the potential to revolutionize the ways in which people collaborate and learn by offering more immersive and dynamic meeting, training, and educational environments. Virtual concerts, movies, and social gatherings within the metaverse offer new forms of engagement. For instance, virtual concerts held in Fortnite have drawn millions of viewers, demonstrating the potential for large-scale virtual events.

5.3 Work and Education

The metaverse can provide more immersive and interactive environments for meetings, training, and education, potentially transforming how people collaborate and learn.

5.4 Commerce and Virtual Economies

The market for virtual products and services is already very large. Users can use cryptocurrencies to buy, sell, and trade virtual goods, such as avatar clothes and virtual real estate, on platforms like Decentraland.

Virtual goods and services are already a booming market. Platforms like Roblox and Decentraland allow users to buy, sell, and trade virtual assets, from clothing for avatars to virtual real estate, using cryptocurrencies.

6. Challenges and Considerations of Metaverse

Numerous challenges exist of using Metaverse including that of manpower and money but important of them are given below:

6.1 Technical and Infrastructure Challenges

Overcoming major technical obstacles, including as latency problems, bandwidth restrictions, and the requirement for powerful computing resources, is necessary to develop a smooth and scalable metaverse.

6.2 Privacy and Security

Since the metaverse will gather enormous volumes of data, privacy and security issues will come up. It will be crucial to guarantee the security of interactions and the protection of user data.

6.3 Governance and Regulation

The regulation of the metaverse presents a challenge due to its worldwide reach. Stakeholders and governments will need to handle matters like jurisdiction, digital identity, and intellectual property.

7. Types of Metaverse

There are three types of Metaverse: Heavyweight, Hybrid Lightweight, and Lightweight Metaverse. Each based on (Chen *et al*., 2023) [12] is described in table 2.

Lightweight Metaverse is a new type of lightweight, unprovoked, and decentralized metaverse. The goal of lightweight metaverse is to maximize the feature that allows users to access it on any device, at any time, from any location. Its benefits include a greater range of applications, inexpensive implementation costs, and low performance requirements. The industry's present source of problems for Metaverse users can be efficiently resolved by lightweight metaverse, which can also encourage platform content fission and increase Metaverse's influence.

Table 2: Comparison of Heavyweight, Hybrid Lightweight and Lightweight Metaverse

Form	Heavyweight Metaverse	Hybrid Light weighted Metaverse	Light weighted Metaverse
3D scene construction	Developed based on traditional 3D engines such as Unreal/Unity	Developed based on traditional 3D engines such as Unreal/Unity	Anyone and any device can realize building blocks through a browser
Rendering mode	Local rendering	Local rendering and cloud rendering	High performance local rendering
Creative interaction and expansion capabilities	Individual project team planning and development	Individual project team planning and development	One-click implementation through lightweight logic editor and seamless docking self-developed engine
Development cycle	180 days or more	Around 90 days	Around 5-30 days
User entrance	Independent Applications, individual engines support H5	H5, applets, and Applications all have independent entrances	H5, applets, and Applications all have independent entrances
Delivery effect	Realistic 3D effect	Texture-based 3D/partial animation-level 3D effects	Animation-level 3D effects

On the other hand, events offered by the *Hybrid Lightweight Metaverse* combine virtual and physical components to provide engaging digital experiences. The metaverse, which has 3D surroundings and customizable avatars, is the virtual engagement of the future. Another kind is called *Light weighted Metaverse*, where building blocks can be realized by any device using a browser. These are Metaverse local renders with exceptional performance.

Additionally, 03 Open metaverse (https://www.pwc.com/m1/en/ industries/ documents/the-future-of-healthcare-in-the-metaverse.pdf) exist, which are:

- **Intravese Metaverse:** It is specially designed metaverse that offers total control over the system's functioning, security, and accessibility to the owner.
- **Private Metaverse:** It functions similarly to an exclusive island and can be used to host individualized medical experiences for patients and is exclusively accessible by invitation. Owners can limit access in a few ways, like password protection or invite-only access, or they can share links to make it more accessible to a larger audience.
- **Open Metaverse:** It is an inclusive, community-driven virtual town square. Blockchain technology makes it possible to have decentralized ownership of things like wearables and land, for example, the NFTs. It is a fantastic platform for providing public an interactive experience.

8. Metaverse in Health Care System

Ullah *et al* (2017) [11] are of the opinion that the provision of healthcare services has been identified as a critical component in maintaining the overall psychological, physical, and social well-being of the world's population. The potential of healthcare services to promote wellbeing and lifespan while simultaneously reducing the detrimental effects of sickness, injury, and illness highlights their important nature. Nevertheless, despite the healthcare industry's long developmental journey, it has undergone a quick and dynamic metamorphosis, largely due to its integration with cutting-edge technological advancements - one such technological advancement that holds the promise of improving the industry's future is the Metaverse.

Metaverse has become a game-changing solution in the healthcare sector by creating immersive and networked digital worlds, helping the sector remain competitive in a rapidly evolving digital landscape. The ever-expanding field of technology has seen the development and exploration of new horizons via metaverse applications in healthcare. Virtual clinics, which enable cross-linguistic communication between patients and doctors, doctors are accessible when you need them. In the medical area, metaverse allows practitioners to focus on patient care, save costs, and increase accuracy of diagnosis.

9. Earlier Studies on Metaverse for Health Care Sector

Various studies have been carried out since the concept of Metaverse evolved in the field of healthcare sector. However, some important of them based on (Petrigna and Musumeci, 2022) [6], are listed in table 3.

Table 3: Health Care Studies in Relation to Metaverse

S. No	Complete References	Main Objectives
1	Abu-Elezz I., Hassan A., Nazeemudeen A., Househ M., Abd-Alrazaq A. (2020). The benefits and threats of blockchain technology in healthcare: A scoping review. International Journal of Medical Informatics, 142: 104246. Doi: 10.1016/j.ijmedinf.2020.104246.	Explore and categorize the benefits and threats of blockchain technology application in a healthcare system
2	Al-Jaroodi J., Mohamed N., Abukhousa E. Health 4.0 (2020). On the way to realizing the healthcare of the future. IEEE Access, 8: 211189–211210. Doi: 10.1109/ACCESS.2020.3038858.	Define Health 4.0 and discuss advanced potential Health 4.0 applications
3	Almarzouqi A., Aburayya A., Salloum S.A. (2022). Prediction of User's Intention to Use Metaverse System in Medical Education: A Hybrid SEM-ML Learning Approach. IEEE Access, 10: 43421–43434. Doi: 10.1109/ ACCESS.2022.3169285.	Evaluate students' perception of the application of the metaverse for medical-educational purposes
4	Aziz H.A. (2018). Virtual reality programs applications in healthcare. Journal of Health & Medical Informatics, 9: 305. Doi: 10.4172/2157-7420.1000305.	Summarizes the current state of knowledge of virtual reality simulation in healthcare
5	Chapman J.R., Wang J.C., Wiechert K. (2022). Into the Spine Metaverse: Reflections on a future Metaspine (Uni-) verse. Glob. Spine Journal, 12:545–547. doi: 10.1177/21925682221085643	The metaverse is associated with training in lung cancer surgery
6	Chen F.-Q., Leng Y.-F., Ge J.-F., Wang D.-W., Li C., Chen B., Sun Z.-L. (2020). Effectiveness of virtual reality in nursing education: Meta-analysis. Journal of Medical Internet Research, 22: e18290. Doi: 10.2196/18290.	Evaluate the effectiveness of virtual reality in nursing education in the areas of knowledge, skills, satisfaction, confidence, and performance time
7	Javaid M., Haleem A. (2020). Virtual reality applications toward medical field. Clinical Epidemiology and Global Health, 8:600–605. Doi: 10.1016/j. cegh.2019.12.010.	Find how the metaverse is going to solve a medical-related problem in saving the life of the patient and what are the significant applications
8	Koo H. (2021). Training in lung cancer surgery through the metaverse, including extended reality, in the smart operating room of Seoul National University Bundang Hospital, Korea. J. Educ. Eval. Health Prof, 18:33. Doi: 10.3352/jeehp.2021.18.33.	Training in lung cancer surgery through the metaverse
9	Krittanawong C., Rogers A., Aydar M., Choi E., Johnson K., Wang Z., Narayan S.M. (2020). Integrating blockchain technology with artificial intelligence for cardiovascular medicine. Nature Reviews. Cardiology, 17:1–3. Doi: 10.1038/s41569-019-0294-y.	Discuss integration of blockchain with artificial intelligencedata-centric analysis and information flow, its limitations, and potential cardiovascular applications
10	Krittanawong C., Aydar M., Virk H.U.H., Kumar A., Kaplin S., Guimaraes L., Wang Z., Halperin J.L. (2021). Artificial Intelligence–Powered Blockchains for Cardiovascular Medicine. Canadian Journal of Cardiology, 38:185–195. Doi: 10.1016/j.cjca.2021.11.011.	Discuss recent advances and potential future directions for the application of blockchain and its integration with artificial intelligence in cardiovascular medicine
11	Kye B., Han N., Kim E., Park Y., Jo S. (2021). Educational applications of metaverse: Possibilities and limitations. J. Educ. Eval. Health Prof, 18:30–32. Doi: 10.3352/jeehp.2021.18.32.	Define the 4 types of the metaverse and explain the potential and limitations of its educational applications
12	Liu Z., Ren L., Xiao C., Zhang K., Demian P. (2022). Virtual reality aided therapy towards health 4.0: A two-decade bibliometric analysis. Int. J. Environ. Res. Public Health, 19:1525. Doi: 10.3390/ijerph 19031525.	Explore VR in aiding therapy, providing a potential guideline for futures application in healthcare towards Health 4.0
13	Mesko B. (2022). The promise of the metaverse in cardiovascular health. Eur. Heart J, 43: 2647–2649. Doi: 10.1093/eurheartj/ehac231.	It was associated with the metaverse with cardiovascular health
14	Ramesh *et al*. (20220. Holographic elysium of a 4D ophthalmic anatomical and pathological metaverse with extended reality/mixed reality. Indian Journal of Ophthalmology 70(8):p 3116-3121. Doi: 10.4103/ijo.IJO_120_22.	Presentation of the 4D ophthalmic anatomical and pathological metaverse
15	Schuelke S., Aurit S., Connot N., Denney S. Virtual nursing: The new reality in quality care. Nursing Administration Quartlery. 2019;43:322–328. Doi: 10.1097/ NAQ.0000000000000376.	Report on an innovative care system and the effects of this model have on patient satisfaction, patient quality metrics, and financial metrics

16	Skalidis I., Muller O., Fournier S. (2022). CardioVerse: the Cardiovascular Medicine in the Era of Metaverse. Trends Cardiovasc. Med. online: https://www.sciencedirect.com/science/artic doi:le/pii/S1050173 822000718	Analysis of the applications of the metaverse and how it can be implemented in cardiovascular medicine
17	Tan T.F., Li Y., Lim J.S., Gunasekeran D.V., Teo Z.L., Ng W.Y., Ting D.S. (2022). Metaverse and Virtual Health Care in Ophthalmology: Opportunities and Challenges. Asia-Pac. J. Ophthalmol. (Phila. Pa.), 11:237–246. Doi: 10.1097/APO.0000000000000537.	Analysis opportunities and challenges of the metaverse in ophthalmology
18	Usmani S.S., Sharath M., Mehendale M. (2022). Future of mental health in the metaverse. Gen. Psychiatry, 35:e100825. Doi: 10.1136/gpsych-2022-100825.	Explore the applications of the metaverse on mental health
19	Gao, K., Wiederhold B., Kong L., Wiederhold, M. (2013). Methodology case study of the application of haptics to combat medic training programs. Annural Review of Cybertherapy and Telemedicine, 191:53–7. 10.3233/978-1-61499-282-0-53.	Application of the metaverse in the health care setting
20	Yeung A.W.K., Tosevska A., Klager E., Eibensteiner F., Laxar D., Stoyanov J., Glisic M., Zeiner S., Kulnik S.T., Crutzen R. (2021). Virtual and augmented reality applications in medicine: Analysis of the scientific literature. J. Med. Internet Res, 23:e25499. Doi: 10.2196/25499.	Association of virtual reality and augmented reality with medicine
21	Zeng Y., Zeng L., Zhang C., Cheng A.S. The metaverse in cancer care: Applications and challenges. *Asia-Pacific Journal of Oncology Nursing*, 100111. Doi: 10.1016/j.apjon.2022.100111.	Application of the metaverse in cancer care

Thus, on the basis of above table 3 it can be concluded that Metaverse has started to be used variously in the field of healthcare system.

10. Challenges of Integrating Metaverse in Health Care Sector

The main challenges of integrating the metaverse into healthcare sector include (https://www.igi-global.com/book/metaverse-applications-intelligent-healthcare / 320471):

- **Privacy and Data Security:** Guaranteeing the security and privacy of electronic health records (EHRs) and patient data in a metaverse setting. It also putting strong security measures in place to stop data breaches and illegal access.
- **Identity Confirmation:** Verifying the identity of patients and healthcare professionals in the metaverse to guarantee safe communication.
- **Complicated Data Exchange Procedures:** Overcoming obstacles in the form of logistics and technology that prevent data from being shared between systems and platforms.
- **Meta-Culture and the Digital Divide:** Addressing the cultural and digital literacy gaps that could affect the acceptance and uptake of metaverse technology in the medical field.
- **Moral Aspects to Take into Account:** Addressing moral issues such the necessity for transparent data management and the possibility of biased AI decision-making in the context of metaverse technology use in healthcare.
- **Risks Associated with Cybersecurity:** Safeguarding against online attacks and guaranteeing the accuracy of data sent over metaverse networks.
- **Social, economic, and resource constraints:** Removing social, economic, and resource-related obstacles that could prevent metaverse technology from being widely used in healthcare.
- **Combining with Current Systems:** Combining metaverse technology with current workflows and infrastructure in healthcare in a seamless manner.

These challenges show how crucial it is to carefully design, strategically deploy, and continuously assess metaverse technology integration in healthcare systems.

11. Conclusion

The compilation of this article is a outcome to the expanding discourse surrounding the evolution and ramifications of "the metaverse". The domain of computer-generated, networked extended-reality spaces (XR, which includes VR, AR, and/or MR) where individuals interact with automated entities is known as the metaverse in its broadest definition. Some of these spaces are "mirror worlds" that replicate real-world settings, while others are gaming or fantasy realms. While social media and virtual reality games have been around for many years, the metaverse's development has only recently gained traction due to technological advancements in the early 2020s. This has drawn billions of dollars in investment and sparked predictions that the metaverse will become "the next internet battleground" or "the future of the internet" (Anderson and Rainie, 2022).

All facets of society, including education, healthcare, gaming and entertainment, the arts, social and civic life, and other pursuits, are expected to gain from the development of sophisticated, immersive, 3D virtual environments. Of course, there are worries about the health, safety, security, privacy, and economic effects of these new spaces—as there are with any digital technology. New discussions regarding the metaverse's development and its implications for society are being sparked by this (Anderson and Rainie, 2022) on the future of Metaverse in 2040.

Though, there is still a long way from seeing the metaverse come to pass, even though it has been around since Neal Stephenson's dystopian cyberpunk novel Snow Crash was published in 1992, but it has enormous promise. However, ongoing technological developments as well as increased interest from investors and big tech corporations, the metaverse may play a big role in our digital future. It will probably change how we connect with the physical and digital worlds as it develops, presenting both new opportunities and difficulties. Healthcare System would equally be benefitted from the Metaverse technology.

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