



ART ANALYSIS AND RESEARCH TEAM

9 March 2022



METaverse - VIRTUAL WORLD, REAL CHALLENGES

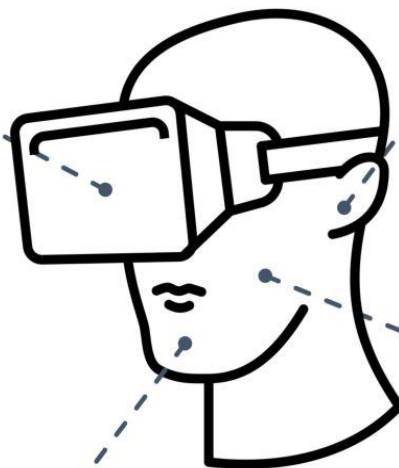
Key Features

- Persistent, immersive & massive
- Synchronous
- Both Digital & Real
- Economy
- Interoperable



Activities in the Metaverse

- Work
- Socialise
- Create
- Play
- Produce Value



"The Metaverse is a massively-scaled, persistent, interactive, and interoperable real-time platform comprised of interconnected virtual worlds where people can socialize, work, transact, play, and create"
(M. Ball)

4 Converging Critical Enablers

- **Technology** (computing power, AR/VR, bandwidth)
- **Decentralised Economy** (NFTs, digital currencies, content/services/assets)
- **Digital Social Life** (Acceptability & user behaviors, habits)
- **Huge investments** (in tech and acquisitions of platforms)



Challenges

- Protection of personal data and privacy
- Safety/Security and jurisdiction/territoriality
- Democracy and values
- Social model, Work, Health
- Consumer protection, intellectual property, litigation and taxation
- Climate & environment
- Competition for standards setting



Source: ART

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INTRODUCTION

Big if true ... the Metaverse could well add an additional dimension to human experience. It could constitute an entirely new space offering limitless possibilities and the potential to change our lives. Alternatively, it could turn out to be something of an empty shell: a fantasy pushed by the social media industry to distract attention from some of their current difficulties.

It is very difficult at the moment to assess the likely impact of the Metaverse. It certainly has the potential to lead to more than simply the next stage in the development of the Internet, but we may well not see the full extent of its potential for a number of years. Yet work on the Metaverse is underway now. Research and innovation is well advanced, and some of the components of the Metaverse are with us already. The label "Metaverse" is being used by various companies such as Microsoft or Walmart with increasing frequency when they roll out new initiatives¹ while Facebook was rebranded Meta in October 2021².

To help grasp the scale of this development, this paper first presents an **overall description of the Metaverse**: what it is and what is driving it. It illustrates how the many different components needed to develop the Metaverse are coming together. The impact of this phenomenon is not just limited to the virtual world.

The paper then looks into some of the **key potential challenges and opportunities** offered by the Metaverse. It assesses why this development should be a matter of concern to the EU, and how governments might respond, not least given that

other parts of the world are already well advanced in this area. It seeks to identify the main issues which are raised by these technological upheavals. It looks at how such major developments raise profound questions about their role and impact on society, as further technological developments are likely to exacerbate the current challenges such as the impact of social networks on democracy and the effects of digitalisation on the economy.

We do not have a clear idea of the full range of potential opportunities offered by the Metaverse, but they could include employment, education, healthcare, economic development as well as political influence. It is possible that the Metaverse will enable citizens in modern democracies to be more closely connected, as through the internet today, but on a different scale and at different speeds. It has been estimated that by 2026, 25% of the population will spend at least one hour a day in the Metaverse for work, shopping, education, social interaction and entertainment³. Despite the expectation that the Metaverse will not be subject to centralised control, its impact on users, not least the potential for intrusive surveillance, could be considerable. A real-life parallel would be a high street environment where all input and content is provided and curated by the owner of the street. This is not only an issue for citizens but also a matter for governments: the Metaverse raises issues around state sovereignty. We know from our experience of the first generations of the internet that the ancient adage that "*With great power comes great responsibility*" cannot be guaranteed, not least by tech companies whose turnover in some cases exceeds the GDP of some nation states.

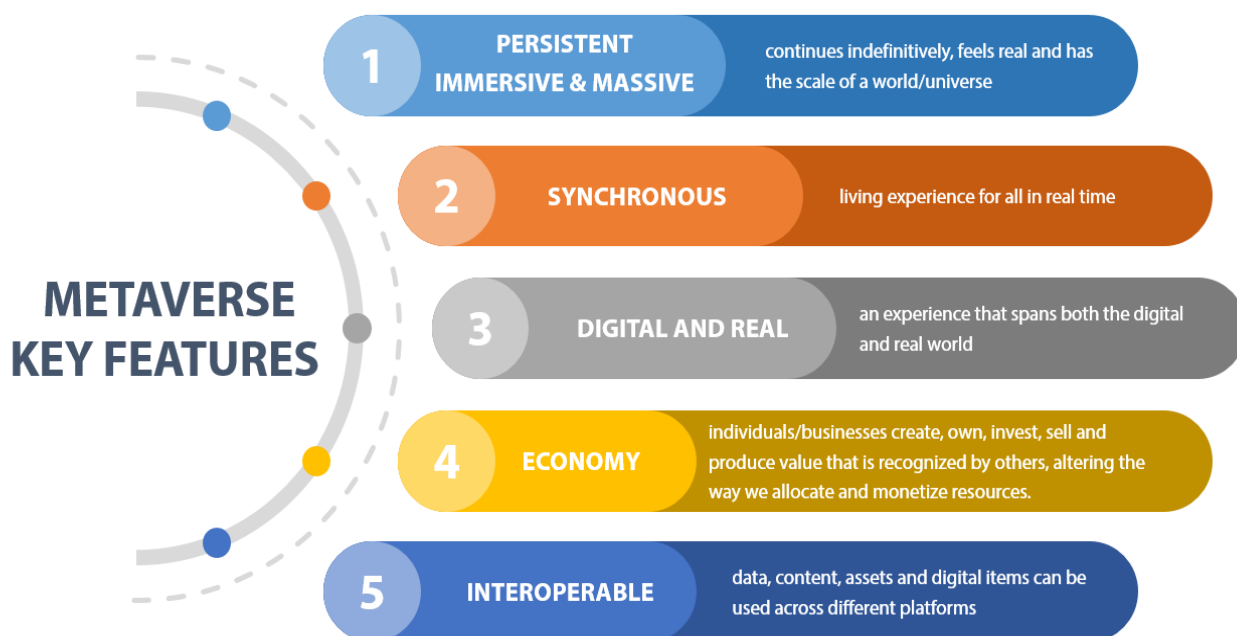
1. WHAT IS THE METAVERSE

What?

Metaverse is a contraction of the Greek word "Meta", meaning beyond, and the word "universe". Although the concept has been around for years and has attracted a number of definitions, it is best described as **an immersive and constant virtual 3D world where people interact through an avatar to enjoy entertainment, make purchases**

and carry out transactions with crypto-assets, or work without leaving their seat. Metaverses are accessible through a virtual reality (VR) headset, glasses or any other dedicated device. It has been described as the "*holy grail of social interactions*" by Mark Zuckerberg⁴. It will be an online "phygital world"⁵, where physical and virtual realities merge.

We don't really know in detail what the Metaverse will look like in 10 years time. But we can identify its core attributes.



Source : ART inspired by Matthew Ball⁶

The concept of the Metaverse is not new and proto-metaverses already exist. As anticipated by science-fiction authors in the early 1980's and 1990's, gaming experiences of virtual worlds such as Habitat (1986)⁷, Second Life (2003) and Club

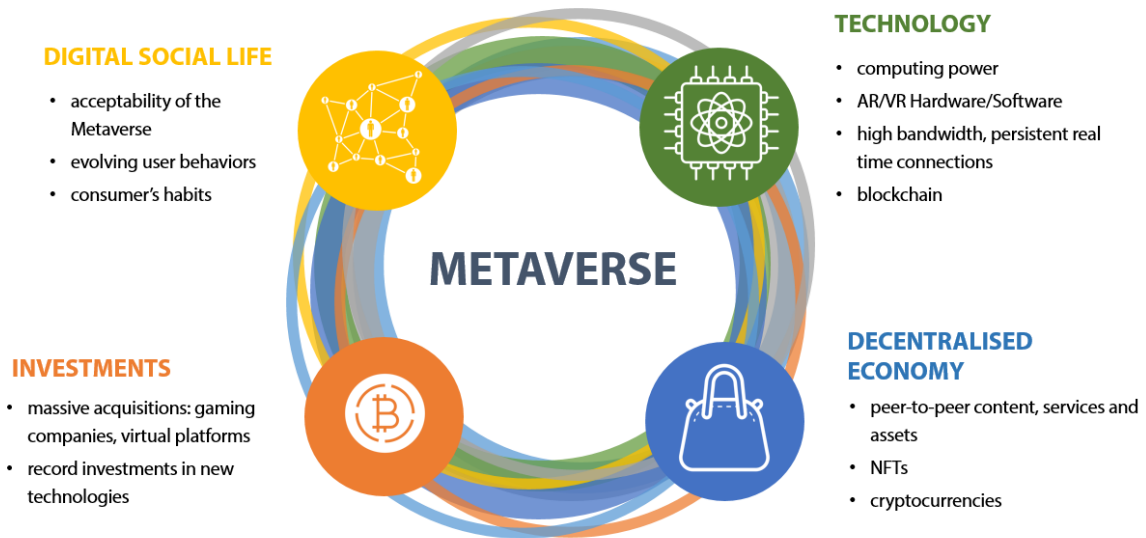
Penguin (2004) are regarded as some of the first attempts at building a Metaverse. Indeed, the Metaverse is not unique but multiple. Its variants are not necessarily compatible, which means that we can expect a race between tech companies to become leaders.

Why?

The Metaverse does not appear out of nowhere. It is the product of **converging trends in a decentralised economy, the expansion of digital**

social life, rapidly expanding technical capacity and massive investment from key players.

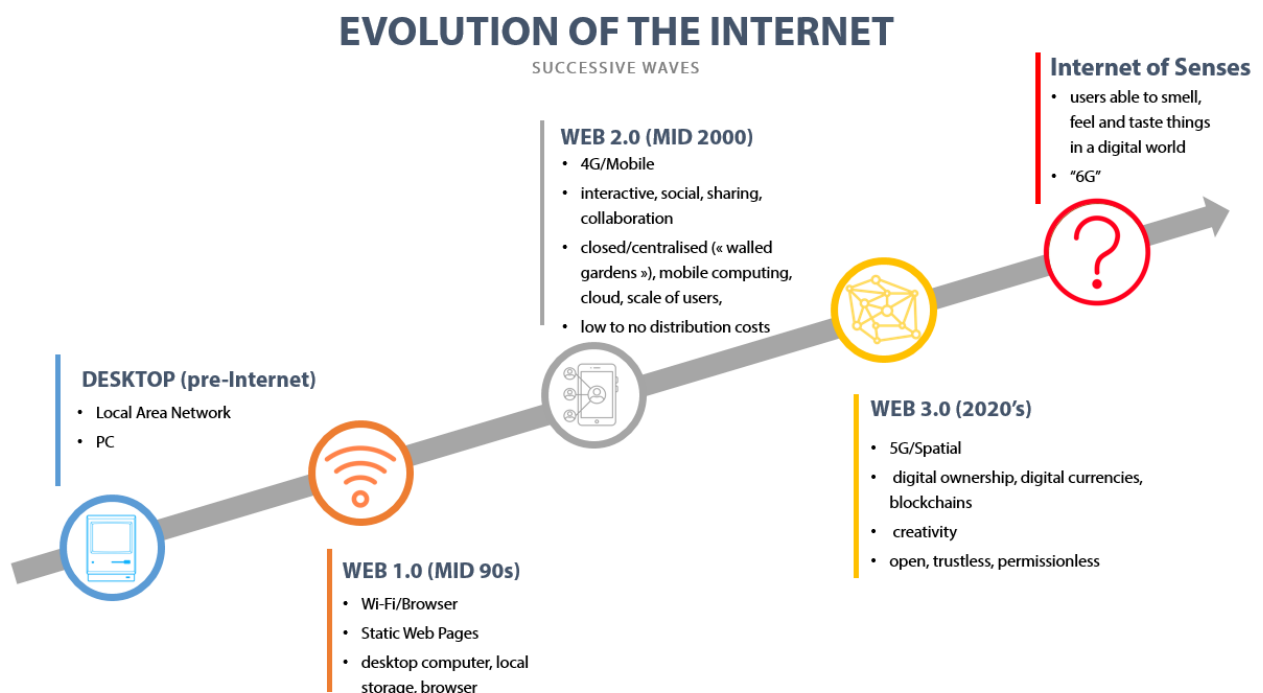
4 CONVERGING CRITICAL ENABLERS



Source: ART

We are currently witnessing a transition from a centralised web, where social media channels connect people (“web 2.0”), to a decentralised internet, where people interact directly (known as “web 3.0”⁹). This is driven by blockchain applications, decentralised finance (DeFi) based on cryptoassets

(cryptocurrencies, tokens or NFTs⁹), and more local/niche/targeted services. Some companies claim they have started work on the next generation of an immersive Internet called the “Internet of Senses”¹⁰.



Source : ART inspired by [About Magic Leap | Magic Leap and Coinbase – Goldman Sachs](#)

Some see the Metaverse only as an evolution of web 3.0. Like the web 3.0, the **Metaverse will be a market place**, driven by artificial scarcity. According to Bloomberg analysts¹¹, the Metaverse could become an 800 billion dollar market by 2024. Existing **virtual worlds** which draw on a combination of social, commercial and entertainment interests, and which use blockchain technology and virtual reality technologies (e.g. Cryptovoxels, Somnium Space, Roblox, VRChat...)

already claim to be part of the Metaverse. Already in 2015 the creator of Second Life¹² anticipated that the Metaverse would eventually revolutionize nearly every part of our lives, from healthcare to payments, consumer products, entertainment, and the workplace. The collective value of the changes in industry and the marketplace as well as the need for new types of skills, professions, and certifications, could run into trillions¹³. As is the case for most of the tech sector, the product itself creates the need.

Two examples of virtual marketplaces Decentraland and The Sandbox

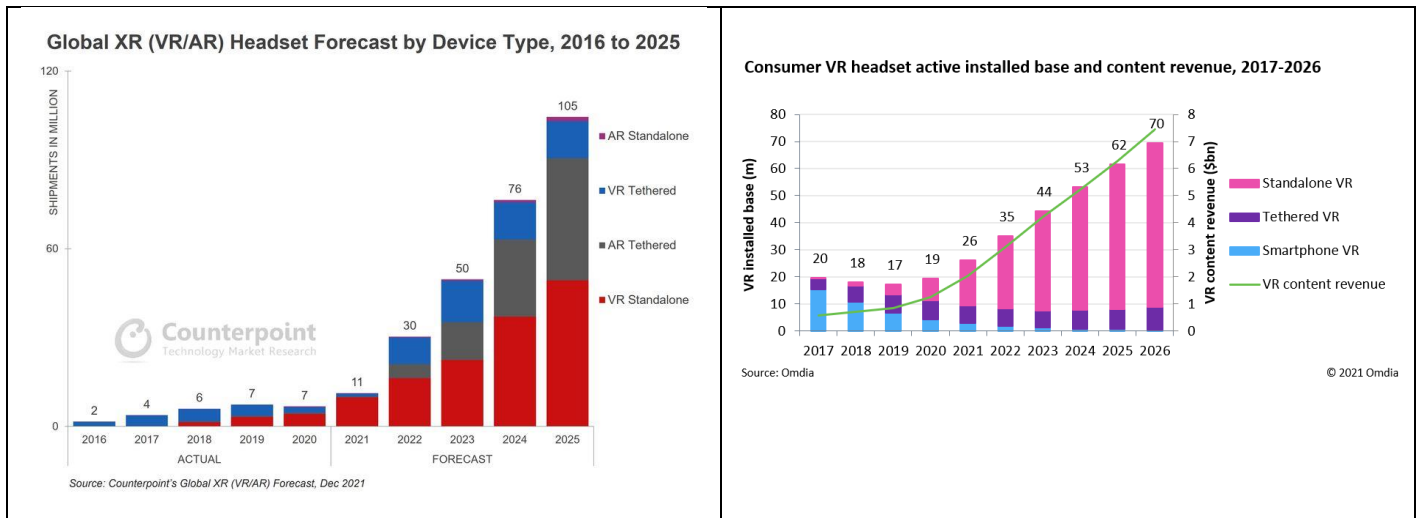
Decentraland allows users to buy virtual estate (as NFTs) which can be bought by the native cryptocurrency (MANA), which is based on the Ethereum blockchain. In October 2021, Decentraland hosted the first Metaverse Music Festival, a four-day immersive social music experience¹⁴. Transactions may occur such as rentals (“virtual Airbnb”) or financial services such as mortgages. Sotheby’s has opened a virtual art gallery in Decentraland. The boundary with the real economy is already significant: in December 2021, a shopping mall was sold for more than 4.3 million dollars to the company Republic Realm in the **TheSandbox**¹⁵. Meta Vice-President Vishal Shah said that *“the metaverse will remove many of the physical constraints we see on commerce today and make entirely new businesses possible,”* noting that the project would explore *“new types of ownership models and entitlements,”* including NFTs.¹⁶

This development of the Metaverse relies on **technological developments** such as virtual and augmented realities (AR/VR), head-mounted displays (HMDs), blockchain, 5G for high-bandwidth with 6G announced for the “Internet of Senses”, cloud, AI, the Internet of Things (IoT), and a continuing increase in computing power.

The extent and pace of these developments is massive. For example, Meta’s Next-Gen AI Supercomputer (“AI Research SuperCluster (RSC)”), once fully rolled out in mid-2022, will be the fastest in the world. Its computing power will be 5 exaflops (the fastest supercomputer in the world currently has a power of 0.4 exaflops)¹⁷. This is not just about computational volume; it also changes the typology of processing: graphics chip powerhouses such as Nvidia are at the forefront of these developments.

Helmets, lenses and googles are the main interface with the Metaverse. In 2014, Facebook invested \$2 bn in buying Oculus, whose CEO Andrew Bosworth became Facebook’s Chief Technology Officer. The Oculus VR app Meta was the most popular app in Apple’s App Store on Christmas 2021 in the US¹⁸. Apple is expected to release Apple glasses soon¹⁹. The consumer VR market is likely to jump from \$6,4 bn in 2021 to \$16,0 bn in 2026, with 70 million VR helmets used by consumers in 2026 (26 million in 2021), who will spend \$7.5 bn on VR games and other media. Gaming will continue to be responsible for about 90% of VR content spend²⁰. Elon Musk recently proposed a surgically implanted brain chip as a better alternative for full immersion in virtuality²¹.

The consumer market for VR headset is booming²²



In parallel, **evolving digital consumption applications** (gaming, avatars, attending sports/concerts, exercise, finance) and the **growing integration of digital in people’s life and in business** are already leading to accelerated demand. The interest in flexible working arrangements relying on digital applications is increasing, driven in part by the pandemic. This takes place in a wider context where **gaming could be described as the new digital paradigm**. For experts²³, most digital activities will mimic the existing logic and technologies of gaming, and this will fundamentally change how a wider public will interact with each other. The entertainment

industry already draws on many of the Metaverse’s basic characteristics (e.g. social and non-game experiences, such as virtual concerts, “metawear”, users as creators, virtual properties rights, AR/VR functionality, and in-game economies²⁴). The under 25s spend more of their time on-line on gaming platforms²⁵. As the merger and acquisition trend in the tech sector shows, most US and Chinese tech giants anticipated that the gaming sector will be key in reshaping the tech power structure. For example, in January 2022, Microsoft bought Activision Blizzard King for \$69bn, the largest gaming deal in history by far²⁶, in order to access competences, data, resources and customers.



Source : Statista²⁷

Significant investment is giving a boost to technological developments, although for the time being these are relatively limited in terms of their direct impact on the development of a real Metaverse. In 2021 Meta announced that it was investing \$10 billion in it²⁸. However the success of the Metaverse will depend not only on technological investment and development, but also on consumer demand for a range of services such as games and the expansion of homeworking beyond the pandemic. The Metaverse will also affect the future development of cultural products (e.g. concerts, movies, amusement parks, museums, on-demand TV, etc), which will need to innovate to survive and thrive.

Big tech companies are betting on this evolution. They want to ensure their own place in the

When?

The Metaverse could happen **within the next 10-15 years**³⁰, it will be a gradual process³¹. The components still need to be integrated and scaled up significantly. For the moment full telepresence does not exist. Extended reality tools are not fully pervasive, and latency remains an important factor on internet networks³². Some components might

Who?

The main global powers see the Metaverse as the next Internet battleground³⁴. US and Chinese companies in particular are at the cutting edge of

development of the Metaverse, ideally taking a lead over the gaming industry. A wide range of other companies, such as luxury fashion and streetwear producers²⁹, as well as musicians and social media influencers, are looking to compete for new revenue streams from virtual platforms.

For Meta, making the Metaverse a reality looks like a matter of survival. As there are virtually no technological barriers to enter the social networking market, Meta is the only US tech giant without monopoly control or a diversified market. Amazon's physical logistics and Cloud platform, the closed ecosystem of the iPhones, or Google's quasi-monopoly are difficult to replicate in the medium term.

develop more rapidly than others. Bill Gates predicts³³ that within the next two or three years most virtual meetings will move from 2D camera image grids to the Metaverse. He sees that "*the acceleration of innovation is just starting*" such as through the enhancement of audio to supplement 3D virtual communication.

the Metaverse and aim to enjoy first-mover advantage.

US, China and UK companies at the forefront of the Metaverse: where is the EU?

US companies	Chinese companies	Other companies
At the forefront: Meta (Facebook)	At the forefront: Tencent	
Others: • Epic Games • Roblox Corporation • Nikeland • Nvidia • Microsoft (Oddly silent: Google and Amazon)	Others: • ByteDance • NetEase • Bilibili (In China, tech companies have formed the Metaverse Industry Committee)	Dyson (UK) Aldin (Iceland) Sensorium (Russia)

(Sources: Euronews, South China Morning Post)

The Metaverse has become a new macro-goal of world tech giants.

In addition to Meta, a number of US companies (Nvidia, Unity, Roblox, and even Snap) are working on creating the infrastructure that is expected to serve as the basis for the Metaverse. But they still do not have an overall concept, and it is difficult to identify now which aspects of the different versions of the Metaverse will actually survive. But in order to compete with Meta, Microsoft has developed a number of key products for its Metaverse: VR helmet Hololens, investments in cryptocurrencies, 3D avatar for Teams, social media (LinkedIn, Github), the “Mesh” platform for virtual collaboration and gaming (hardware and platform).

China sees the Metaverse as an important development for consolidating its global technological dominance and boosting its digital industry. In November 2021, **China launched its first metaverse industry group**, the Metaverse Industry Committee, established under the state-supervised China Mobile Communications Association (CMCA)³⁵. ChineseTech Giants (social media Tencent, video gaming firm NetEase, search company Baidu³⁶), have joined the race, although the Chinese authorities keep a close eye on developments against the background of China’s regulatory crackdown on tech firms against speculation, monopoly or addiction.



[China sees the metaverse as the next internet battleground — Quartz \(qz.com\)](#)

Very limited data/analysis is available within the EU in relation to the application of the Metaverse. The EU has strong presence in the gaming sector. However, without adequate EU

infrastructure, most European Metaverse industries could end up being limited to providing consumer services (luxury brands...).

2. WHY AND HOW SHOULD IT BE A CONCERN FOR THE EU?

a. The need for a shared model

The Metaverse has the potential to change profoundly the respective role of states, private companies and individuals. There may well be a **struggle between three different approaches**:

- a **regulatory approach supported by states**, albeit with differences of emphasis on issues such as personal freedom, surveillance and protection;
- an approach pushed by **tech activists** who want to achieve a free, decentralised and open web for everybody; digital money and property rights will be embedded in automated protocols, whereas the existing web remains controlled by corporate giants and under surveillance by states;
- a **business-oriented and purely profit-driven model backed by the tech sector**, which aims to claim ownership of the Metaverse by controlling its components; they risk freeing

b. A battle between superpowers for influence in the making?

The **geopolitics of the Metaverse remains unclear**, but a **struggle for dominance between Western and Chinese models is possible**. A geopolitical race is already underway in the area of AI, with US and Chinese companies in the vanguard (a group of experts chaired by former Google CEO Eric Schmidt said China could soon replace the US as the world's "AI superpower"³⁷). Competition over the Metaverse is likely to follow. To implement Beijing's five-year plan released in March 2021³⁸, the City of Shanghai has already encouraged the use of the Metaverse in public services, business offices and other areas. But competition is likely to be as much about differences of approach as technological dominance (already access to the Chinese-owned Tik Tok social network service varies depending on whether the consumer is Chinese or not). Regional Metaverses could also emerge. It will be interesting to see how Russia reacts to the Metaverse, not least given that more than a third of

themselves from many of the rules which apply in the real world, yet could assume powers in the Metaverse which are normally the prerogative of the state; they could reproduce the economy of attention model on a larger scale; the mastery and control of algorithms, the automation of monetary and economy transactions (blockchain, cryptocurrencies, tokens and NFT's), the design of policy content adding to the blurring of traditional borders, creating entirely new jurisdictions, calling into question the ability of states to exercise (supra)national oversight.

In general, the absence of borders and rules in the Metaverse is likely to constitute a further challenge to the existing **notion of territorial sovereignty**. President Erdogan recently asked for studies on the metaverse, following the purchase in game-based Metaverse platforms of thousands of virtual colonies in Turkey, most of them located in the historic former capital of Istanbul.

Russians surveyed think that it will do more harm than good. Only 9% of respondents think the opposite, according to the Russian Public Opinion Research Center³⁹. India could also be an important player⁴⁰.

Overall, European supply is expected to grow relatively slowly. With multiple languages content sharing, the absence of a smartphones industry, and differences between Member States over the adoption of 5G, while US-China rivalry for leading on 6G has already started⁴¹, the EU risks ending up as a "milk cow" for non-EU companies. As far as human resources are concerned, Mark Zuckerberg has announced the recruitment by 2026 of 10,000 people in Europe to build its Metaverse⁴². The EU should have serious concerns about these sorts of recruitment campaigns, which risk siphoning off tech talent for AR/VR in line with what happened in the AI sector and other key technologies.

c. New opportunities as well as an expansion of existing digital challenges

The Metaverse will have a major impact on the way we define but also protect our identity, reputation, privacy and data. It has the potential to create **new opportunities** in many sectors such as healthcare⁴³, education, professional training or industry⁴⁴. But it could also accelerate and accentuate the downsides of the digital revolution and the use of social media. Issues such as privacy protection, misinformation, hate-speech, polarisation, cybersecurity, addiction and market gatekeeping are likely to become even greater challenges in the Metaverse. In practice, we will be confronted with a very basic challenge of proving that we are who we say we are given the multiplication of possibilities to forge facial features, footage and voice. In general users are likely to be providing more information about themselves than they do today (including for example insights into their emotions through visual interpretation of facial muscles). This is likely to

require **new ways of ensuring the protection of personal data and privacy.**

Questions of control, content moderation, and copyright infringement will assume much greater importance when it comes to **values promotion**, especially if the Metaverse is controlled by a state or a company. Political destabilisation could become a growing risk, as the Metaverse becomes the source of an ever-increasing amount of data. This raises real questions about the manipulation of emotions and the protection of privacy. Moderating user behaviour "*at any meaningful scale is practically impossible*" according to Meta's virtual reality boss, Andrew Bosworth⁴⁵. This could have a **damaging effect on democracies**. If the US election playground was Facebook in 2008 and Twitter in 2016 and 2020, could the metaverse be the place to be elected in 2028?

Politics in the Metaverse

Already in 2007 cyber vandals wrecked the John Edwards campaign virtual HQ

Back in 2007-2008 some politicians or their supporters started setting-up campaign HQs on Second Life. This was the case of the French presidential candidates, notably Sarkozy (who owned a complete island) but also Le Pen and several US presidential candidates, including Clinton, Obama, Edwards and McCain. Even if there is no evidence of any impact on visitors, it opened the debate over political activities on platforms such as Second Life also triggered by one of the **first examples of political violence on a virtual platform**. Edwards' Second Life virtual HQ was attacked and plastered with obscenities and Marxist/Leninist posters and slogans. Several years later, another US election year, large number of pro and anti-Trump political billboards appeared in trafficked areas of Second Life. This time, Second Life reacted by updating its advertising rules and restrictions and prohibiting content considered "political in nature".

There is already much debate on the **future of work**⁴⁶. The Metaverse could accelerate trends resulting from the digitalization of service work (a PwC report predicts that nearly 23.5 million jobs worldwide could be using AR and VR by 2030 for training, meetings or to provide better customer service⁴⁷). Whilst AR/VR might offer more realistic and productive virtual meeting spaces than current 2D platforms, it might also produce an increase in psychological effects, increased job competition, and less emphasis on location. People are unlikely to want to spend days wearing cumbersome headsets to attend virtual meetings, but lighter, cheaper and more sophisticated hardware, either in

partial form or in full immersion, could make the experience much more acceptable. The Metaverse could also be the source of **new social inequalities**, given the associated costs as well as the level of expertise and knowledge needed to access and use the virtual world.

From a more **psychological** perspective, the multiple personas and avatars that we will be using in the virtual world, and which will become a key determinant of who we are, risk creating a disconnect with reality. If people are able to customize their 3D hyperrealistic virtual human avatars, or alter, filter, and manipulate their digital

identities, there is a worrying risk of generating body dysmorphia, selfie dysmorphia, and eating disorders. More positively, simulations could offer new opportunities to people with disabilities to recover control of their bodies during the time they are connected to VR, and even develop opportunities for heightened real-life experience in the light of the further developments in connectivity between virtual reality and the real world. It could also challenge our notion of death, by resurrecting in the Metaverse avatars of those who have already passed away⁴⁸.

d. A race to build and legislate this new market place?

The Metaverse will have an impact on how we acquire, own, sell and add value. This will not happen without the existence of a system capable of checking the owners of virtual assets in the Metaverse. And new challenges will arise in the areas of **consumer protection, including for financial services, intellectual property rights, litigation and taxation**.

But more importantly, the Metaverse could increase risks to our **safety and security**. New crimes could emerge in an immersive dimension where we might find ourselves spending an increasing share of our time. We are already seeing the impact of this in the area of **criminal law in particular, but**

Finally, the Metaverse will have an impact on the **environment** and our capacity to fight **climate change**. Although it could reduce the need for mobility for both private and professional purposes, the extremely heavy footprint of digital infrastructure and the massive computational power and associated energy consumption needed to create a virtual reality are a source of serious concern.

possibly also civil law (see box below). Legislators are likely to be faced with new challenges in relation to certain aspects of privacy laws in order to prevent all forms of cyber violence, from cyberbullying to the protection of avatar integrity.

The way in which the Metaverse is likely to revolutionise the digital and the physical world, and how they relate to each other, will require a reassessment as to whether existing **legislation is still fit for purpose. New tailor-made policy tools as well as innovative political thinking might need to be developed, not least to clarify the very notion of jurisdiction in a virtual space.**

Virtual crimes are becoming a more serious and concrete threat LambdaMOO in the early 90's

Way before the Metaverse became trendy, back in the 90's Multi User Domains (MUD) offered access to text-based worlds with no graphics, where users could interact together in separated "rooms". Despite their basic settings, these MUDs already show the very concrete impact of "virtual" crimes. LambdaMOO was one of the most popular of these text-based worlds. David Chalmer, in his book, "Virtual Worlds and the problems of Philosophy"⁴⁹, refers to a situation where one of the users named Mr. Bungle, deployed a "voodoo doll," a **tool that produced text making some users perform actions of a sexual and violent nature toward others**. These users were horrified and felt violated. Much debate followed among the LambdaMOO community about how to respond to such acts within the virtual world. As a result Mr. Bungle was banned from the MUD. Months after the virtual assault, one of the victims was interviewed and was still under shock. This is not a unique anecdote: **Second Life reported several thousands of abuses per day**⁵⁰. Other similar events show that, whilst not fully comparable, what happens in virtual worlds, can feel very real to the victim of a crime. And this can only get worse with more immersive technology and stronger identification of users with their avatars.

Whilst the virtual reality market is still at an early stage, those who act quickly and take the lead in **standard-setting** on the Metaverse(s) will gain leverage and dominance over other operators in the market. Standards will need to cover not only interoperability and openness, but also the way in which the Metaverse is constructed and is used. Standard-setting is a strategic issue since it is a key element in determining competitiveness as well as

Is the EU toolkit adapted to this new - virtual - reality?

It is unclear if the current EU toolbox is fit for the challenge of responding to the new realities brought forward by the Metaverse. According to Vice-President Margrethe Vestager⁵², the Commission does not want to add provisions for the “metaverse” in the ongoing negotiations on the “Digital Markets Act” (DMA) and “Digital Services Act” (DSA). Although the DMA deals with aspects of competition law, Vestager announced that at this stage, there would only be a process of monitoring “There will be a marketplace where someone may have a dominant position,” (...) “Things are happening that we need to be able to follow.” She told Politico in January 2022 that: “We’re trying to figure out how to ask the right questions” to the companies⁵³. It would be useful to assess if current legislation (privacy, competition, broadband-related issues...) or future legislation such as the AI Act could apply to the Metaverse.

The German competition authority recently modernised its abuse control instrument to turn it

promoting values. Its **increasingly horizontal dimension** (AI, data protection or cybersecurity) makes it more challenging to maintain influence in this area. In a recent communication, the Commission notes that private and non-European industry-led consortia are leaner and faster in developing standards, and that there is also growing politicisation of internet standardisation⁵¹.

into more focused, proactive and digital competition legislation 4.0⁵⁴. According to the German authority, “We will be allowed to take preventive measures which can contribute decisively to curbing the market power of the large digital platforms. The German lawmaker has assumed an international pioneer role in this area since the legislative process at the European level, where similar tools are being discussed, is still at an early stage.” In the UK, the Government has warned⁵⁵ that legislation would apply to the Metaverse whatever form it took in the future⁵⁶. For companies, **relevant regulation is already under scrutiny in the US and other part of the world**, in particular in the areas of **e-commerce and privacy law**⁵⁷. In China, some expect the internet itself to be developed with Chinese characteristics: content controls, monitoring, censorship and no scope for anonymity⁵⁸.

3. CONCLUSION

Whether the Metaverse happens sooner or later, and even if it turns out to be much more limited than might currently be imagined, its effects are already being felt. The EU and its Member States should take this development seriously if they are to avoid being caught by surprise in a few years, when there will be far fewer possibilities to promote and defend a European approach to this new world. Europe should also be setting the conditions needed for Europe to benefit fully from the new opportunities opened up by the Metaverse. These include enabling the **emergence of EU "champions"** and ensuring control over the key **enabling technologies**. Some large powers, notably the US and China, but also the UK, as well as the big tech companies themselves, have clearly understood that **those who take control of the building blocks of the Metaverse now are set to become its future gatekeepers**.

As well as the issue of market dominance, other issues need to be addressed. Who will **set and police safeguards in this virtual world**? If the Metaverse succeeds in becoming a marketplace offering new ways to transact business, will this create a paradigm shift in how competition policy for the digital economy is conceived (collusion, pricing of products, interoperability, etc.)? Will there be a system of governance which is subject to some form of democratic legitimacy? What will be the impact on individual freedom of a system that is panoptic (offering continuous and total surveillance), driven by sensors which can record the slightest emotion? In short, **should we be ready to adopt an approach to the governance of the Metaverse which is tailor-made, innovative, and quite distinct in both its tools and methods from that of the "traditional" Internet?**

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