

METaverse TECHNOLOGY AND THE LEGAL IMPLICATIONS OF ITS EMERGENCE

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Received: 23/02/2024

Published: 26/08/2024

Abstract:

The Metaverse technology is considered as one of the modern technologies that have swept the world and are now being used in many fields, be it education, health, work, investment, etc. This technology has revealed a number of advantages and disadvantages.

The use of metaverse technology has raised many issues, including legal ones, as it lacks a precise legal framework, which can lead to many problems for the user. Therefore, there is an international willingness to embrace this technology from a legal perspective and to fill this legal void.

Keywords: *Metaverse, Frontier technologies, Legal vacuum*

INTRODUCTION:

The technological development that the world is witnessing is undergoing rapid changes, especially with the advent of the fifth generation of telecommunications, and this accelerating movement, which has both positive and negative aspects, has knocked on a new and different door, which is the world of the metaverse, where reality and tangible imagination are intertwined.

The world of the metaverse reveals the mysterious and distinctive future of technology, which arouses the interest of specialists in all scientific and human fields, as it is a world that touches all sectors, and this is what also requires the attention of legal scholars to know the intricacies of this world and the problems it may pose, in order to find a sound legal environment qualified to host the metaverse, and this in the face of the fierce competition of large technology companies to develop this system. However, the observed phenomenon is the weakness of the legal texts that frame the speed of technological development and the digital environment, which may lead to legal disputes that are difficult to resolve in the absence of a legal rule that keeps pace with this technological revolution, which may entail some new attacks and crimes that traditional legal rules cannot contain.

Given the expected and unknown negative aspects of metaverse technology, some countries are accelerating the study of this system and the areas of dealing with it, emphasising the need to contain it from a legal point of view, as is the case, for example, in the results of the Dubai Metaverse Forum 2022, where it was recommended the need to formulate proactive legislation to keep pace with the rapid developments in the new virtual and digital worlds, the most prominent of which is the world of the metaverse¹.

The previous discussion raises the following two questions: Are there any legal texts that regulate metaverse technology? And what are the main legal challenges posed by this technology?

To answer these questions, the study is divided into the following sections:

The first topic: The specificity of Metaverse technology and its areas of application

The second topic: The Impact of Metaverse Technology on Specific Legal Situations and the International Preparedness to Contain It

The first topic: The Specificity of Metaverse Technology and its Applications

Metaverse technology is considered to be one of the modern technologies that has recently taken the world by storm due to its specificity and the wide range of its applications. In order to understand the specificity of this technology, it is necessary to address its concept and its relationship with some

¹- Dubai Future Foundation. Outcomes Report, Dubai Metaverse Assembly.2022. Available at: <https://www.dubaifuture.ae/wp-content/uploads/2022/12/TheMetaverseAssembly-OutcomesReport-WP-Arabic.pdf>. Accessed: 29 January 2024, 10:03 AM.

borderline technologies (the first section), as well as to identify its areas of application (the second section).

The first section: The Concept of Metaverse Technology and Its Relation to Some Borderline Technologies

The meaning of metaverse technology is still unknown to some, so it is necessary to define it and clarify its characteristics (the first subsection), as well as to explain the extent of this technology's association with some borderline technologies (the second subsection).

The first subsection: Definition of metaverse technology and its characteristics

At present, countries such as Japan, the USA, Singapore and the United Arab Emirates¹ are showing increased interest in modern technologies based on the Internet and using Metaverse technology. This technology has become a revolution on all fronts, as it will allow an interaction that eliminates the boundaries between the physical and digital worlds, especially since Metaverse technology is supported by technological developments such as augmented reality, the third generation of the web and digital currencies².

As for the origin of the term "Metaverse", it was first used in the 1992 science fiction novel "Snow Crash", where software is used and people interact as fictional characters (avatars) in a three-dimensional space³.

The term "metaverse" has two parts in the English language. The first part, "meta", means "beyond" or "transcending", while the second part, "verse", is derived from "universe", meaning "the world". So the two parts together mean "beyond the world" or "transcending the world".

Currently, the term "metaverse" refers to the shared three-dimensional world that is closely associated with the Internet and its development, resulting in projects by major companies such as Facebook and Microsoft.

Metaverse technology can be defined as "the integration of technology into all aspects of life, taking advantage of the information revolution and the unlimited applications of modern technologies that have made the world a small village thanks to the enormous capabilities they provide, especially in terms of the speed of information and data exchange, causing a radical change in lifestyles, ways of living, working and communicating, including applications of artificial intelligence, the Internet of Things and others"⁴.

From the above, we can identify the following characteristics of Metaverse technology:

1. Global dimension: The Abu Dhabi Future Trends Center for Advanced Research and Studies has published a study entitled "Metaverse... The Future of Human Urbanisation in the Post-Internet World"⁵. The study concludes that the use of metaverse technology will not be limited to video games, but will be redesigned to become an alternative to smartphones, reinforcing the idea of eliminating borders between countries, especially as the world is prepared by the widespread culture of online shopping, learning and networking. It is clear, therefore, that the search for globally applicable legal frameworks to govern this evolving virtual world is a necessity.

2. Metaverse as a digital world embodying virtual reality: The means used in metaverse technology allow the user to enter a virtual world and isolate themselves from the real world. This is facilitated by the user's perception of realistic three-dimensional graphical images. Metaverse technology also allows the user to touch objects. In addition, Metaverse technology includes virtual characters, called

¹- Rami Metwally Al-Qadi. The Digital Forensic Guide in Metaverse Technology. Arab Journal of Security Studies, Naif Arab University for Security Studies, no. 39, p. 190.

²- Chris Liquin and Aleyan Dogane. A Tale of 2 Metaverses: Here's Why Web 3 Might Look More Like Web 2.5 in the Mid-Term 2022.

³- Khalifa Ehab. The Metaverse: The Future of Human Urbanisation in a Post-Internet World. Future for Advanced Research and Studies Center, Abu Dhabi, Series of Studies, No. 17, November 2022, p. 8.

⁴- Quoted in: Abdelkader Jadi. The Sharia Rulings on Financial Transactions in Metaverse Technology. Al-Mi'yar Journal, vol. 27, no. 5, 2023, p. 465.

⁵- Ehab Khalifa. The Future of Human Urbanisation in a Post-Internet World.* Future for Advanced Research and Studies Center, Abu Dhabi, no. 17, November 2022.

“virtual humans”, created by artificial intelligence with the ability to communicate and interact¹. This raises a number of legal implications and challenges, particularly in relation to legal liability in the event of harm.

3. Uniqueness of the means used: A user of metaverse technology requires a number of means to access this virtual world. The first of these is a high speed internet connection, as well as a special suit known as (Tesla), which is characterised by its ability to allow the user to sense the surrounding objects, thus allowing them to elicit a reaction when using this technology. The headset is also an essential means of immersing oneself in the virtual world as if it were real, in addition to the special headphones that help with emotional communication, as facial expressions are reflected on the avatar’s symbolic image².

Section Two: The Relationship of Metaverse Technology to Specific Boundary Technologies

The concept of the Metaverse is intertwined with some of the latest technologies, and it is sometimes difficult to see the relationship between them. Therefore, we will look at the relationship of this technology to certain boundary technologies and whether the latter interfere with the use of the Metaverse.

First: Metaverse and Artificial Intelligence

The topic of artificial intelligence has become a subject of interest to researchers of various specialisations, including legal scholars, due to its widespread use in many fields and domains. Artificial intelligence has also become a point of contention among legal scholars in terms of definition, given its rapid development. Among the definitions given for it is that of Marvin Minsky, who defined it as “a computer program that performs tasks that humans perform in a satisfactory manner because they require high-level mental processes...”³. Artificial Intelligence also raises a number of legal issues, including the determination of its legal nature and the difficulty of applying traditional rules of liability for damages resulting from its use.

Having considered both the concept of the Metaverse and artificial intelligence, it can be said that the difference between them lies in the fact that the latter plays an important role in the development and improvement of the virtual worlds on which the Metaverse technology is based, through the development of intelligent systems that facilitate the user’s work. Therefore, the integration of artificial intelligence into the Metaverse results in the performance of tasks with a high level of accuracy and quality. Consequently, both technologies may share some legal issues that need to be addressed with solutions.

Second: Metaverse and Blockchain

Blockchain has been given several definitions, including the following: “It is a digital ledger of transactions recorded in blocks and linked using cryptography, and when the blocks are full of data, they are time-stamped and added to the chain of blocks in a verifiable and immutable manner without the consent of the majority of participants”⁴.


Blockchain plays a crucial role in the proper functioning of the metaverse, as the latter cannot function smoothly without relying on blockchain technology, not to mention cryptocurrencies. For example, if a user wants to receive a service without being physically present, Metaverse technology provides the user with a virtual presence service. In this case, blockchain technology, due to its role in data protection and the creation of a non-forgable digital identity, helps the user to receive the

¹- Mohammed Karam Kamal El-Din El-Sawy. The Metaverse: Between reality, aspiration and its effectiveness in the field of graphics. *Journal of Arts and Applied Sciences*, Damietta University, vol. 09, no. 04, October 2022, p. 143.

²- Mohammed Jibril Ibrahim Hassan. The Legal Framework for Metaverse Technology: A Fundamental Study. *Journal of Legal and Economic Research*, no. 58, p. 133.

³- Tahir Abu Al-Eid. The Artificial Intelligence Guide for Law Students and Legal Professionals in the Arab World. *Journal of Law and Technology*, 2023, p. 4.

⁴- Excerpt from: Ibn Salim Ahmad Abdulrahman, Blockchain Technology and Smart Contracts: An Analytical Approach to the Legal and Technological Frameworks, *Journal of Legal and Political Studies*, Vol.8, No.2, June 2022, p.469.



service seamlessly, of course using cryptocurrencies, although the latter have been banned from use by the 2018 Finance Law¹.

Third: Metaverse Technology and Non-Fungible Tokens (NFTs)

Non-fungible assets are encrypted assets on a blockchain network that contain a unique identifier and a variety of information that distinguishes them from each other. They are created using programmable code, smart contracts and technology protocols².

Non-fungible tokens are digital files that can embody artistic or creative works. These can be displayed in the metaverse, and each user needs a non-fungible token to access them.

The second requirement: Areas of Metaverse Use

It has to be recognised that Metaverse technology has become widespread in many areas, especially in developed countries, such as education and learning (the first branch), healthcare (the second branch), and even the field of work and investment (the third branch).

The first branch: Education and learning

The COVID-19 pandemic has created many problems at different levels, including the problem of student enrolment in schools. This has brought the method of online learning to the fore, and serious thought has been given to exploring modern means of education and learning. This raises the question of whether Metaverse technology can replace the traditional method of education and learning.

Metaverse technology has permeated many fields, including education. Despite the adherence of some to traditional teaching methods, many conferences have been held calling for the increased use of this technology to convey information to students, given the advantages of this technology, especially in cases where the parties involved in the educational process cannot be present in the same place, or when the subject matter presented to the students requires practical application³.

The second sector: Healthcare

Metaverse technology can effectively contribute to the development of the healthcare sector through remote treatment and the provision of medical advice. In fact, some countries have already begun to use this technology in the medical field. In the United States, for example, the use of this technology will increase to 95% by 2020. In addition, Metaverse technology can enable the secure exchange of medical information using blockchain technology⁴.

The Third Branch: Work and Investment

With the emergence and rapid development of Metaverse technology, the question arises as to whether this technology will limit employment opportunities or open up new avenues of employment⁵.

The widespread adoption of Metaverse technology is expected to create new types of jobs. The consultancy firm PwC has reported that Metaverse technology will create 2.6 million jobs worldwide by 2021. The problem, however, is the legal vacuum surrounding employment contracts related to this technology, as the work may be performed outside the boundaries of the employee's home country. This raises questions about the applicable labour laws, and there is a need to address this issue as the decentralised digital work landscape expands.

In terms of the link between metaverse technology and investment, this technology is seen as a fertile field for capital growth due to the profits that can be made from its use. Many companies around the

¹- Nabeel Wanas, Legal Developments of Cryptocurrencies, *Tabina Journal of Academic Scientific Studies*, Vol.06, No.02, 2023, p.106.

²- Karim Mowaffaq, A Legal Study on Non-Fungible Tokens, *Judicial Magazine*, No.15, February 2022, p.23.

³- Amal Mohammad Abdullah Al-Badou, The Importance of Metaverse Technology in the Education and Learning Process, *Research and Education Journal*, National Institute for Educational Research, Vol.13, No.01, June 2023, p.49

⁴- The Metaverse: Challenges and Opportunities in the Arab Region, Economic and Social Commission for Western Asia (ESCWA), Beirut, 14-15 November, p. 8. See link: <https://www.unescwa.org/ar/node/42278>. Date accessed: 30 January 2024, time of access: 15:32.

⁵- Labour Policies for the Digital Workforce - Challenges of the Metaverse - p. 34. See link: <https://www.pwc.com/m1/en/world-government-summit/documents/pwc-labor-policies-of-the-future-ar.pdf>. Date accessed: 30 January 2024, time accessed: 19:15.

world have begun to invest in this area, especially after Mark Zuckerberg's announcement to change his company's name from Facebook to Meta, which was the first step towards embracing the Metaverse. Virtual assets that exist within the Metaverse, such as Roblox, can be bought as investments.

The Second Topic: The Impact of Metaverse Technology on Certain Legal Situations and the International Readiness to Contain It

The widespread use of Metaverse technology in numerous fields has resulted in various impacts, including legal issues that require resolution (the first requirement). Therefore, there is an international readiness to provide a legal framework for this technology (the second requirement).

The First Requirement: The Reflection of Metaverse Technology on Certain Legal Situations

The widespread use of Metaverse technology has had an impact on various legal situations, resulting in several issues, including the problem of contract enforcement (the first branch), intellectual property rights (the second branch), and the impact of the use of this technology on individual security and privacy (the third branch).

The First Branch: The Reflection of Metaverse Technology on Contract Enforcement

As is known, the Metaverse is a space that can be used in various fields. It may be a domain for concluding various contracts that may not be executed within a single geographical area and may be in a virtual world with its own characteristics and features. This raises the question of whether the traditional general rules governing the general theory of the contract can be applied in this case? And what are the guarantees provided to the Metaverse user to ensure the enforcement of the contract he has concluded?

It can be said that it is difficult to apply the general principles of contract theory literally to contracts concluded through metaverse technology, especially since the contracting parties are in a virtual environment with its own peculiarities regarding the identity of the parties, which may not be real. As a result, one of the parties may be harmed and exposed to fraud and deception. Therefore, the Metaverse Technology managers must adopt policies that make the digital identity trustworthy through a series of measures, including, when a user registers for the Metaverse Technology, the need to provide a special symbolic image, as well as the collection and analysis of some biometric data¹. The contracting user of Metaverse technology may face the risk of proving his rights, so it has become necessary to develop the legal rules of proof, which must be characterised by comprehensiveness and universality. Experts must work to find techniques that make the use of this means safe for the contracting parties, whether in the conclusion of the contract, its enforcement or its proof².

Section Two: The Link Between Metaverse Technology and Intellectual Property Rights

It is well known that intellectual property rights are diverse, including patents, copyrights and trademarks. There is no doubt about the importance of these rights, as they are an important means of economic development for any country, since the accumulation of knowledge in its various forms is the driving force of economic growth³.

Following the WIPO (World Intellectual Property Organization) discussion on intellectual property and frontier technologies held in Geneva on 29-30 March, the issue of the relationship between Metaverse technology and intellectual property rights was raised, and several questions were asked, such as:⁴ What are the risks faced by Metaverse developers and how can intellectual property support them? Are current intellectual property rights sufficient to protect innovation and creation in the virtual world?


Jurisdiction, enforcement and dispute resolution.

1_ Ahmed Mostafa Al-Dabbousi Al-Sayed, The Legal Dimensions of Metaverse Technology. See the link: https://library.adjd.gov.ae/record=b1014285. Date accessed: February 2, 2024, Time accessed: 19:30.

2- Abdelkader Jadi, The Shariah Rulings for Financial Transactions in Metaverse Technology, Vol. 27, No. 05, 2023, p. 481.

3- Kamil Idris, Intellectual Property. Publications of the World Intellectual Property Organisation, Geneva, p. 4.

4- https://www.wipo.int/edocs/mdocs/mdocs/ar/wipo_ip_conv_ge_23/wipo_ip_conv_ge_23_1_prov_1.pdf



A user of Metaverse technology may need to use an artistic work, audio clip, video or other registered creative work on behalf of another person. As you know, the Berne Convention and the 1996 WIPO treaty give exclusive rights to the owner of the work. If their content is used in the Metaverse, the owner's permission is required. The same applies to the owner of a trademark, which will lead to many cases being brought before the courts. It is therefore necessary to find a pre-emptive legal solution that protects both the user and the rights holder.

Section Three: Security and Privacy in the Use of Metaverse Technology

Despite the positive aspects of Metaverse technology, there are some behaviours that make the use of this technology a cause for concern, especially in terms of cybersecurity, such as identity theft, the inclusion of inaccurate information and data, in addition to other crimes such as fraud, child exploitation and sexual assault, and other crimes that require the modification of traditional legal texts according to technological developments and the accompanying crimes that do not require physical presence.

With the expected increase in crimes committed through metaverse technology, the problem of proving the crime that occurred in this virtual space arises, and therefore it is necessary to make radical changes in the methods of gathering evidence¹, which are characterised by their special nature due to the rapid change of information stored on computers and the manipulation of this information².

The Second Requirement: The International Willingness to Legislatively Contain Metaverse Technology

It has become necessary to find the legal framework to contain the Metaverse technology, otherwise this legal vacuum will create a crisis and this technology will become a curse instead of benefiting from its positive aspects. Therefore, we will look at the reasons for the international interest in embracing this technology from a legal perspective (the first branch), and we will present some manifestations of this readiness (the second branch).

The first branch: Reasons for International Interest in Embracing Metaverse Technology from a Legal Perspective

Metaverse technology is considered to be one of the modern and widespread technologies that will change the world in the future, and this change will affect all fields. By 2030, the market is expected to be worth \$679 billion³, and this figure is expected to rise. Accordingly, the use of this technology will create many problems and conflicts that need to be resolved.

The conflicts created by the use of metaverse technology require legal solutions, and in the absence of a legal vacuum to contain these conflicts, the legal system is on the threshold of a new confrontation with the developments of contemporary life, which has become blended between material and virtual reality, resulting in many legal issues that need to be resolved⁴.

The legal vacuum faced by users of metaverse technology will also create a crisis for the judiciary. When a judge is confronted with a dispute on this matter, he will be forced to make a judgement and refer to the general rules, which are considered inadequate because they regulate a traditional, real-world environment and do not achieve justice⁵.

The second branch: Some Manifestations of the International Readiness to Embrace Metaverse Technology

It can be said that the legislative readiness of countries to embrace Metaverse technology varies from one country to another, taking into account the policy and future strategy of each country in relying on Metaverse technology in various fields, especially those of an economic nature, as well as the degree of their technological advancement, which makes them the initiators of finding the legal


¹- The Metaverse: Challenges and Opportunities in the Arab Region, cited above, p. 11.

²- Rami Metwally Al-Qadi, Digital Forensic Guide in Metaverse Technology, The Arab Journal for Security Studies, Vol. 93, No. 2, December 2023, p. 198.

³- Rami Metwally Al-Qadi, cited above, p. 190.

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⁵- Jibril Ibrahim Hassan, cited above, p. 166.



frameworks specific to this technology. This raises the issue of the adequacy of national and international legal frameworks to protect users of Metaverse technology and intellectual property rights.

What can be observed in terms of domestic legislative readiness to provide a precise framework for Metaverse technology remains weak, as most countries have not yet enacted a domestic law dedicated to this technology and rely on general rules and provisions, such as the Law on the Protection of Intellectual Property Rights, which does not provide direct protection for Metaverse technology. However, some national initiatives have begun to emerge.

For example, at the Arab level, the United Arab Emirates is leading the way in developing a working strategy for metaverse technology, with the aim of establishing Dubai's position among the top 10 cities in the leading economies in this field. Accordingly, much discussion has taken place on the mechanisms of a secure virtual environment for the legal regulation of the Metaverse, where the Dubai Legal Affairs Department held its third conference on the legal regulation of the Metaverse, which addressed the legal requirements for regulating this technology. The possibility of applying Federal Decree Law No. 38 of 2021 on Copyright and Related Rights to the use of the Metaverse was also discussed.

In 2022¹, the United Arab Emirates took the initiative to enact a law regulating virtual assets in the Emirate of Dubai, Article 3 of which states that “the provisions of this law shall apply to virtual asset services provided throughout the Emirate, including special development areas and free zones, with the exception of the Dubai International Financial Centre”.

At the international level, there are numerous international agreements and treaties that indirectly frame metaverse technology, such as the 1994 TRIPS Agreement on Trade-Related Aspects of Intellectual Property Rights and the 1994 Trademark Law Treaty. We should not forget the role of some international organisations in shaping the legal framework for Metaverse technology, including the World Intellectual Property Organisation (WIPO).

CONCLUSION:

The COVID-19 pandemic has demonstrated the role and importance of the virtual world, digitalisation and modern means of communication. This situation has also revealed the shortcomings of legislation in shaping the digital environment and the resulting positive and negative effects.

Metaverse technology is one of the modern technologies that has shown us the virtual reality as a tangible reality, thanks to the technologies used in it. Today, the world recognises the importance of this technology and in the future, it will continue to develop and its use will become more widespread.

The current legal framework, especially at the national level, is based on general provisions to regulate metaverse technology, which have proven to be inadequate due to the specificity of this technology, both in terms of the means used and the breadth of its application.

The main conclusions are:

- There is an urgent need to find legal texts that regulate Metaverse technology and not to rely solely on general provisions.
- The need to unify the legal provisions regulating metaverse technology in different countries, as the USE of this technology transcends national borders.
- Considering the negative effects of the misuse of Metaverse technology and the crimes that can be committed through it, the developers of this technology must focus on the digital identity of the user in order to avoid some dangerous acts.
- Ensure the monitoring of children using Metaverse technology and provide them with legal protection so that they are not exposed to exploitation or shameful behaviour.

¹- Law No. (4) of 2022 on the Regulation of Virtual Assets in the Emirate of Dubai.

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