SciencesPo

THE METAVERSE
CHALLENGES AND REGULATORY ISSUES

by

Eduardo MANGADA REAL DE ASÚA
School of Public Affairs - Master in European Affairs

Victoria OTTER
School of Public Affairs - Master in Public Affairs

Tatsuaki TSUKUDA
School of Public Affairs - Master in Public Affairs

Bastien VIVENOT
School of Public Affairs - Master in European Affairs

Student Paper

Executive Summary

Meta's push for the implementation of the metaverse has marked a turning point in the tech industry. The giant's corporate strategy has the potential to alter our current socio-economic paradigm, by transforming society's means of daily social or economic interactions. The technologies needed for its full potential are still far from being a reality. However, multiple issues and concerns are rising fast across several stakeholders. Namely, the fear of a monopolization of the new virtual space by the US tech giant has caused great concerns for regulators across the globe. Meta has a poor record of upholding public interest and the welfare of users over corporate interests. And for this reason, an unrestricted and unregulated metaverse could lead to disastrous consequences.

Therefore, this policy brief will address the main regulatory concerns raised by Meta's vision of the Metaverse, focusing on: (i) privacy; (ii) provision of public services; (iii) intellectual property; and (iv) interactions between avatars. In order to properly assess these concerns, the first sections will provide a general introduction, a definition of the Metaverse's key notions and a detailed analysis of Meta's business model. Finally, upon this previous extensive revision, a series of recommendations and conclusions will be presented, so that European institutions count with the necessary basis for deploying an ex ante regulatory framework that upholds the welfare of users and the rights of citizens in the implementation of the Metaverse.

Keywords: *Metaverse, Meta, Virtual Reality, Augmented Reality, Avatar*

1. Introduction

It is very well possible that the Metaverse will cause a transformational shift in our current socioeconomic paradigm— perhaps even more so than the introduction of the internet and smartphones did. It was in October 2021 when Meta, ex-Facebook, decided to renew the company name and introduce their vision of Metaverse. The Metaverse promises to transform social and economic interconnectivity to a 3D immersive world, based on a communal and collaborative ecosystem.[1] The concept of Metaverse is nothing new, however. The term was first introduced by Neal Stephenson in 1992, in the science fiction novel Snow Crash. Neal described Metaverse as a "form of human life and communication in a virtual three-dimensional space through a digital avatar". Since then, various virtual reality platforms have been created to embody Metaverse, suggesting the arrival of a decentralized and token-based internet, known as Web3.

Despite Metaverse already being developed by multiple companies, the Meta company has brought global attention to its promise of developing the largest and most interactive Metaverse for all. Considering Meta's (formerly known as Facebook) current business model and strategy, Meta's objective seems to be the privatization, centralisation and the monopolization of the Metaverse. This means that daily social interactions and digital commerce between billions of people will occur on one sole digital platform only. As such, a vital question surfaces: who governs the Metaverse? As Lawrence Lessig famously said: "*Code is Law*"[2]*,* and given Meta's presently released information, it seems that its code will decide upon the rules of its entire virtual world; from its virtual economy, to privacy, to character identification and to education.

These domains are sensitive and crucial to human well-being, as well as at the core of a liberal democracy. To hand over the power of law-making concerning these questions to one sole agent only, even if virtually, would allow an authoritarian regime to blossom.

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[1] Huang, Yujun, "Comparative Study: How Metaverse Connect with China Laws." SSRN, October 20, 2021.
[2] Lessig, Lawrence. 1999. "Code Is Law on Liberty in Cyberspace."

Perhaps even more problematically, considering this agent is a private company, it is safe to assume their own monetary interest will be at stake when developing this platform, potentially at the cost of people's well-being. While innovation is encouraged, in order to avoid the potential harm of the well-being of our society, we propose that it is necessary for the EU to be alert and engaged to the impact the Metaverse potentially will have on human society. Doing so, it needs to devise ex-ante regulation necessary to avoid a finished final platform that is architected to be monopolistic and untransparent with a private company's holistic control over the Metaverse.

2. DEFINITIONS

To give a clear view of what is going to be the Metaverse, we can define four technologies that can be used for the development of this new world in a spectrum of applications ranging from augmentation to simulation; and the spectrum ranging from intimate (identity-focused) to external (world-focused). First of all, the **Virtual World** (intimate/ simulation) is defined by the professor Edward Castronova (2011) as 3-dimensional, digital environments in which a great number of people interact one another by means of an **avatar** - a digital representation of self[3]. Therefore, the founding features of Virtual Worlds are:

- **Interactivity**: it exists on one computer but can be accessed remotely (i.e. by an Internet connection) and simultaneously by a large number of people, with the command inputs of one person affecting the command results of other people.

- **Physicality:** people access the program through an interface that simulates a first person physical environment on their computer screen; the environment is generally ruled by the natural laws of Earth and is characterized by scarcity of resources.

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[3] Castronova, E. and Wagner, G.G. "Virtual Life Satisfaction". Kyklos, 64 : 313-328. 2011, https://doi.org/10.1111/j.1467-6435.2011.00508.x

- **Persistence:** the program continues to run whether anyone is using it or not; it remembers the location of people and things, as well as the ownership of objects.

An important component of this reality is the avatar that can interact with other avatars as in the real world that is, however, already skilled and experienced and can learn faster.

The second technology, **augmented reality** (External / Augmentation) , can be defined as "a computer-generator of images, videos, or texts that integrate the real-physical context with the virtual world by the visualization of multimedia information and narratives (Cranmer et al., 2020; He et al., 2018)."[4] This specific technology is key to enhancing experiences in future smart cities. Then, the **Mirror world** (external / simulation) is an informationally enhanced virtual reflection of the virtual world. Its construction uses technologies of mapping in order to reproduce the most accurate virtual world. An example of this technology is google earth that reproduces a web-based earth. This concept will be used to demonstrate its possibilities for educational purposes.[5]

Furthermore, **Lifelogging** (augmentation / intimate) is a component that records and reports "intimate states" and personal facts in hardware or an electronic object. It is conceived as a backup technology or a tool to share very personal information with close people. As an example, Nike has conceived a personal trainer token to save the statistics of the runners in order to enhance performance of the user.

Finally, we can add **Mixed Reality** (MR) which is a combination of AR and VR. An advanced integrative interface, based on an innovative system of content generation, MR offers interaction and vividness which promote a perfect overlay of real and virtual information, and reality and virtuality worlds, shifting the traditional tangible points of heritage interaction in the virtual environment.

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[4] Mariapina Trunfio, Maria Della Lucia, Salvatore Campana & Adele Magnelli. "Innovating the cultural heritage museum service model through virtual reality and augmented reality: the effects on the overall visitor experience and satisfaction", Journal of Heritage Tourism, 17:1, 1-19, 2022, DOI: 10.1080/1743873X.2020.1850742
[5] Smart, Cascio & Paffendorf. Metaverse Roadmap. 2007. Accelerating.org
https://www.w3.org/2008/WebVideo/Annotations/wiki/images/1/19/MetaverseRoadmapOverview.pdf

3. META'S BUSINESS MODEL

A. BUSINESS MODELS AND PEOPLE'S WELL-BEING

"Business models eat law", to quote Lawrence Lessig during the CodeX futurelaw conference 2022 on his opinion on whether the Metaverse should be regulated. What is crucial to understand, is that a private company will be the architect as well as the governor of a platform that will likely become the primary means of daily social interaction within society. In this case, the private company that wants to become the "sole" Metaverse to be recognized, essentially becoming a monopoly of Metaverse, is Facebook's Meta. Therefore, it is natural to assume that Meta will create the Metaverse not necessarily for the public benefit of the people, but for its own benefit— monetary profit. When revenue becomes the highest priority out of the platform that will facilitate people's daily interactions, it could potentially harm their well-being.

Facebook's current business model is known to be exploitative for data, neglecting privacy concerns,[6] as well as purposely engineered to be addictive at the cost of information integrity or people's mental well-being.[7] What is worrying however, is because the Metaverse is envisioned to become the main platform for daily social interactions while being much more cognitively immersive. Depending on the business model, this immersiveness could be exploited. This section will analyze in accordance with Meta's potential business models why this could harm citizens' well-being. This in turn, will serve as an argument as to why the EU needs to regulate the Metaverse's business model in order to protect citizens' well-being.

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[6] Glance, David. 2018. "How Facebook Uses the 'Privacy Paradox' to Keep Users Sharing." The Conversation. April 15, 2018. https://theconversation.com/how-facebook-uses-the-privacy-paradox-to-keep-users-sharing-94779.

[7] Business Insider Deutschland. 2021. "How Instagram Is Intentionally Designed to Mimic Addictive Painkillers." Business Insider. Insider. August 11, 2021. https://www.businessinsider.com/facebook-has-been-deliberately-designed-to-mimic-addictive-painkillers-2018-12?r=US&IR=T.

B. MONEY IN THE METAVERSE

While there is no information released about what the precise business model of Meta will be, Meta's CEO Mark Zuckerberg has announced in an earnings conference call in 2021 that the company plans to earn money mainly through advertising and the selling of virtual goods.[8] Zuckerberg emphasized that the expected earnings will not be through selling the hardware (the Oculus virtual reality headsets that Meta owns) as he said he wants the Metaverse to be *"as affordable as possible, so as many people as possible can get into it and then compound the size of the digital economy inside it."*[9] This is interesting, because this phrase reveals that the amount of users that access and interact on the Metaverse will directly affect the profitability of the platform. While the term digital economy is still quite broad in narrowing down what is exactly going to be the source of revenue, it does indicate that the interconnectivity between people, businesses, devices, data, and processes will facilitate Meta's business model. Additionally, Zuckerberg has expressed that advertising will play an important role, but that Meta will focus on the sale of virtual goods, taking a percentage of each transaction. Both of these points are very important to consider— advertising as a business model is already criticized for harvesting personal data and selling it to third parties to improve the target market. (as discussed in section 5.1 privacy) However, even more important to consider, is the latter aspect; if Meta there will be a commerce of virtual goods, there will be a market, and thus there will be money involved.

The commerce of virtual goods is not new to the digital space. There are already different types of business models introduced that profit from digital commerce, primarily in games, as these games often have a virtual world with their own virtual rules, similar to the Metaverse. Even as of now, it is estimated people spend more than eighty billion dollars a year on virtual goods sold in video games.[10] Game-scholars argue that virtual worlds

[8] Facebook, Inc. (FB), Second Quarter 2021 Results Conference Call, July 28th, 2021 TRANSCRIPT
https://s21.q4cdn.com/399680738/files/doc_financials/2021/q2/FB-Q2-2021-Earnings-Call-Transcript.pdf
[9] Ibid, p.12
[10] Bobrowsky, Meghan. 2021. "Big Tech Seeks Its next Fortune in the Metaverse." WSJ. The Wall Street Journal. November 9, 2021. https://www.wsj.com/articles/big-tech-seeks-its-next-fortune-in-the-metaverse-11636459200.

stimulate a different identity in their users and therefore stimulate consumption to enhance that identity.[11] Accordingly, virtual worlds seem to train players to be eager, expectant, and constant consumers.

Subsequently, we will examine existing business models in virtual worlds, usually games, which are based on virtual commerce in order to generate profit. This is motivated by the need to understand business value creation inside a virtual world, as well as if and how this value creation could translate into benefits in the real world. Additionally, understanding these business models will expand the understanding of the potential market involved in the Metaverse, along with its potential socioeconomic consequences.

Since information and intangible assets are digitized, they are cheap to reproduce and they are not conformed to geographical constraints.[12] At the same time, it should be considered who controls the market, as the information in virtual commerce is asymmetric.[13] Unlike a real world market based on the principle of scarcity, code will establish the parameters that determine the value of property and services (this problem will be further discussed in the Section on Intellectual Property).

C. A VIRTUAL WORLD ECONOMY

A virtual world essentially simulates a first person physicality of a community-based world, where its environment resembles the natural laws of Earth, and most importantly, is characterized by a scarcity of resources.[14] This scarcity of resources brings forth a virtual economy. It must be emphasized again, this scarcity will be artificially created by code itself. The case study of Second Life (henceforth SL) is valuable because it shares the virtual world mechanisms in great similarity to how the Metaverse is presented. Over 160 real world companies (e.g., Mercedes-Benz, IBM, Coca-Cola, Reuters) entered SL, and

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[11] Ondrejka, Cory. 1976. "NYLS Law Review NYLS Law Review Escaping the Gilded Cage: User Created Content and Building the Escaping the Gilded Cage: User Created Content and Building the Metaverse Metaverse 22: 22–63.
[12] Tucci, Christopher. 2001. "Internet Business Models and Strategies." Academia.edu. Boston, McGraw Hill. 2001.
[13] Ibid.
[14] Cagnina, Maria Rosita, and Michele Poian. 2008. "How to Compete in the Metaverse: The Business Models in Second Life."

even universities (e.g., Harvard Law School) and public institutions (e.g., the Swedish embassy) explored possibilities within the virtual world.[15] SL has a virtual economy, based on its own currency, the Linden$, which is convertible in US dollars. This means that every commercial transaction in SL occurs by means of a virtual currency that has real value. When businesses entered, 3 types of business strategies were identified[16]:

(i) **Real world companies,** who entered SL to extend real brand value

(ii) **Real world companies**, who sell SL-based B2B or B2C services or products (e.g., builders, consulting, software tools) (iii) Virtual world companies— an emerging type of value creation that exists solely in a virtual space. Typically, these are skilled individuals that play into the demand within the virtual world and sell creations or services through the SL facilitated marketplace. Additionally this gives rise to *"metabranding"*, a brand that solely exists in the virtual space, and solely plays into the virtual demand.[17]

From these observations, the conclusion can be drawn that both real world economies and virtual economies trends may interact. If real world companies enter a virtual economy, economic trends in the real world will affect the virtual economy. For example, the value of Mercedes-Benz cars in virtual space will be affected by their real world value. On the other hand, the virtual world may affect real world socioeconomic trends. For example, games such as RuneScape and Tibia have attracted Venezualan players as they found the in-game currencies more valuable and stable than the Venezeluan bolívar.[18] At the same time, when widespread electricity cuts affected the country in 2019, correspondingly, an immediate economic crisis hit in the virtual economy of both games.[19] Indeed, it could be promising to have a platform that offers economic opportunity to people with less barriers of entry to a market and without geographical barriers. However, this

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[15] Ibid.
[16] Ibid.
[17]Arakji, Reina Y, and Karl Reiner Lang. 2008. "Avatar Business Value Analysis: A Method for the Evaluation of Business Value Creation in Virtual Commerce." Journal of Economic Commerce Research, 2008
[18] Wiener, Anna. 2022. "Money in the Metaverse." The New Yorker. The New Yorker. January 4, 2022.
https://www.newyorker.com/news/letter-from-silicon-valley/money-in-the-metaverse.
[19] Ibid.

close interaction between both virtual and the real world economy, if unregulated, gives rise to concerns such as the growth of black markets, money laundering, or the virtual currency being used for fraudulent purposes.[20] So far, these virtual economies have not had enough users to have a large impact on the real world economy. However, if the Metaverse will become as large a scale and part of everyday life as Meta envisions it to be, the real world economy will become closely interlinked to the Metaverse's virtual world economy. If even just 1 billion users (which is around a third of today's number of Facebook users)[21] uses the Metaverse currency, the value of that currency will become viable in real world stock markets. If so, this is certain to create economic inequality.

Those with more accessibility to translate their real world assets to the virtual world will enjoy virtual social privilege. It also leaves room for many other questions: if there is employment in the Metaverse, will there also be unemployment? If so, will there be (economic) support for those that need it? If there are large numbers of people using a virtual currency that is unregulated, can they coordinate or control financial markets (similar to the 2021 GameStop Reddit case)[22]. Is it possible that there will be inflation? Is it possible to create debt? Who will decide upon the artificial scarcity mechanisms? It is worrying that the economic dimension of the Metaverse is so poorly discussed, though it is certain that it gives rise to multitude of conundrums that, if unaddressed, may inflict serious harmful real world consequences

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[20] Kleiman, Jared. n.d. "Beyond the Silk Road: Unregulated Decentralized Virtual Currencies Continue to Endanger US National Security and Welfare" 4: 2013.
[21] "Facebook MAU Worldwide 2021 | Statista." 2021. Statista. Statista. 2021. https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/#:~:text=With%20roughly%202.91%20billion%20monthly,years%20to%20reach%20this%20milestone..
[22] Misra, Shubhangi. 2021. "The GameStop Story — How a Group of Investors on Reddit Gave Wall Street a Wild Week." ThePrint. January 30, 2021. https://theprint.in/theprint-essential/the-gamestop-story-how-a-group-of-investors-on-reddit-gave-wall-street-a-wild-week/595181/.

4. POSSIBLE OPPORTUNITIES FOR THE STATES: THE PROVISION OF PUBLIC SERVICES

A key question that arises when exploring the possibilities of the metaverse is the role played by the State in virtual realities. In this sense, the options for public authorities are still undefined, as the technologies of the metaverse continue to develop. However, two key fields have been identified as potential focal points for public intervention in the metaverse: smart cities and education.

A.   Smart Cities

The future of the metaverse is being built almost entirely by companies. Microsoft, Nike, and Facebook's parent company Meta are all staking claims to digital real estate. South Korea is among the only governments attempting to recreate the virtual public square. But if they can, it could expand the utility of the metaverse to millions of citizens who might otherwise be excluded. It is for this reason that the case study on Seoul's metaverse project can serve as an illustration on the limitations and benefits of the provision of public services on the Metaverse. Such a project has a budget of around €3 million, and presents a vision that would facilitate the administration of public services, such as filing complaints or requesting municipal benefits. The city also plans to use the platform to hold virtual versions of the city's cultural events and tourist attractions, making them accessible to a global audience. Seoul's metaverse would be a partial simulation of the real city. Since this pioneer proposal, similar initiatives have been announced: Barbados has proposed an embassy in the metaverse and Santa Monica (California), the gamification of its city center through augmented reality[23].

However, even Seoul's most practical use for the metaverse is a continuation of another complex technological addition: the "metaverse city" is the logical extension of the smart

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[23] Austin, D. April 14th, 2022. Pronto podrás recorrer tu ciudad en el metaverso: lo único que te costará es tu privacidad. Business Insider. https://www.businessinsider.es/metaverso-puede-optimizar-ciudades-pero-sacrifica-privacidad-1039777

city, a popular urban management idea that has emerged over the past two decades thanks to new data collection and analysis capabilities[24]. While metaverse cities are likely to reap many of the same benefits as smart cities, they are equally likely to replicate and even amplify many of their shortcomings, exposing citizens to the same problems created by digital platforms, such as surveillance and corporate control. If practical ambitions like Seoul's fail, they will draw attention to the shortcomings of the metaverse itself, once again raising the question of what its true purpose is.

The smart city, simply defined, is the data-driven city. It is a method of gathering real-time information via sensors and other data sources on activities such as traffic patterns or power grid usage and then synthesizing that information to streamline city operations[25]. An early prominent example was IBM's Operations Center in Rio de Janeiro, Brazil, which opened before the 2016 Olympics. The center was a citywide system that combined data from some 30 agencies, including transportation, police and sewerage, all housed in a sleek, screen-filled facility from which everything was controlled.

The theoretical benefit of such initiatives for residents is an operational efficiency that improves the quality of municipal services and increases the speed of fixing problems such as downed trees after a storm or restoring power after a blackout. Smart cities often use crowdsourcing as a method for reporting problems such as broken streetlights, clogged sewers or missing garbage cans. By streamlining this process, in theory, problems are identified and fixed more quickly. The city in the metaverse that Seoul has proposed is, in a sense, a direct extension of the smart city[26]. It is a smart city free from the constraints of physical cities, such as road traffic or poor infrastructure. For example, if a citizen has to deliver a document to an office, he will not be delayed by the fact that there are many vehicles circulating, as he will be able to do it without moving from home. For people with limited ability to physically move around, such as the elderly or people with disabilities, access to such direct digital communication is an even greater advantage.

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[24] Ibid.
[25] Ibid.
[26] Squires, C. November 9th, 2021. Seoul will be the first city government to join the metaverse. Quartz. https://qz.com/2086353/seoul-is-developing-a-metaverse-government-platform/

The metaverse also makes these interactions more traceable. There would be no need to file physical papers and then digitize them; rather, this digitization would be automatic.

The first feature of Seoul's project, scheduled to launch next year, will be the "Metaverse 120 Center," which Quartz describes as a "virtual public service space where avatars will handle citizens' concerns that previously could only be dealt with face-to-face at city hall." Seoul residents will be able to obtain permits for their businesses or file complaints about public maintenance issues while still conducting other activities in a traditional, non-digital way (at least for now). Over time, this Seoul metaverse will incorporate more robust features, such as virtual tours of popular historical sites and other local attractions. The city also plans to hold major festivals, such as the Lotus Lantern Festival, in the metaverse. These plans suggest that the benefits of cities in the metaverse and smart cities overlap significantly[27]. Both serve to promote the city to newcomers, while also attracting investment, business and positive attention. As envisioned by Seoul City Hall, it also promises to help streamline the city's operations and centralize its data, while improving the safety and convenience of its residents.

While the ambitions may seem feasible on paper, the history of smart cities shows what could be the dark side of the project. The truth is that, more often than not, the interests of business have taken precedence over the needs of citizens[28]. Like smart cities, metaverse cities seem poised to capitalize on the business world's interest in their grassroots concept. The use of the term "smart city" has often been vague, more of a marketing gimmick to attract tech companies than a substantive approach to running a city. In a 2019 essay for Real Life, technology researcher Jathan Sadowski wrote, "The 'smart city' is not a coherent concept, let alone a truly existing entity. It is best understood as a misleading euphemism for a corporate-controlled urban future."[29] As the tech companies demonstrated last year when they rushed to explain their plans in the

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[27]Ibid.
[28] Austin, D. April 14th, 2022. Pronto podrás recorrer tu ciudad en el metaverso: lo único que te costará es tu privacidad. Business Insider. https://www.businessinsider.es/metaverso-puede-optimizar-ciudades-pero-sacrifica-privacidad-1039777
[29]Sadowski, J. November 12th, 2019. The Captured City. Real Life Mag. https://reallifemag.com/the-captured-city/

metaverse, this project runs the risk of becoming equally incoherent, actually used to stir up positive local sentiment or to attract investment to a city.

In fact, there are good reasons to be skeptical about the ability of the metaverse to function as any kind of digital public venue. Smart cities, and companies like Meta that are launching these initiatives, have already demonstrated that the welfare of citizens and users is not their primary concern, despite their claim to be aligned with the public interest. Meta, in particular, has a history of such problems, such as making user data available for electoral manipulation and allowing the dissemination of misinformation in order to maximize interactions within its ecosystem. Sadowski refers to the smart city as "the captured city", a system that is often not used by people, but on top of people. Social networks like Facebook have reframed the user as the product itself, an object from which to collect data to sell to third parties or target for targeted advertising. By making the data footprint of the urban subject even more visible, cities in the metaverse could align themselves with the more nefarious goals of smart cities and corporate platforms, producing an increasingly privatized urban surveillance state that extracts maximum value from its citizens. Over time, the goals of such cities could even converge with the advertising targeting and data collection practices of digital platforms.

The worst-case scenario, as Sadowski points out, is something akin to smart-city policing [30]. Instead of making authorities more responsive to the needs of their communities, the police end up serving the ultimate goal of making cities more attractive to investment capital, at the expense of the residents themselves. These police forces can quell protests and demonstrations more decisively, with the help of smart city policing, while they shrug off serious crime in less affluent areas. Surveillance can also benefit city dwellers, of course, but when data collection replaces their welfare as a priority, this reflects poorly on the smart cities approach. The city in the metaverse is likely to function in a similar way, with a corporate giant like Meta getting a lucrative contract to offer some slight improvement (or downgrade) to city services, while collecting data that the company

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[30]Ibid.

can monetize elsewhere. And this brings us to a key question: is the metaverse really necessary for the provision of public services?

B.   Education

The metaverse can be a tool to develop inclusivity of public services and to reduce inequalities of access to common goods and services. One sector is at the forefront of this metaverse for public good: Education. In fact, companies, institutions and countries started working on programs to enhance the citizens' experience toward those two sectors. The Metaverse is still a technology to be defined and a lot of experiments are made in the educational sector. Studies show that "education" is one of the most associated words to virtual reality (understood as Metaverse). Many companies developed new ways of teaching using technologies such as Virtual Reality, Augmented Reality, Lifelogging and mirror world. They enhance the experience of teaching for the students and for the professor who can develop new ways of introducing complex issues by 3D representations for example.

This technology can be considered as a game-changer to reduce inequalities and to create new standards for education. In 2021 during the covid crisis, all around the world, a major part of students was not able to attend class. Remote learning facilities were not always appropriate and adapted to the realities of families[31]. Several universities in the US experimented with "virtual campus" to learn, to teach and to socialize on a completely remote tool. More recently, the WorldBank has funded a program to develop the use of metaverse for national colleges in the Eastern Caribbean[32]. This unique collaboration included trans university cooperation for career fair, a specific qualification that allows students from the CARICOM economic community to work more easily in a member country. To prevent difficulties to enter labor markets, heads of the colleges used the

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[31] Maqableh, Mahmoud Alia, Mohammad, 2021, Idealism Evaluation online learning of undergraduate students under lockdown amidst COVID-19 Pandemic: The online learning experience and students' satisfaction
[32] Prof., J Educ Eval Health. 2021. National library of medecine. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8737403/.

metaverse as a facility to interconnect students on a specific moment of their academic lives.

However, this application is still the beginning of something more important that can include young students from early age to postgraduate students. This use will be very diverse, and we cannot predict all the deployment of Metarverse for education yet. But scholars already underlined three important limits to take into account for a reasonable and effective use of virtual realities for education[33]. The first limit is the weakness of the social interactions in virtual spaces. Indeed, the personality of the individual passes from a "me as I am" to a "me I want to show". The individual cannot interact formally and sincerely because the virtual world allows him to hide or change personality traits. Also, this new social life brings new challenges of privacy infringement and data collection that are not caused in a real-life space.

The second point concerns the" high degree of freedom". On online platforms and games that already exist, the moderation can predict behaviour of the user. However, the virtual world gives a total freedom that the administration cannot control. Researchers fear the exposure of young adolescents who have low social experience, to new forms of crimes, of harassment or bullying. Finally, through the high degree of immersion, young people can tend to develop identity confusion that would not fit with their identity in real life. A teenager would not be adapted to the real world by focusing on exclusive metaverse relations. This reality, the screen addiction, but also the impact of social media on teenagers has been repeatedly demonstrated and should be taken into account in the policy and regulation making.

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[33] VAINSTEIN, DIEGO ANGEL-URDINOLACYNTHIA MARCHIONI JIMMY. 2022. World Bank blogs - Education meets the metaverse in Eastern Caribbean national colleges. https://blogs.worldbank.org/latinamerica/education-meets-metaverse-eastern-caribbean-national-colleges.

5. LEGAL ISSUES

A. Privacy

Although the metaverse is still far from becoming a reality, its arrival has the potential to raise a new set of challenges for data protection and user privacy. As it has already occurred with social networks, the use of apps, e-commerce and other digital services, which have already brought new challenges for data protection and ultimately led to the implementation of the GDPR in Europe, the metaverse also carries a series of privacy challenges that may involve the creation of new laws or the adaptation of existing ones. In immersive realities, new technologies will collect data at unprecedented granular levels: a user's eye movements, emotions and gait patterns will become subject to data collection and processing, thus unleashing unprecedented options for monetization.

This granular collection is enabled by the new technologies needed to enter the metaverse, which will capture and record biometric data. It must be noted that the GDPR already covers this form of data, and namely when its collection is intended for the unambiguous identification of an individual through automated means. In this regard, technologies of the so-called wearables (such as smartbands), as well as facial recognition, fingerprint or iris scanning, to cite a few examples, are forms of biometric data processing that the GDPR has already regulated. Therefore, limitations to the use of this type of personal data are currently being implemented, although it remains unknown to what extent the technologies for accessing the Metaverse could capture new types of biometric data that are not taken into consideration within the GDPR. And more specifically, data related to users' neuronal information, which so far existing technologies have not been able to collect and has therefore been excluded from data protection regulations.

Beyond concerns on the collection and processing of biometric data, the implementation of the metaverse also raises questions on the consented collection of all forms of data.

Users, in their interactions with the metaverse, will need to provide their express consent for the collection and use of their information. However, the challenge arises when, as with technical cookies, part of the collection and processing of such data is necessary for the operation of the metaverse, which would make consent not completely mandatory and could leave the door open to the collection and processing of a large amount of personal data (and metadata) without the user really having control over it. In such cases, the key question that arises is who will be the data controller and processor. In this regard, the metaverse will not change much, since it will still be US big tech companies (and namely Facebook). Therefore, the challenge will not vary: to control the data that is transferred to and processed in countries outside the EU.

Currently, the GDPR (alongside its judicial application, such in the case of the Schrems II ruling) general principles and structure could address to a certain point some challenges posed by the metaverse with respect to privacy and data protection[34]. After all, we have already seen that biometric data is covered by European regulation and, therefore, its use, processing and export to foreign jurisdictions could be addressed through GDPR provisions and existing case law. The same applies to data that may be generated in interactions with the metaverse: targeted advertising is going to be more regulated once the Digital Services Act is effectively implemented, so users will, in theory, have more control over who and how they are tracked when using certain online services, which should include interactions in the metaverse. However, in order to ensure full protection for European data subjects, we recommend that European regulators closely monitor the deployment of Meta's technologies, so that proper modifications are implemented to face new data collection techniques.

The role played by the Digital Services Act will be crucial, as the previously mentioned collection of biometric data will lead to exceptional possibilities for targeted advertising. In this regard, American privacy expert Brittan Heller has coined the term for the

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[34] Grupo Atico 34. Metaverso. 2022. ¿Qué desafíos plantea para la protección de datos? https://protecciondatos-lopd.com/empresas/metaverso/

combination of users' biometric data and targeted ads: biometric psychography. In this regard, Heller defines the notion as[35]:

"a new concept for a novel type of bodily-centered information that can reveal intimate details about users' likes, dislikes, preferences, and interests. Immersive technology must capture this data to function, meaning that while biometric psychography may be relevant beyond immersive tech, it will become increasingly inescapable as immersive tech spreads. This is important because current thinking around biometrics is focused primarily on identity, but biometric psychography is the practice of using biometric data to instead identify a person's interests".

According to Heller, the combination of existing targeted advertising datasets and new biometric technologies will allow platforms to deploy advertising strategies "akin to reading the user's mind". And for this reason, the deployment of the metaverse and its use of biometric technologies must be carefully regulated. However, as opposed to the underregulation of the US, the EU already counts with the provisions of the GDPR and the Digital Services Act, which address the collection of biometric data and its use for targeted advertising. Furthermore, both of these laws are flexible, in the sense that they leave room for modifications and introduction of new aspects, such as technology advances.

In addition, the GDPR establishes a system of protection by design and by default, something that must be applied to any data processing and, by extension, to any technology that involves the processing of personal data, as it will be the case for those used to enter and interact in the metaverse. Consequently, existing EU regulation should be the base to address most of the challenges that the metaverse will pose for privacy protection, although modifications will most likely be necessary as both the technology involved and the metaverses themselves develop[36].

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[35] Heller, B. (2021). Watching Androids Dream of Electric Sheep: Immersive Technology, Biometric Psychography, and the Law. Vanderbilt Journal of Entertainment and Technology Law; https://scholarship.law.vanderbilt.edu/jetlaw/vol23/iss1/1/
[36] Grupo Atico 34. Metaverso. 2022. ¿Qué desafíos plantea para la protección de datos? https://protecciondatos-lopd.com/empresas/metaverso/

B. Interoperability

Interoperability for virtual reality platforms is the capability of virtual assets as well as game track records of users to be ported across different platforms. This concept started to gain importance, particularly after the NFTs have become an integral aspect of transactions made in virtual reality. Being able to switch between multiple virtual reality platforms while "carrying" online properties together will become important, as users will be able to seamlessly switch between various platforms. This will facilitate users to engage in various projects that are taking place on multiple platforms, fostering a unified experience by being to participate in various socio-cultural activities[37]. It will lower the cost of switching by the users, contributing to creating a virtual reality ecosystem where multiple platforms are present, without a dominant player present.

Interoperability within virtual reality platforms is achieved through adequate regulatory frameworks. First of all, antitrust law to enforce interoperability will be necessary. In the US, the Augmenting Compatibility and Competition by Enabling Service Switching Act (ACCESS Act) is passed by Congress. It was amended in June 2021, to ensure data portability and interoperability. This act is notable as it also touches on the issue of data security. Data portability, which is the capability of sharing processed data between different platforms, is essential to achieving interoperability. Meanwhile, data portability carries the problem of each platform losing the value of processed data that is exchanged among different platforms, as processed data is often unique to each platform. To approach this problem, ACCESS Act also has a clause on data security, allowing reasonable securing of data by each platform, in case it could introduce security risks to "user data or the covered platform's information systems"[38]. Ensuring data portability and hence interoperability, while also considering data security is a credible approach.

In Europe, the forthcoming Digital Markets Act (DMA) is likely to include regulations on interoperability. Interoperability is hoped to bring down market domination by big firms

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[37] LeewayHertz, "Interoperability and the Future of the Metaverse." LeewayHertz, April 20, 2022.
[38] 117th Congress, "H.R.3849 - ACCESS Act of 2021", April 06, 2021.

and allow smaller firms to be provided with bigger opportunities, by enabling users to move across all different kinds of platforms. It is still unclear, however, whether the DMA will contain sufficient regulation to allow interoperability in virtual reality. Current discussions about interoperability in the EU are largely concerned with messaging apps, and the scope of the regulation to be able to cover virtual reality is questionable. Only after the DMA comes into effect, will it be possible to observe whether it is a sufficient regulation.

C. Property

The Metaverse is often described as a huge potential for businesses to conduct their activities on its platform, as well as individuals to engage in various economic activities, namely the transaction of NFTs that is widely discussed today. Since business transactions and purchase activities are widely expected on the Metaverse, the basic framework of copyright and trademark has already been established. Intellectual property (IP) assets in the metaverse include but are not limited to "all manner of trademarks, including logos, brands, and slogans". The U.S. Trademark and Patent Office have experienced "a significant rise in the number of trademark applications to protect goods in a virtual sphere"[39].

At the same time, it is uncertain whether the current regulatory framework is sufficient in order to ensure the ownership of their IPs. This section considers potential risks in regards to IP in the Metaverse, and proposes possible ways to overcome them.

I.   The need for holistic regulation

Although regulatory frameworks for various aspects of IP like trademark and copyright law are present, what is missing is holistic regulations that can play an overarching role. For instance, a design patent is concerned with a virtual business' product, in regards to

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[39] Rahman, Muthmainur. The Metaverse – What Does It Mean for Data Privacy and Information Security? 1 March, 2022

its design and what can potentially become its trade dress (peculiar characteristics of a product, or its packaging, that can lead consumers to distinguish the product from its counterparts). This design patent will fall under trademark law. At the same time, copyright law is also concerned in case this trade dress applies to original works of authorship. In order for businesses to prepare for future legal actions against such virtual products, it is essential that different aspects of IP rights are interconnected for them to ensure unquestionable ownership of their products. This is not an easy task, as even in the real world, design is "frequently forgotten and some even consider it a 'small patent'"[40], and also because there is a lack of uniformity between national laws. Design plays an important role for products that are sold in the Metaverse, as the outlook of products will become an important consideration for users when making purchases, especially in the case of NFTs and their characteristics as artistic products. Public regulators could ensure the interconnectivity of different IP aspects in the Metaverse, so that important IP concepts like trademark and copyright can be well understood and acquired without trouble by businesses and individuals.

II.   More transparency

Metaverse claims that the property owner is secured as the platform uses blockchain technology for storing data. While it is true that this technology could effectively prevent theft of properties as purchase records will be stored in a decentralized manner, the terms of service of the Metaverse are completely centralized. This is inherently problematic, since this suggests that even though your purchase records are on the blockchain, the purchase made on the Metaverse is entirely controlled by the company running the platform. In other words, the company has ultimate control over which user is able to access or use what product they have purchased, authorizing an immense control over the activities that can be done by the users[41]. Even if one legally owns digital assets that are acquired through legal purchases, if the platform decides to do so, it is possible for

[40] Roux, Evelyne. "Combining Design and Trademark Rights to Defend Design Creations ." *World Trademark Review*, 2013
[41] Marinotti , Joae. "Can You Truly Own Anything in the Metaverse? A Law Professor Explains How Blockchains and Nfts Don't Protect Virtual Property." The Conversation, April 21, 2022

them to easily confiscate, delete, or link those assets. This framework of owning digital assets is inherently different from what purchasing and owning assets are like in the real world, and this discrepancy can bring serious threats.

Another alarming situation is that, currently, metaverse platforms possess the right to amend their terms of service in ways they prefer, without having to notify their users. Not only does there exist the problem of terms of service not being read by web users today, but this problem is also further exacerbated by the authority possessed by the platforms to amend their conditions in ways they prefer. This creates a risk where platforms gain full control over users' assets; for instance, once a user breaches the terms of service that were recently modified without being informed, the platform now reserves the right to modify the purchased assets, or even ban the access to the platform itself[42].

Public regulators have a huge role to play to ensure that property ownership of the users, or even the right of the users to be informed and updated with the rules of the Metaverse, is properly assured. To achieve this, new regulations must be imposed, even separate from enforcing the GDPR. The current GDPR does not mention terms of service (and conditions) agreements and does not have an impact on the necessity of including terms of service, as well as having no clause on requiring the service provider to inform users of the changes in terms of service[43]. For the case of the Metaverse, however, terms of service are extremely important to surveil, as not only property ownership can be risked in the ways described above, the whole do's and don'ts are defined through the terms of service. Steps must be taken immediately to change this situation.

III.   The problem of artificial scarcity

In the real world, the value of land is tied to the scarcity of it. The same goes for shoes or clothing; the value is tied to the scarcity of the raw materials and production costs. On the other hand, digital assets are not truly scarce. Essentially, it is a line of code that could

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[42] Ibid.
[43] Bass, Ross. "Will the GDPR Affect Your Terms and Conditions Agreement?" TermsFeed. TermsFeed, March 28, 2022.

be replicated. Nonetheless, there are already virtual world economies that revolve around virtual commerce and the idea of digital scarcity. We have identified two types of digital scarcity:

- *Artificial scarcity:* imposed by the creator of a game or virtual world, by offering a "limited" amount of a digital good. For example, Fortnite "skins" (customized character appearances) are limited and seasonal, creating a customer demand around its scarcity.

- *Creative scarcity:* within the virtual world marketplace, users can have the ability to create or design their own goods and sell them for the corresponding virtual currency. In this case, the price is usually set by the creator themselves and could correspond to the time investment made.

The problem identified is within the artificial scarcity mechanism. The control of the market would lie with the creator, in the case of the Metaverse, it would be Meta itself. Considering Meta has already announced it will introduce "personal virtual spaces" and virtual plots, it is worrying that there is little information given about how the prices of these spaces will be valued. Taking from other existing Metaverse economies, where some famous celebrities have bought virtual plot, the location of the surrounding area became instantly more expensive. The availability of land would be artificially limited through code, and it would take real world problems into the Metaverse. It would create social hierarchy, with expensive and valued areas to live, and other, less desirable places to go to for more affordable prices. Additionally, the question becomes, where does the money go? If it is commerce between users and sellers and businesses, it is understandable there is a flow of value exchange, of which Meta would take a percentage of. But, if some virtual assets are only made available by Meta and sold by Meta, it would raise the question where the paid money goes to. Does it go to direct Meta profit margins? If so, what is their share in the control of the Metaverse currency?

In short, the problems identified around property in the Metaverse are concerning artificial scarcity. If Metaverse is in control of exclusive digital assets, such as virtual land and virtual space, it will likely create artificial scarcity to simulate value. However, this would give them a monopolistic, even authoritarian regime to control and regulate the Metaverse market. Essentially, the one who controls the code, controls the market. This is both undemocratic as well as unliberal, and potentially bringing worrying social inequality implications. Creative scarcity on the other hand, may not be problematic as it would suggest a real scarcity: the production of time and the rarity of creators' skills in the Metaverse that sell to an user audience could define a real value to digital assets. The problem thus surrounds the architecture of virtual commerce; if the creator has too much control over the market, determining the value through artificial scarcity, regulation is necessary to avoid this kind of issue.

D. Interactions between avatars

The last question about avatars is linked to the possibility to protect and prevent in a global perspective any kind of abuse. We already mentioned issues and propositions to ensure better control of the avatars on several specific aspects. But one issue remains: how to effectively protect each avatar against any kind of threat on Metaverse. On social media, a lot of users are threatened, and the legislation is only evolving to stricter standards. Talking about boundaries, the first cases of sexual harassment occurred in California. Several other cases have been already mentioned. The solution that the Californian court found, was to delete the IP address and so, to ban the user from the Metaverse. Furthermore, Meta introduced the notion of "personal boundary".

Indeed, to remain safe and to avoid threats from unknown people, a barrier of "4 foot" will be designed by default around each avatar. The setting will be modifiable to let friends of the avatar be closer and remove the boundary. However, a blur remains around solutions. We don't know how people will interact with each other. Indeed, users tend to behave differently when it comes to interacting on the cyberspace and the metaverse. The proteus effect has an impact on everyday social life on social media, so we can easily

think that it will be stronger in a virtual world. What is also debatable is the responsibility. Should a government punish the user that spread the hate/ threat or should a government punish the platform that has not been able to provide sufficient provisions for a safe space. Today, referring the article 6 of the French law "loi pour la confiance dans l'économie numérique" stipulates that the creators of the content are responsible for what it publishes since the platform that hosts the message took all the measures to prevent it. The debate of responsibility is important to be sure that the new cyber world that is going to be created is safe for everyone. The Digital Services Act is also an alternative that will oblige Big Tech platforms to prevent hate speeches and threats on social media by a system of "notice and action".

I.   What is an avatar?

One must make a clear distinction between the conventional account on social media and avatars on the Metaverse. Avatar is a virtual identity of the users of Metaverse, allowing close representation of their identity, namely gender, ethnicity, age, and so on[44]. It is an extension of yourself in virtual reality, largely influencing social relationships and interactions. While this peculiarity of the avatar has enabled the interactions on the Metaverse to be more realistic than ever, it has also raised the question of the need for regulation. Users on the Metaverse have reported cases of sexual harassment, hate speech, and rape. For regulations to be put into space for the activities of avatars, it is firstly required to assign a legal persona to the avatar itself. This will provide rights and duties to the avatar, hence the capability to sue other users through the activity of their avatars. This process is complicated, however, since there is a conflicted view as to whether avatars and the digital identity that is around them are the same as the real identity[45]. While avatars are extremely personal to the users by representing their real identity, the external representations of avatars are still different from what they are in the real world. When users of the Metaverse interact with other avatars, they also perceive the avatars to be separate from the external representations of the users in the real world.

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[44] Huang, Yujun, "Comparative Study: How Metaverse Connect with China Laws." SSRN, October 20, 2021.
[45] Lean Lau , Pin. "The Metaverse: Three Legal Issues We Need to Address." The Conversation, April 21, 2022.

This separation becomes the source of complication when assigning a legal persona. Yet, to achieve a safe user experience on the Metaverse, this conflict must be overcome. Regulators must realize the need for legal personal assignment since the Metaverse with its personalized features is a space where users feel no different from the interactions happening in the real world. For instance, with your own virtual room which is your private space, an intrusion of the space by another avatar without consent would give the same sense of alertness to the user to the real world. Regulating the avatars' interactions becomes essential.

II.   How to ensure verification and authentication of users?

Another challenge of the Metaverse is to overcome the issue of user authentication. Concerns over problems generated through avatar interactions have raised voices to prohibit anonymity of the user, though this approach could potentially hinder personal freedom, especially the freedom of speech described in the first amendment. Simultaneously, there is a need for the Metaverse to be able to track down the users, in case issues between the avatars rise. One solution to be proposed is to establish a credible verification and authentication process for the users. Although users can stay anonymous on the Metaverse, user verification and authentication now becomes essential for this issue, as well as eliminating bot and fake trolling accounts that are present on the internet today. Several approaches can be taken to achieve this.

i) Creation of a "one user, one account" policy
Limiting the users to be able to create one account is an effective approach to take. Tracking down the users will not become a problem in case the users possess a single verified account. User verification becomes a key, however, as traditional verification methods are insufficient to ensure "one user one account". One solution is to tie the user's account to their digital wallet that will be used for their in-game activities. For instance, Upland, a virtual property NFT game, requires digital wallet verification, as well as mentioning the right for them to restrict the user's account once they breach the terms of

the agreement to have only one account[46]. Currently, some virtual reality platforms, such as Decentraland, allow the creation of multiple accounts, showing that not all platforms are currently agreeing on this policy.

ii) Further development on verifications and authentication methods

Tying one's digital wallet to their account is not sufficient, however, since various individuals possess multiple digital wallets today. To further strengthen the prevention of creating multiple accounts, effective methods of authentication and verification must be constructed. This is also to avoid a situation such as, in a household with each family member holding an account, to cross-use each other's accounts. To prevent such situations, various verification and authentication methods must be combined. For instance, the use of biometric authentication can be effective, including fingerprint and facial recognition, both when you create an account and when you log in. Requiring multiple authentications and verification processes may sound cumbersome, but in order to ensure the Metaverse is a safe place for the users, rigorous steps must be taken.

For the two solutions proposed above to be implemented, public regulators must implement necessary measures to achieve this situation. The interoperability between multiple virtual realities requires the terms of service of each platform to be aligned closely as well. Therefore, the public regulators must first assure each platform requires a series of authentication and verification processes to ensure one user one account policy, and that there is a strong consequence to those users who do not abide by the regulation. Simultaneously, the public regulators must propose overarching regulations that can ensure essential rules to be applied by each platform, in order to maintain the safety of users. For instance, it is important to ensure that all platforms have functionalities where users can immediately report and block other users. Because virtual reality platforms are operated by private actors, only the public regulators are the ones that are capable of imposing such overarching solutions.

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[46] Sawers, Paul. "Identity and Authentication in the Metaverse." VentureBeat. VentureBeat, January 26, 2022.

III.   Prevention and protection against abuses

The last question about avatars is linked to the possibility to protect it and prevent in a global perspective any kind of abuse. We already mentioned issues and propositions to ensure a better control of the avatars on several specific aspects. But one issue remains. How to effectively protect each avatar against any kind of threat on Metaverse. On social media, a lot of users are threatened and the legislation is only evolving to stricter standards. Talking about boundaries, the first cases of sexual harassment occurred in California. Several other cases have been already mentioned. The solution that the Californian court found, was to delete the IP address and so, to ban the user from the Metaverse. Furthermore, Meta introduced the notion of "personal boundary"[47] . Indeed, to remain safe and to avoid threats from unknown people, a barrier of "4 foot" will be designed by default around each avatar. The setting will be modifiable to let friends of the avatar be closer and remove the boundary.

However, a blur remains around solutions because we don't know how people will interact with each other. Indeed, users tend to behave differently when it comes to interacting on the cyberspace and the metarverse. What is also debatable is the responsibility. Should a government punish the user that spread the hate threat or should a government punish the platform that has not been able to provide sufficient provisions for a safe space. Today, referring to French law "la loi pour la confiance dans l'économie numérique" stipulates that the creators of the content are responsible for what it publishes since the platform that hosts the message took all the measures to prevent it (article 6). The debate of responsibility is important to be sure that the new cyber world that is going to be created is safe for everyone. The debate of responsibility is important to be sure that the new cyber world that is going to be created is safe for everyone. The DSA is also an alternative

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[47] Vivek Sharma, Vice President, Horizon. 2022. *Meta - Introducing a Personal Boundary for Horizon Worlds and Venues.* https://about.fb.com/news/2022/02/personal-boundary-horizon/.

that will oblige Big Tech platforms to prevent hate speeches and threats on social media by a system of "notice and action".

6. RECOMMENDATIONS

After having stated the risks and the necessity of regulating the Metaverse, the group proposes the following recommendations so that European institutions can design a comprehensive ex ante regulatory framework.

A. Privacy rights and data protection

In this study, we underlined the danger of the use of biometric psychographic data to enable a better experience in the Metaverse. The gathering of sensitive data by a private company raises questions of privacy that demand a proper regulatory response. Current GDPR standards include the protection by design and by default of the users. The Digital Services Act would complement the GDPR in order to ensure that the collection and processing of biometric data on the Metaverse meets EU standards. However, as the Metaverse technologies continue to develop, European regulators must be prepared to reform certain provisions in order to ensure that new biometric psychographic data technologies do not endorse data collection monetization tools that would infringe individual privacy rights.

B. Property

Property is a notion that is going to be very important in the Metaverse. A certain number of companies already created NFT or bought spaces in the Metaverse to sell products. Here, we think that intellectual property must be protected and well understood by businesses and individuals. In this sense, Metaverse should encourage transparency of the parameters that constitutes artificial scarcity to allow a greater understanding of the limits that constitute the Metaverse. Also, currencies that will be linked to the goods sold on the Metaverse should be considered as a real-world money.

Furthermore, analyzing the actual regulation, we take the view that GDPR should be applied and be completed by provisions that mention terms of service (and conditions) agreement. For better transparency we also advise that the code of the virtual world be accessible to avoid any kind of biases that would lead to discriminations

Finally, the Augmenting Compatibility and Competition by Enabling Service Switching Act (ACCESS Act) passed by the US congress in 2021 presents characteristics that are necessary to protect creators on the Metaverse. Thus, we take the view that a law that enforces interoperability should be implemented in a European Union framework

C. Avatar

The question of avatar is essential to understand the future importance of the Metaverse. It will be the extension of the user in the virtual world. However, we have seen that cyberspace is not always safe for the user when we talk about harassment and threats. An avatar will be able to behave badly and harass other avatars. That is why a legal personality should be assigned to the avatar to keep an umbilical cord between the avatar in the metaverse and the user behind the screen.

Also, we noticed that, sometimes, users create several profiles on social media to 'troll' other users and to spread misinformation or threats. Even though anonymity has been a key principle in cyberspace and knowing that the avatar will be an extension of the physical person, different provisions should be applied such as the 'one user, one account" system or biometric facilities to ensure that each account will be certificated and will correspond to one user.

D. Provision of public services and role of the state in the Metaverse

Finally, regarding the provision of public services, several cities have already started a transition towards a virtual public venue. Virtual reality seems to be the choice picked by

these cities for greater efficiency and proximity in favor of their citizens. However, this approach presents a strong risk of massive surveillance and monetisation for host platforms. To protect users, European institutions should ensure the complete application of the GDPR provisions to effectively avoid targeted advertising in such online public venues.

Furthermore, our study underlined the transformation that is going to occur in education. The Metaverse will open new possibilities and opportunities for professors to teach to students and to improve pedagogical support. However, studies already mentioned the danger of screens and social media for young people. Their social identity could be deeply modified creating isolation and behaviour alteration. European authorities and actors of health and digital sectors should open a conversation toward the use of the Metaverse for education and its impact on our children's health.

Conclusion

To conclude, we can underline three points.

First, regulation of the Metaverse must be a European project that aims at protecting all the European citizens and at influencing worldwide regulation.

Second, numerous provisions already exist or are already implemented on platforms such as GDPR or DSA. But, knowing that the Metaverse will be a proper virtual world, we took the view that proper implementation of the existing legislation is a prerequisite before any further regulation.

Finally, the Metaverse is still in the process of construction. A lot of research is to be done and it is the role of the national and European regulators to prepare and create a healthy and safe environment for all.

Bibliography

Angel-Urdinola, Marchioni & Vainstein. 2022. Education meets the metaverse in Eastern Caribbean national colleges. World Bank blogs https://blogs.worldbank.org/latinamerica/education-meets-metaverse-eastern-caribbean-national-colleges

Ara Mark, Radcliffe, Fluhr & Imp (2022). Exploring the metaverse: What laws will apply?. *DLA Piper.* https://www.dlapiper.com/en/france/insights/publications/2022/02/exploring-the-metaverse/

Austin, D. April 14th, 2022. Pronto podrás recorrer tu ciudad en el metaverso: lo único que te costará es tu privacidad. *Business Insider.* https://www.businessinsider.es/metaverso-puede-optimizar-ciudades-pero-sacrifica-privacidad-1039777

Bass, Ross. "Will the GDPR Affect Your Terms and Conditions Agreement?" TermsFeed. TermsFeed, March 28, 2022. https://www.termsfeed.com/blog/gdpr-termsconditions/#Will_The_Gdpr_Have_Any_Impact_On_Terms_And_Conditions.

Basu, Tanya. "The Metaverse Has a Groping Problem Already." MIT Technology Review. MIT Technology Review, February 4, 2022. https://www.technologyreview.com/2021/12/16/1042516/the-metaverse-has-a-groping-problem/.

Bobrowsky, Meghan. 2021. "Big Tech Seeks Its next Fortune in the Metaverse." WSJ. The Wall Street Journal. November 9, 2021. https://www.wsj.com/articles/big-tech-seeks-its-next-fortune-in-the-metaverse-11636459200.

Brooke, Thomas. "Intellectual Property Protection in the Metaverse: Insights." Holland & Knight, March 2022. https://www.hklaw.com/ja/insights/publications/2022/03/intellectual-property-protection-in-the-metaverse.

Business Insider Deutschland. 2021. "How Instagram Is Intentionally Designed to Mimic Addictive Painkillers." Business Insider. Insider. August 11, 2021. https://www.businessinsider.com/facebook-has-been-deliberately-designed-to-mimic-addictive-painkillers-2018-12?r=US&IR=T.

Cagnina, Maria Rosita and Poian, Michele, How to Compete in the Metaverse: The Business Models in Second Life. U of Udine Economics Working Paper No. 01-2007, Available at SSRN: https://ssrn.com/abstract=1088779 or http://dx.doi.org/10.2139/ssrn.1088779

Castronova, E. and Wagner, G.G. (2011), Virtual Life Satisfaction. Kyklos, 64: 313-328. https://doi.org/10.1111/j.1467-6435.2011.00508.x

David Bundi, Valérie Bourgaux. 2022. Legal & compliance in the Metaverse. https://www.pwc.ch/en/insights/regulation/legal-compliance-metaverse.html.

Data Privacy Manager. 2021. What is the future of your Privacy in METAverse. https://dataprivacymanager.net/what-is-the-future-of-your-privacy-in-facebook-metaverse/

Facebook, Inc. (FB) Second Quarter 2021 Results Conference Call. July 28th, 2021. https://s21.q4cdn.com/399680738/files/doc_financials/2021/q2/FB-Q2-2021-Earnings-Call-Transcript.pdf

Fernandez, Carlos Bermejo, and Pan Hui. "Life, the Metaverse and Everything: An Overview of Privacy, Ethics, and Governance in Metaverse." 2022, *arXiv preprint arXiv:2204.01480.*

Flores, Juan. "Ex-Facebook Executive Says Company Made Its Product as Addictive as Cigarettes." CBS News. CBS Interactive, October 4, 2020. https://www.cbsnews.com/news/facebook-addictive-as-cigarettes-former-executive-says/.

Gokmi, Hyun Jeon. 2021. A Study on the Copyright Survey for Design Protection in Metaverse Period. *International Journal of Advanced Smart Convergence Vol.10 No.3 https://www.koreascience.or.kr/article/JAKO202128054627798.pdf*

Grupo Atico 34. Metaverso. 2022. ¿Qué desafíos plantea para la protección de datos? https://protecciondatos-lopd.com/empresas/metaverso/

Haisler, D. (2022, Mar 08). Regulating the Metaverse, With Guest Bradley Tusk -- ICYMI. Government Technology, https://acces-distant.sciencespo.fr/login?url=https://www.proquest.com/magazines/regulating-metaverse-with-guest-bradley-tusk/docview/2637222805/se-2?accountid=13739

Heller, B. (2021). Watching Androids Dream of Electric Sheep: Immersive Technology, Biometric Psychography, and the Law. *Vanderbilt Journal of Entertainment and Technology Law; https://scholarship.law.vanderbilt.edu/jetlaw/vol23/iss1/1/*

Hollowell. 2022. Why the metaverse must be open but regulated. *Venture Beat.* https://venturebeat.com/2022/01/26/why-the-metaverse-must-be-open-but-regulated/

Huang, Yujun, "Comparative Study: How Metaverse Connect with China Laws." SSRN, October 20, 2021. https://ssrn.com/abstract=3955900 or http://dx.doi.org/10.2139/ssrn.3955900.

2022. Intellectual Property in the Metaverse. Episode II: Trade Marks. 29 March. https://intellectual-property-helpdesk.ec.europa.eu/newsevents/news/intellectual-property-metaverse-episode-ii-trade-marks-2022-03-29_en.

Jules, Beley. "Who wants interoperability? Compatibility and regulation in digital markets". 2021. https://www.sciencespo.fr/public/sites/sciencespo.fr.public/files/BELEY%20Jules-%20update.pdf

Kurnaz, Efe. 2022. Intellectual Property in the Metaverse. Episode 1. . European Commission. 25 February. https://intellectual-property-helpdesk.ec.europa.eu/news-events/news/intellectual-property-metaverse-episode-1-2022-02-25_en.

Kye, B., Han, N., Kim, E., Park, Y., & Jo, S. 2021. Educational applications of metaverse: possibilities and limitations. Journal of educational evaluation for health professions, 18, 32. https://doi.org/10.3352/jeehp.2021.18.32

Lean Lau, Pin. "The Metaverse: Three Legal Issues We Need to Address." The Conversation, April 21, 2022. https://theconversation.com/the-metaverse-three-legal-issues-we-need-to-address-175891.

LeewayHertz, "Interoperability and the Future of the Metaverse." LeewayHertz, April 20, 2022. https://www.leewayhertz.com/metaverse-interoperability/.

LexisNexis. "Facebook's Metaverse Aspirations Tied to Privacy, Antitrust Regulation." MLex Market Insight, November 2021. https://mlexmarketinsight.com/news-hub/editors-picks/area-of-expertise/antitrust/facebooks-metaverse-aspirations-tied-to-privacy-antitrust-regulation.

Lomas, Natasha. "Europe Says Yes to Messaging Interoperability." TechCrunch. TechCrunch, March 25, 2022. https://techcrunch.com/2022/03/24/dma-political-agreement/.

Mac, Ryan. "Meta Aims for 'Deep Compatibility' with Blockchain, According to an Internal Post." The New York Times. The New York Times, December 23, 2021. https://www.nytimes.com/2021/12/22/technology/meta-facebook-web3-blockchain.html.

Maqableh, Mahmoud Alia, Mohammad, 2021, Idealism Evaluation online learning of undergraduate students under lockdown amidst COVID-19 Pandemic: The online learning experience and students' satisfaction

Mariapina Trunfio, Maria Della Lucia, Salvatore Campana & Adele Magnelli. "Innovating the cultural heritage museum service model through virtual reality and augmented reality: the effects on the overall visitor experience and satisfaction", Journal of Heritage Tourism, 17:1, 1-19, 2022, DOI: 10.1080/1743873X.2020.1850742

Marinotti , Joae. "Can You Truly Own Anything in the Metaverse? A Law Professor Explains How Blockchains and Nfts Don't Protect Virtual Property." The Conversation, April 21, 2022. https://theconversation.com/can-you-truly-own-anything-in-the-metaverse-a-law-professor-explains-how-blockchains-and-nfts-dont-protect-virtual-property-179067.

"Metaverse: What Legal Issues Can We Expect in the next Chapter of the Internet?" Guden, 2022. https://guden.av.tr/metaverselaw.

Murphy, Hannah. "Facebook Owner Meta Targets Finance with 'Zuck Bucks' and Creator Coins." Subscribe to read | Financial Times. Financial Times, April 6, 2022. https://www.ft.com/content/50fbe9ba-32c8-4caf-a34e-234031019371.

Oppenheim, Maya. "'Repeated Rape Threats': Sexual Violence and Racist Abuse in the Metaverse." The Independent. Independent Digital News and Media, February 16, 2022. https://www.independent.co.uk/news/uk/home-news/metaverse-sexual-harasment-assault-racism-b2015741.html.

Ondrejka, Cory. 1976. "NYLS Law Review NYLS Law Review Escaping the Gilded Cage: User Created Content and Building the Escaping the Gilded Cage: User Created Content and Building the Metaverse Metaverse 22: 22–63.

Osborne Clarke "Blockchain in the Metaverse: What International Regulatory Challenges Lie Ahead?", Osborne Clarke April 21, 2022. https://www.osborneclarke.com/insights/blockchain-metaverse-what-international-regulatory-challenges-lie-ahead.

Oxford Analytica (2021), "US reforms on sexual harassment will be patchy", Expert Briefings. https://doi.org/10.1108/OXAN-DB265963

Pape, Colin. 2022. The metaverse will bring a further erosion of privacy. 20 February. https://cointelegraph.com/news/the-metaverse-will-bring-a-further-erosion-of-privacy.

Petter, Olivia, Emily Chan, Alice Newbold, Noreen Malone, and Rhiannon Lucy Cosslett. "Why Is No One Taking Sexual Harassment in the Metaverse Seriously?" British Vogue, March 20, 2022. https://www.vogue.co.uk/arts-and-lifestyle/article/sexual-assault-in-the-metaverse.

Preimesberger, Chris. 2022. VentureBeat. 28 January. https://venturebeat.com/2022/01/28/metaverse-vs-data-privacy-a-clash-of-the-titans/.

Prof., J Educ Eval Health. 2021. National library of medicine. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8737403/.

Rahman, Muthmainur. 2022. The Metaverse – What Does It Mean for Data Privacy and Information Security? 1 March. https://www.jdsupra.com/legalnews/the-metaverse-what-does-it-mean-for-2751284/.

Reeds Solicitors LLP "Should Sexual Harassment Be a Criminal Offence in the UK? - Reeds." Reeds Solicitors LLP, February 25, 2022. https://www.reeds.co.uk/insight/should-sexual-harassment-be-a-criminal-offence-in-the-uk/.

Robinson, James. 2022. Exploring the metaverse and the digital future. GSMA, 27 p.

Roux, Evelyne. "Combining Design and Trademark Rights to Defend Design Creations ." *World Trademark Review*, 2013, 38–41.

Sadowski, J. November 12th, 2019. The Captured City. Real Life Mag. https://reallifemag.com/the-captured-city/

Sawers, Paul. "Identity and Authentication in the Metaverse." VentureBeat. VentureBeat, January 26, 2022. https://venturebeat.com/2022/01/26/identity-and-authentication-in-the-metaverse/.

Services, Bosco Legal. "Tracking down Fake Accounts: Frequently Asked Questions." Bosco Legal Services, February 9, 2021. https://www.boscolegal.org/blog/tracking-down-fake-accounts/.

"Sexual Harassment in Europe." Compliance Training - Interactive Services, September 2019. https://blog.lrn.com/latest-news/how-is-sexual-harassment-being-addressed-in-europe.

Sharma, Vivek. 2022. Introducing a Personal Boundary for Horizon Worlds and Venues. *Meta Quest*. https://about.fb.com/news/2022/02/personal-boundary-horizon/

Squires, C. November 9th, 2021. Seoul will be the first city government to join the metaverse. *Quartz*. https://qz.com/2086353/seoul-is-developing-a-metaverse-government-platform/

Smart, Cascio & Paffendorf. Metaverse Roadmap. 2007. Accelerating.org https://www.w3.org/2008/WebVideo/Annotations/wiki/images/1/19/MetaverseRoadmapOverview.pdf

Statista. 2021. Number of monthly active Facebook users worldwide as of 4th quarter 2021. https://www.statista.com/statistics/264810/number-of-monthly-active-

facebook-users-
worldwide/#:~:text=With%20roughly%202.91%20billion%20monthly,years%20to%20
reach%20this%20milestone.

Tucci, Christopher. 2001. "Internet Business Models and Strategies." Academia.edu.
Boston, McGraw Hill. 2001.

Uberti, David. 2022. "Come to the Metaverse, Can Privacy Exist?" The Wall Street
Journal.

Unknown. 2021. What is the future of your Privacy in METAverse. 12 December.
https://dataprivacymanager.net/what-is-the-future-of-your-privacy-in-facebook-
metaverse/.

VAINSTEIN, DIEGO ANGEL-URDINOLACYNTHIA MARCHIONI JIMMY. 2022.
World Bank blogs - Education meets the metaverse in Eastern Caribbean national
colleges.   https://blogs.worldbank.org/latinamerica/education-meets-metaverse-
eastern-caribbean-national-colleges.

Virtual Currencies Working Group. 2014. REGULATING VIRTUAL CURRENCIES.
https://www.economie.gouv.fr/files/regulatingvirtualcurrencies.pdf

Wiener, Anna. "Money in the Metaverse." The New Yorker, January 4, 2022.
https://www.newyorker.com/news/letter-from-silicon-valley/money-in-the-metaverse.

117th Congress, "H.R.3849 - ACCESS Act of 2021", April 06, 2021.
https://www.congress.gov/bill/117th-congress/house-bill/3849/text

About the authors

Eduardo MANGADA REAL DE ASÚA

Master in European Affairs, Digital, New Technology and Public Policy stream.
Law and International Relations Graduate, Universidad Pontificia de Comillas - ICADE
Specialization in European Union and Competition Law
Intern at the OECD's Directorate for Financial and Enterprise Affairs (Competition Division)

Victoria Madalena OTTER

Master in Public Affairs, Digital, New Technology and Public Policy stream.
Bachelor of Liberal Arts and Sciences at the University of Groningen. Specialized in international relations and business.
Intern as a Cybersecurity strategist at Capgemini consultancy.

Tatsuaki TSUKUDA

Master in Public Policy, Digital, New Technology and Public Policy stream.
Bachelor of Arts, Europe-Asia program, Sciences Po Paris Le Havre campus. Majored in political science and government studies.
Co-founder of an online tutoring company Lighthouse, and a former business development intern at Corpy&Co an AI startup.

Bastien VIVENOT

Master in European Affairs, Digital, New Technology and Public Policy stream.
Bachelor of Social Sciences, Ibero-Latin- American program, Sciences Po
International development intern, French Tech program - French Ministry of Economy

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