

Navigating the Metaverse Business and Legal Challenges: Intellectual Property, Privacy, and Jurisdiction

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Abstract— *The metaverse, a virtual space where users can interact, create, and transact with digital assets, represents a new frontier in human interaction and commerce. However, the legal landscape of the metaverse is complex and still developing, and it presents several challenges and considerations for intellectual property, privacy, and jurisdiction. This paper aims to provide an overview of the legal challenges associated with the metaverse and to identify potential solutions for addressing them. Applying legislation for intellectual property in the metaverse is a complex issue, as virtual worlds and online communities can involve collecting and sharing large amounts of personal data. A combination of technical, organizational, and legal measures may be necessary to protect intellectual property. Finally, it is still being determined who has jurisdiction in the metaverse, as virtual worlds and online communities can cross international boundaries and involve multiple legal systems. Jurisdiction in the metaverse can refer to the authority of a government or legal system to regulate and enforce laws in virtual environments. The paper concludes by highlighting the need for interdisciplinary approaches to understanding and addressing the legal challenges of the metaverse and the importance of creating specific laws, regulations, and policies that will balance the competing interests of different stakeholders.*

Keywords— *Metaverse, Intellectual Property, Privacy, Jurisdiction, Business*

I. INTRODUCTION

The metaverse is a term popularized by fiction author Neal Stephenson. His 1992 novel "Snow Crash" is considered by many to be the first work of fiction to popularize the concept of the metaverse or a virtual world where people can interact with each other in a shared online space. In the novel, the metaverse is a virtual world accessed through a virtual reality headset and used for various purposes, including business, entertainment, and social interaction. The novel is one of the first works of fiction to explore the potential of virtual worlds and how they could impact society in the future. Additionally, the novel's exploration of the concept of a shared online space, where individuals can interact in a virtual environment, is considered one of the earliest depictions of what we now know as the metaverse. [1]. With the advent of virtual reality and other technologies, the metaverse concept is becoming a reality. However, as the metaverse evolves, it also brings various legal challenges. These challenges include issues related to intellectual property, jurisdiction, and privacy. This paper will explore these legal challenges and the potential solutions for addressing them. The study will draw on scholarly work in the fields of law, computer science, and philosophy, including the seminal work of (1) Lawrence Lessig's Code and Other Laws of Cyberspace [2], (2) Jack

Goldsmith and Tim Wu's Who Controls the Internet? Illusions of a Borderless World [3], and (3) Helene Snee et al.'s Digital Methods for Social Science [4].

The question of who owns creations inside the metaverse is a complex and unresolved issue. In the virtual world known as the metaverse, ownership is a prominent aspect, particularly in regard to user-created products and the sale of virtual space [5]. The ownership of virtual assets, such as virtual real estate, digital items, or avatars, must be clearly defined under current laws and regulations [6]. In some cases, creators of virtual assets in the metaverse may own the rights to their creations, as with copyright laws protecting original authorship [7]. However, the terms of service of many virtual worlds, platforms, and games may specify that the creators of virtual assets do not own their rights but rather grant a license to the platform or game owner to use the assets [8]. This means that the platform or game owner may have the right to sell, license, or otherwise profit from the assets, while the creator of the assets may not have any right to do so. However, it is also possible that the user who creates an asset might not be the true owner of it but rather the virtual platform or game itself, as the terms of use might indicate that the platform or game retains ownership of all virtual assets [9].

The legal challenges for users and companies operating in the metaverse include intellectual property, privacy, and jurisdiction [10]. Intellectual property laws, such as copyright and trademark laws, may be difficult to enforce in the metaverse, given the decentralized and virtual nature of the platform. Additionally, there may be challenges in determining who owns and has the right to use virtual assets within the metaverse. Privacy is also a significant concern in the metaverse, as users may need more control over their data and how it is collected, used, and shared. This could lead to potential violations of data protection laws such as the General Data Protection Regulation (GDPR) in the European Union [11]. Jurisdiction is another legal challenge, as it may take time to determine which laws apply in the metaverse, given its borderless nature. Additionally, disputes may arise regarding which legal jurisdiction should be used to resolve disputes within the metaverse.

II. METHOD

This research thoroughly reviews existing literature from the past two decades on the legal challenges associated with the metaverse, including intellectual property, privacy, and jurisdiction. Data is collected from various sources such as

government reports, legal cases, and academic journals to gain a deeper understanding of the current legal landscape of the metaverse. The keywords used to identify relevant sources for this research include "metaverse," "virtual world," "intellectual property," "privacy," "jurisdiction," "legal challenges," "laws," "regulations," and "policies." These keywords are used to search for relevant sources in the databases of Westlaw, and JSTOR. For this research in addition to using the above databases, a comprehensive search of the Google Scholar and World Wide Web was also conducted to ensure that all relevant legal cases and journal articles related to the legal challenges of the metaverse were identified. The articles obtained from this search were carefully reviewed to ensure their relevance to the research topic.

The collected data (Table 1) were analyzed to identify common themes and patterns related to the legal challenges of the metaverse, and potential solutions for addressing them are identified. The research is conducted using a qualitative approach, using thematic analysis to identify patterns and themes in the data. The conclusion summarizes the findings, highlighting the need for interdisciplinary approaches to understanding and addressing the legal challenges of the metaverse, and the importance of creating specific laws, regulations, and policies that balance the competing interests of different stakeholders.

III. DISCUSSION AND FINDINGS

There needs to be more specific international legislation regarding the metaverse, as it is a relatively new concept and technology. However, laws and regulations, such as those related to intellectual property, data privacy, and online conduct, may be applied to activities within the metaverse. Some countries, such as the United States, have laws in place to protect intellectual property rights in virtual worlds and online environments. For example, the Digital Millennium Copyright Act (DMCA) in the US allows copyright holders to take legal action against those who infringe on their rights in the digital world [12]. The EU's General Data Protection Regulation (GDPR) applies to personal data processing in virtual worlds and online environments. At the same time, the EU's e-Commerce Directive regulates liability for illegal content in the online world [11-13]. Moreover, in France, the CNIL (Commission Nationale de l'informatique et des libertés) has issued guidance on virtual worlds and online environments, which includes recommendations for data protection and user consent [14]. Additionally, in China, the Cyberspace Administration of China (CAC) has issued regulations for virtual worlds, including requirements for obtaining licenses, censoring content, and monitoring user activities [15].

A. Intellectual Property

Intellectual property (IP) can be protected in the metaverse through various legal mechanisms, including patents, trademarks, licenses, and copyrights [16]. These laws can provide creators and owners of virtual assets and experiences exclusive rights to use, sell, and license their works. For example, patents can protect the functional aspects of virtual objects, such as the technology used to

create them [16-19]. Trademarks can protect branding and logos associated with virtual businesses, while copyrights can protect the creative elements of virtual worlds, such as 3D models, avatars, and other forms of digital content [20].

One example of using intellectual property in the metaverse is using patents to protect virtual reality technology. Recently, Facebook has filed for a patent for a system for creating and displaying virtual reality content. This patent covers the technology developed and displayed virtual reality environments and experiences [17], [21-23].

Another example is the use of trademarks in the metaverse, as virtual worlds have their economy, many virtual businesses have been created, and they need to protect their brands. Some of those trademarks are:

- "Second Life" is a trademark of Linden Research, Inc. "Second Life" is a virtual world platform created by Linden Research, Inc. It allows users to create avatars, build virtual environments, and interact with other users in a social setting. It is often used for education, business, and entertainment [24, 25].
- "Minecraft" is a trademark of Microsoft. "Minecraft" is a popular sandbox video game created by Mojang Studios and later acquired by Microsoft. It allows players to build and explore virtual worlds made of blocks and can be played in single-player and multiplayer modes [26].
- "Roblox" is a trademark of Roblox Corporation. "Roblox" is a massively multiplayer online game platform created by Roblox Corporation. It allows users to create and share their own games, as well as play games created by other users. It is popular among children and teenagers [27].
- "World of Warcraft" is a trademark of Blizzard Entertainment, Inc. "World of Warcraft" is a massively multiplayer online role-playing game (MMORPG) created by Blizzard Entertainment, Inc. It is set in the fantasy Warcraft universe and allows players to create characters and interact with others in a virtual world. It is one of the most popular MMORPGs in the world and has a large and dedicated player base [28].

B. Copyrights

Copyright laws can protect creators in the metaverse by giving them exclusive rights to reproduce, distribute, and display their works. This can include virtual worlds, 3D models, avatars, and other forms of digital content created in the metaverse.

For example, the U.S. Copyright Act of 1976 (17 U.S.C. § 101 et seq.) provides a framework for protecting original works of authorship, including literary, dramatic, musical, and artistic works, such as those that may be created in the metaverse [29]. The law states that copyright protection subsists when the work is created in a fixed form and lasts several years after the author's death.

In addition to the Copyright Act, the Digital Millennium Copyright Act (DMCA) also protects copyrighted works in the digital environment [12]. It includes provisions for the safe harbor of online service providers and the notice-and-takedown system for removing infringing content.

TABLE I. LIST OF JOURNAL ARTICLES EXAMINED

No.	Year	Authors	Title / Resource
1	2004	N. J. Gervassis	“From Laws for Cyberspace to Cyber Laws (literally): Integration of Legal Norms into Internet Protocols and Law for Closed Digital Management Communities,” <i>SCRIPT</i> -ed, vol. 1, no. 2, pp. 259–271.
2	2006	G. Stobbs	“The Digital Millennium Copyright Act,” in <i>Multimedia Security Technologies for Digital Rights Management</i> , pp. 457–482.
3	2007	D. S. Siegel and M. Wright	“Intellectual property: The assessment,” <i>Oxford Rev. Econ. Policy</i> , vol. 23, no. 4, pp. 529–540.
4	2007	D. P. Sheldon	“Claiming ownership, but getting owned: Contractual limitations on asserting property interests in virtual goods,” <i>UCLA Law Review</i> , vol. 54, no. 3, pp. 751–787.
5	2007	J. Goldsmith	“Who Controls the Internet? Illusions of a Borderless World,” <i>Strateg. Dir.</i> , vol. 23, no. 11, pp. 44–50.
6	2008	S. Papagiannidis, M. Bourlakis, and F. Li	“Making real money in virtual worlds: MMORPGs and emerging business opportunities, challenges and ethical implications in metaverses,” <i>Technol. Forecast. Soc. Change</i> , vol. 75, no. 5, pp. 610–622.
7	2008	S. Yong, H.-Y. Moon, Y. Sohn, and M. Fernandes	“A Survey of Security issues in Collaborative Virtual Environment,” <i>Ijcsns</i> , vol. 8, no. 1, pp. 14–19.
8	2011	V. Lehdonvirta	“Real-Money Trade of Virtual Assets: Ten Different User Perceptions,” <i>SSRN Electron. J.</i>
9	2011	K. Cornelius	“Responsibility under Criminal Law in Virtual Worlds,” in <i>Virtual Worlds and Criminality</i> , Springer, Berlin, Heidelberg, pp. 95–119.
10	2016	H. Snee, C. Hine, Y. Morey S. Roberts, and H. Watson	“Digital Methods as Mainstream Methodology: An Introduction,” in <i>Digital Methods for Social Science</i> , Palgrave Macmillan UK, pp. 1–11.
11	2020	A. Greenberg	“Protecting Virtual Things: Patentability of Artificial Intelligence Technology for the Internet of Things,” <i>IDEA Law Rev. Franklin Pierce Cent. Intellect. Prop.</i> , vol. 60.
12	2022	S. Kasiyanto and M. R. Kilinc	“Legal Conundrums of the Metaverse,” <i>J. Cent. Bank. Law Institutions</i> , vol. 1, no. 2, pp. 299–322.
13	2022	V. Furashov, D. Zhuravlov, O. Dniprov Oleksii Kostenko, D. Zhuravlov DSc, and O. Dniprov	“Genesis of Legal Regulation Web and the Model of the Electronic Jurisdiction of the Metaverse,” <i>Bratislava Law Rev.</i> , vol. 6, no. 2, pp. 21–36.

Note. List of Research Articles Retrieved from Analyzed Databases and the Web between 2002 and 2022

C. Privacy

Protecting privacy in the metaverse can be a complex challenge, as virtual worlds and online communities can involve collecting and sharing large amounts of personal data. A combination of technical, organizational, and legal measures may be necessary to protect privacy. Legislation around privacy in the metaverse is still developing, but several existing laws can provide a framework for protecting privacy in virtual worlds. For example, the General Data Protection Regulation (GDPR) in the European Union and the California Consumer Privacy Act (CCPA) in the United States provide individuals with certain rights regarding their data, such as the right to access, correct, and delete personal information [11], [30]. Additionally, the Health Insurance Portability and Accountability Act (HIPAA) in the United States and the Personal Information Protection and Electronic Documents Act (PIPEDA) in Canada provide specific protections for sensitive personal data, such as health information [31], [32].

A specific example of legislation protecting privacy in the metaverse is the Children's Online Privacy Protection Act (COPPA) in the United States, which regulates the collection of personal information from children under the age of 13[33]. This law requires that websites and online services directed at children obtain verifiable parental consent before collecting, using, or disclosing personal information from children.

Another example of how privacy can be protected in the metaverse is using virtual private network (VPN) technology. VPNs can encrypt data transmitted between a user's device

and the virtual world, making it more difficult for third parties to intercept or access personal information [34].

D. Jurisdiction

Jurisdiction in the metaverse can be complex, as virtual worlds and online communities can cross international boundaries and involve multiple legal systems. Jurisdiction in the metaverse can refer to the authority of a government or legal system to regulate and enforce laws in virtual environments [35], [36].

Currently, legislation around jurisdiction in the metaverse is still developing, but several existing laws can provide a framework for determining jurisdiction in virtual worlds. For example, the Brussels Regulation (Regulation (EU) No 1215/2012) in the European Union and the Federal Courts Jurisdiction and Venue Clarification Act of 2011 in the United States provide rules for determining jurisdiction in cross-border disputes [37, 38]. Additionally, the Convention on Cybercrime (also known as the Budapest Convention), adopted by the Council of Europe, provides a framework for international cooperation in investigating and prosecuting cybercrime [39].

A specific example of the jurisdiction in the metaverse is the case of *Bragg v. Linden Research, Inc.* In this case, the U.S. District Court for the Eastern District of Pennsylvania had to determine whether it had jurisdiction over a dispute involving virtual property in the online world of *Second Life*. The court found that it did have jurisdiction over the case, as the parties were located in different states, and the virtual property at issue had a monetary value [40].

E. Additional Legal and Ethical Challenges

There are several additional legal and ethical challenges to keep in mind when navigating the legal landscape of the metaverse, including cybercrime. As the metaverse becomes more advanced, it becomes a cybercriminals' target. This can include issues such as hacking, fraud, and the sale of illegal goods and services. Additionally, virtual worlds can be a breeding ground for discrimination and harassment, and the anonymity of the metaverse can make it difficult to hold individuals accountable [41].

The metaverse is a complex, global system operating outside traditional geographic boundaries. This can raise questions about the appropriate level of governance and regulation for virtual worlds and the role of governments, private companies, and international organizations in shaping the metaverse.

1. Virtual Identity

Digital identity in the metaverse refers to the representation of an individual's identity in virtual environments, including virtual worlds, online communities, and social media platforms [42–44]. As the metaverse becomes more advanced, individuals can create and manage multiple digital identities, each with unique characteristics and attributes.

However, this raises several legal and ethical concerns around anonymity, accountability, and privacy [45]. For example, anonymity in the metaverse can make it difficult for individuals to be held accountable for their actions and can also make it challenging to enforce laws and regulations. Additionally, individuals may be able to use multiple digital. In conclusion, Digital identity in the metaverse is a complex issue that raises many legal and ethical concerns, such as anonymity, accountability, and privacy. It is important to consider these issues and develop solutions protecting individuals' rights and privacy while promoting accountability and security in the metaverse.

2. Cybercrimes

Cybercrimes between two countries can be challenging to handle due to the complex nature of cross-border investigations and each country's varying laws and regulations. One of the main ways cybercrimes are handled between two countries is through international cooperation and mutual legal assistance. This typically involves sharing information, evidence, and intelligence between law enforcement agencies of different countries, as well as the extradition of suspects to face trial in the country where the crime was committed. Another way cybercrimes are handled between other countries is through the use of international treaties and agreements, such as the Council of Europe Convention on Cybercrime (also known as the Budapest Convention) which has been signed by 57 countries, including the U.S, Canada, Japan, and many European countries [39]. The convention provides a framework for international cooperation in investigating, prosecuting, and extraditing individuals for cybercrimes.

In addition, some institutions like the INTERPOL and Europol play a significant role in coordinating international efforts to combat cybercrime [46].

F. Terms of Service

Many companies that operate virtual worlds, such as Second Life, Minecraft, Roblox, and World of Warcraft, have developed terms of service agreements for their users to follow. These agreements typically outline the rules and regulations for using the virtual world, as well as the rights and responsibilities of both the company and the users.

The terms of service for Minecraft prohibit cheating and hacking, as well as sharing personal information or engaging in hate speech. And Roblox terms of service prohibit sharing personal information and engaging in hate speech, cyberbullying, or sharing inappropriate content. In the case of World of Warcraft, the terms of service prohibit cheating, hacking, and sharing personal information, it also includes a code of conduct which specifies that players should not engage in hate speech or harassment of other players. Overall, these terms of service agreements are meant to ensure that virtual worlds are safe and enjoyable for all users, and to protect the rights of the company and other users.

Similarly, the terms of service for Second Life prohibit certain types of behavior, such as harassment, hate speech, and the sharing of personal information. The Second Life terms of service (TOS) specify the rights and responsibilities of users concerning virtual assets within the virtual world. According to the TOS, users retain ownership of the intellectual property rights in any content they create and upload to the Second Life platform; however, by uploading such content to the platform, users grant Linden Lab (the company behind Second Life) a perpetual, worldwide, non-exclusive, and fully-paid up license to use, distribute, reproduce, modify, adapt, publish, translate, publicly perform, and publicly display such content on or through the Second Life platform [47]. This license is limited to the use of the content in Second Life and does not extend to any other use. In addition, the TOS also specifies that users do not have the right to sell or transfer virtual assets outside the Second Life platform. Linden Lab reserves the right to delete or reclaim any virtual assets transferred outside the platform. Users need to read and understand the specific terms of service of each platform or virtual world before uploading any content or engaging with virtual assets.

Virtual reality (VR) companies use various methods to enforce their terms of service agreements to ensure that users have a safe and enjoyable experience in their virtual worlds. One common method is user reporting, where users can report other users who they believe have violated the terms of service. The company then investigates the report and takes appropriate action, such as warning or banning the offending user. Some VR companies use automated systems, such as machine learning algorithms, to detect and flag potential violations of the terms of service. Other companies have moderation teams who monitor the virtual world for violations and act when necessary. Some VR companies also use third-party software, such as anti-cheat programs, to detect and prevent cheating or hacking in the virtual world.

In severe cases, VR companies may take legal action against users who violate the terms of service, such as filing a lawsuit for copyright infringement or breach of contract. However, every company has its own way of enforcing the terms of service, as well as different degrees of enforcement.

G. An Interdisciplinary Approach

The three books "Code and Other Laws of Cyberspace" by Lawrence Lessig, "Who Controls the Internet? Illusions of a Borderless World" by Jack Goldsmith and Tim Wu, and "Digital Methods for Social Science" by Helene Snee et al. all offer unique but complimentary perspectives on the legal challenges and potential solutions for the internet and metaverse. "Code and Other Laws of Cyberspace" examines how technology can shape and regulate human behavior in online environments and argues that the software and hardware that make up the internet's infrastructure can function as a form of law, exerting control over users [2]. "Who Controls the Internet? Illusions of a Borderless World" examines how governments, private companies, and international organizations exert control over the internet and how legal and technical means are used to shape the internet and its impact on free speech, privacy, and security [3]. "Digital Methods for Social Science" is a guide for using digital methods in social research, providing an overview of the latest digital research methods and their importance for understanding the complexity and diversity of online communities [4]. In conclusion, all three books offer a unique but complimentary perspective on the legal challenges and potential solutions for addressing them in law, computer science, and philosophy. The books highlight the complexity of the legal and regulatory issues surrounding the internet and metaverse and the need for interdisciplinary approaches to understanding and addressing them.

IV. CONCLUSION AND RECOMMENDATIONS

The metaverse, or virtual worlds and online environments, presents a number of legal challenges that need to be addressed to ensure a safe and enjoyable experience for all users. One potential solution is to develop new laws and regulations tailored to the unique characteristics of the metaverse, such as rules for virtual property ownership, intellectual property rights, and user privacy. Another solution is to establish a clear jurisdiction and dispute resolution framework to ensure that legal disputes that occur within the metaverse can be effectively addressed.

Collaboration with other organizations and stakeholders is also crucial in developing industry-wide standards and best practices for the metaverse, which promote consistency and fairness across different virtual environments. Education is also important in helping users and stakeholders understand their rights and responsibilities in this new environment. Additionally, forming a governance structure for the metaverse, where the community, government, and private entities come together and establish a self-regulatory framework with the help of legal experts and experts in the field of technology, could also be an effective solution. It's worth noting that the legal challenges and potential solutions for the metaverse are still under development and are constantly evolving as the technology and its applications advance.

Potential research that can be done in these fields could include further studies on the impact of code as law, specifically in the metaverse, the examination of government and private control over the internet and its implications, as well as the use and application of digital methods in social science research in the metaverse.

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