

Communication COM(2023) 442 of 11 July 2023 for an EU initiative on Web 4.0 and virtual worlds: a head-start in the next technological transition

EU-METAVEVERSE STRATEGY: WEB 4.0 & VIRTUAL WORLDS

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LONG VERSION

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A. Key elements of the EU proposal

1 Context and Objectives

- ▶ Virtual worlds – commonly known as the “metaverse” – are persistent, immersive 3D-environments based on technologies such as augmented reality (AR) and virtual reality (VR) [for definitions, see Section 2], which blend physical and digital worlds in real-time for various purposes such as learning, socialising, and entertainment.
- ▶ Over the past few years, the European Union (EU) has started to develop a legislative framework for the digital economy that already applies to some aspects of these emerging virtual worlds, most importantly
 - the Digital Services Act [[Regulation \(EU\) 2022/2065](#), see [cepPolicyBriefs 22/2021, 23/2021 and 24/2021](#)] and the Digital Markets Act [[Regulation \(EU\) 2022/1925](#), see [cepInput 2020](#), [cepInput 12/2021](#), [cepPolicyBrief 14/2021](#), [cepPolicyBrief 15/2021](#)], which establish a system of obligations especially for large online platforms that will protect the rights of EU citizens and firms operating in virtual worlds offered by designated platforms,
 - the Data Governance Act [[Regulation \(EU\) 2022/868](#), see [cepPolicyBrief 6/2021](#)] and the Data Act [[Proposal for a Regulation COM/2022/68](#), see [cepInput 3/2022](#), [cepPolicyBrief 11/2022](#)], which establish rules for data-sharing and give users control over the data generated by their connected devices, including those necessary for accessing the metaverse, and
 - the General Data Protection Regulation [[Regulation \(EU\) 2016/679](#), see [cepPolicyBrief 01/2020](#)], which is “technologically neutral” and thus “fully applies to the processing of personal data in virtual worlds” [p. 5].
- ▶ Like any large-scale technological transition, however, the shift towards the metaverse brings both
 - new societal and economic opportunities for Europe, such as [p. 2]
 - efficient interaction between humans and machines in all EU industrial ecosystems through digital twins, which virtually represent a product or firm, based on real-time data,
 - improved medical diagnosis and therapy (see [cepInput 8/2023](#)), and
 - immersive cultural experiences, i.e. 3D-environments which appear to surround the user
 - but also certain legal, environmental, and economic risks, such as [p. 3]
 - novel challenges to fundamental rights, privacy, and cybersecurity,
 - legal uncertainty regarding responsibility, liability, and contractual rules, and
 - the negative environmental impact of metaverse devices, data centres, and telecommunication networks.
- ▶ To maximize the opportunities and minimise the risks, the Commission wants to gain a first-mover advantage by formulating a strategy and proposing Actions for a Web 4.0 and virtual worlds that
 - “reflect EU values and principles and fundamental rights” [p. 4],
 - are based on “open and highly distributed technologies and standards” [p. 4], i.e., interoperability, and
 - place “sustainability, inclusion and accessibility” [p. 4] at their technological core.
- ▶ The three pillars for action are derived from the Digital Decade policy programme [[Decision \(EU\) 2022/2481](#)]:
 - Skills [see Section 3],
 - Business [see Section 4], and
 - Government [see Section 5].

2 Definitions: What are the differences between Web 3.0, Web 4.0, virtual worlds, and the metaverse?

- ▶ The evolution of the Internet since its inception in the 1990s is typically categorized into distinct phases of the Web [[SWD\(2023\) 250, part 1](#), pp. 32-73].
- ▶ Web 3.0 describes the current status which is a decentralised and artificial intelligence (AI)-based web where “end-users can create, share and connect content through search and analysis based on the capability to comprehend the meaning of words” [[SWD\(2023\) 250, part 1](#), p. 32].
- ▶ Web 4.0 is “the next generation of the Internet” where “physical and digital worlds will be seamlessly blending, enabling more intuitive and immersive experiences” [[SWD\(2023\) 250, part 1](#), p. 32], making use of
 - the internet of things, which refers to the wide-spread diffusion of smart devices with multiple sensors,
 - ambient intelligence techniques, which allow these smart devices to interact with their environment, including human users, through advanced AI, and
 - distributed computing facilities, which might even allow machine learning to take place locally on devices.

- ▶ Virtual worlds
 - are part of the transition from a static 2D-internet to a “more generalised use of 3D-environments” [[SWD\(2023\) 250, part 1](#), p. 33] that are accessed through enhanced user interfaces like VR headsets, and
 - require multiple technical building blocks for smooth integration of digital and real objects, including
 - AR, a technology that overlays digital information or virtual objects onto the real world,
 - VR, which immerses users in a completely computer-generated, interactive 3D environment,
 - distributed ledger systems, also known as a blockchains, for transactions in the metaverse to be validated and recorded across a network of computers, thereby enabling trust and verification,
 - non-fungible tokens (NFTs), a unique and non-interchangeable unit of data stored on a blockchain, in order to represent and prove ownership of unique digital assets, such as virtual real estate, and
 - computing, including cloud and edge capacities, as promoted by the Gigabit Infrastructure Act [[COM\(2023\)94](#)].
- ▶ Metaverse denotes an “interoperable network” of virtual worlds [[SWD\(2023\) 250, part 1](#), p. 86]. Although the Commission avoids this term in its Communication, it is frequently used in the literature and in other jurisdictions. Key characteristics are massive scale, real-time rendering, and continuity of data. Stakeholders differentiate between industrial, gaming-oriented, enterprise, and consumer-oriented metaverses [see [SWD\(2023\) 250, part 1](#), p. 102].

3 Skills: How can Europe develop a metaverse talent pool?

- ▶ The development of virtual worlds in Europe requires society-wide awareness and digital skills, but there is
 - insufficient user acceptance, according to the Citizens’ Panels [[SWD\(2023\) 250, part 2](#), pp. 5, 9],
 - a lack of specialists in core virtual world technologies [p. 6], such as AR and VR, and
 - a “severe gender imbalance” [p. 6] in the information and communication technology sector.
- ▶ To address these challenges and improve digital literacy and skills in Europe, the Commission wants to
 - support skills development for virtual world technologies via the Digital Europe programme and for creators of digital content and audio-visual professionals via the Creative Europe programme [Action 1, announced for Q3 2023],
 - promote the EU as an attractive destination for highly skilled specialists from non-EU countries [Action 1, announced for Q3 2023],
 - promote the eight principles for fair virtual worlds from the Citizens’ Panel [Action 2, announced for Q4 2023], i.e. freedom of choice, sustainability, human centredness, health, education & literacy, safety & security, transparency, and inclusion [[SWD\(2023\) 250, part 2](#), p. 7],
 - support research on the impact of virtual worlds on people’s health through the EU program Horizon Europe [Action 2, announced for Q4 2023],
 - develop a public toolbox covering the use of trustworthy digital identity and digital wallet solutions, virtual transactions, digital assets, privacy, cybersecurity, and tools for content verification [Action 3, announced for Q1 2024], and
 - develop resources on VR for young people under the Better Internet for Kids strategy [[COM/2022/212](#)] [Action 3, announced for Q1 2024].

4 Business: How can Europe develop its own metaverse ecosystem?

- ▶ While Europe has the industrial potential to utilize the metaverse by drawing on its regional hubs with expertise in 3D modelling, VR and AR content, gaming, and audio and optical technologies, the EU ecosystem
 - is fragmented, which makes it burdensome, especially for SMEs and start-ups, to establish collaborations,
 - faces challenges related to the mainstream uptake of virtual world technologies, since this would require substantially more computing capacities at much lower latencies [[SWD\(2023\) 250, part 1](#), p. 36], and
 - lacks access to sufficient finance and public funding, especially in relation to industrial scenarios.
- ▶ To address these gaps and foster a European Web 4.0 industrial ecosystem, the Commission wants to
 - explore the launch of a new European Partnership under the EU’s Horizon Europe program that would build on the EU’s major investment in [Action 4, announced for Q1 2024]:
 - all key cutting-edge technologies and applications at the heart of virtual worlds,
 - common European data spaces, and
 - the Next Generation Internet initiative, which funds digital commons,
 - support EU cultural and creative industries with testing VR business models through the EU’s Creative Europe program [Action 5, announced for Q1 2024],
 - facilitate the collaboration between virtual world developers and industrial users in so-called virtual worlds hubs by leveraging [Action 5, announced for Q4 2023]:

- the VR/AR Industrial Coalition that brings together various industry players along the value chain,
- European Digital Innovation Hubs that offer access to testing, experimentation, and training opportunities, especially for SMEs and the public sector, and
- the Enterprise Europe Network that helps businesses to innovate and grow on an international scale,
- promote the use of virtual worlds regulatory sandboxes by identifying specific topics where experimentation should be prioritised and to ensure a coordinated approach within the EU [Action 6, announced for Q2 2024],
- create a toolbox against counterfeiting in virtual worlds for holders of intellectual property [Action 6, announced for Q4 2023],
- explore the potential of new digital cooperation models [Action 6, announced for Q4 2023], and
- support the development of standards for open and interoperable virtual worlds that enable the seamless use of avatars, data, and virtual assets across networks and prevent “future gatekeepers of virtual worlds” [p. 11] from exploiting network effects to create market entry barriers for European SMEs and start-ups [Action 6, announced for Q4 2023].

5 Government and governance: How can Europe shape the metaverse?

- ▶ Robust governance at multiple levels has a key role in leading the way towards a Web 4.0, but
 - the uptake of virtual worlds for delivering public services across the EU is too “slow” [p. 13],
 - the scale of the technological shift necessitates new forms of governance, including closer cooperation between the Commission and Member States, and
 - more international engagement is needed to ensure that virtual worlds are shaped as an “open, secure space, respectful of EU values and rules” [p. 14], which includes finding common ground on
 - technological issues, such as standards for interoperability, identity management, and connectivity, and
 - practical issues, such as avoiding disinformation and protecting freedom of speech and privacy.
- ▶ To address these challenges and help to develop the emerging economic and regulatory framework for the metaverse, the Commission wants to
 - support public flagship projects with financing from the Horizon Europe and Digital Europe programmes and through European data spaces (e.g., European CitiVerse will help to optimise spatial planning, European Virtual Human Twin will digitally replicate the human body) [Action 7, announced for Q4 2023],
 - encourage European Digital Infrastructure Consortia (EDICs) in areas relevant to virtual worlds and Web 4.0 as EDICs can be used by Member States to speed up the setup of multi-country collaboration projects [Action 7, announced for Q4 2023],
 - establish an expert group to share best practices on the development of virtual worlds among Member States [Action 8, announced for Q4 2023],
 - engage with internet governance institutions to design open and interoperable virtual worlds [Action 9, expected from Q4 2023 onwards],
 - create a technical multi-stakeholder forum to address “essential aspects of virtual worlds and Web 4.0 that are beyond the remit of existing internet governance institutions”, such as [Action 9, expected from Q1 2024 onwards]
 - the virtual world’s interoperability system, and
 - the essential components underpinning the functioning of virtual worlds such as rights management, transactions in virtual worlds, and identity management, as well as topics related to the industrial uptake of virtual worlds solutions (p. 14), and
 - monitor the development of virtual worlds across all industrial ecosystems to [Action 10, expected from Q1 2024 onwards]
 - identify and support new opportunities for growth and innovation,
 - better understand and encourage emerging practices and forms of cooperation such as digital cooperatives and the role of decentralised autonomous organisations and
 - identify and respond to challenges emerging from the use of virtual worlds especially in relation to ethics, societal well-being, fundamental rights, important objectives of general public interest in a democratic society, and consumer protection.

B. Political Context

Options for exerting political influence

Directorates General:

DG Communications Networks, Content & Technology

Committees of the European Parliament: Internal Market and LIBE, Rapporteur Internal Market Brando Benifei (S&D Group, IT); Rapporteur LIBE: Dragoş Tudorache (Renew, RO)

C. Assessment

1 Economic Impact Assessment

Web 4.0 and virtual worlds offer numerous opportunities for companies, and advantages for users, but also pose risks, e.g. for competition and cyber-security. To ensure that the benefits of these digital technologies are realized as fully as possible while avoiding the risks, it is necessary to adapt the economic policy framework at an early stage. Otherwise, powerful American digital companies will set the standards in this domain and protect their market position, both of which will be very difficult to change later. Moreover, in this scenario, these new technologies might not adequately reflect European values, such as by not adequately protecting consumer privacy. The policy framework must also ensure that the required investments in infrastructure are made in sufficient quantity and with enough speed. Most notably, for these technologies to flourish in the EU, substantial investments are needed in low-latency, high-bandwidth 5G and 6G networks and technologies such as edge computing. However, according to the EU's first report on the State of the Digital Decade, the EU is "still far from achieving the Digital Decade connectivity targets", with fibre networks only reaching 56% of households and the deployment of 5G stand-alone networks lagging behind.¹ The underlying conditions must be right for the proper development of a European metaverse ecosystem, not least to ensure legal predictability. Finally, sufficient skilled workers must be available so that European companies can actively shape Web 4.0 and virtual worlds instead of leaving this to American digital companies. This Communication is therefore a necessary means for the EU Commission to address the issues of Web 4.0 and virtual worlds.

The Communication presents an initial strategy for dealing with the development of the metaverse and its impact on various sectors in Europe, including healthcare, tourism, and industrial manufacturing. Europe possesses unique strengths in the field of metaverse development, such as software giants, globally recognized consumer brands and cultural artefacts, and innovative gaming companies from Scandinavia. From an economic policy perspective, however, the strategy contains several issues, which may hinder its effectiveness in establishing Europe as a significant player in the metaverse ecosystem.

1.1 Confusing terminology

One problem in dealing with Web 4.0 and virtual worlds is that there is no generally accepted or agreed definition of these terms. This is also reflected in the Communication and the accompanying Staff Working Document which use ambiguous terms such as "Web 3.0", "Web 4.0", and "virtual worlds," while omitting more established expressions like the "metaverse". The concept of "digital twins", for example, is initially framed as part of the older Web 3.0 but later given as an example of the new transition to Web 4.0 [cf. definition of Web 3.0 on p. 1 with example of Web 4.0 applications on p. 4]. Similarly, the definition of virtual worlds (see Section A.2) only partially aligns with the standard literature.² Tellingly, the accompanying Staff Working Document deals primarily with Web 4.0, whereas the Communication is clearly about virtual worlds in a narrow sense. The draft report by the Committee for Internal Market and Consumer Protection uses the terms virtual world, metaverse, and Web 4.0 interchangeably [2022/2198(INI), p. 7]. The rapporteur, Pablo Arias Echeverría, notes "the lack of a universally recognised or agreed definition of virtual worlds and considers that further work is needed in order to rectify this" [2022/2198(INI), p. 4]. This confusing terminology could lead to a lack of common understanding and hinder international interoperability. Some have speculated that the Commission avoids the term "metaverse" after the company formerly known as Facebook renamed itself "Meta", and uses neologisms instead in order to position itself as a leader that is taking a different regulatory path.³ Others argue that choosing the "Web 4.0" terminology is a strategic move by European regulators, who want to avoid moving into the decentralised Web 3.0 model for web development in light of the recent troubles experienced by blockchain-centric technological platforms like the exchange company FTX.⁴ However, defining clear and universally accepted concepts is crucial for fostering international cooperation and standardization. In particular, the ambiguous terminology clashes with the EU's

¹ European Commission, 2023 Report on the state of the Digital Decade, [Shaping Europe's digital future \(europa.eu\)](https://european-council.europa.eu/media/en/press-communications/infographic/infographic_shaping_europe_s_digital_future_2023.pdf), p. 11.

² See: Ball, Matthew, *The Metaverse: And How It Will Revolutionize Everything*, Liveright Publishing Corporation, 2022, p. 57.

³ See: [Europe's agenda for... not 'the metaverse' - POLITICO](https://www.politico.com/news/2022/07/27/europe-agenda-for-not-the-metaverse/).

⁴ See: [Will the EU's Web 4.0 Strategy 'Lead' Global Metaverse Efforts? - XR Today](https://www.xrtoday.com/news/will-the-eu-s-web-4-0-strategy-lead-global-metaverse-efforts/).

stated objective of fostering an “open, interoperable” metaverse, as achieving the latter will require some of the decentralised Web 3.0 technology.

1.2 Lack of regulatory influence and sovereignty

Focusing on developing open standards and an interoperable metaverse is highly welcome from an economic policy viewpoint, as it reduces externalities and helps to prevent the emergence of new “metaverse gatekeepers” that can exploit network effects and economies of scale. However, it is unclear how Europe – and by extension EU firms – should go about gaining sufficient influence and credibility to promote open standards and contribute to their concrete development. The metaverse standards, which influence, for instance, asset portability, are predominantly shaped by non-EU firms like Meta, Epic Games, Unity, and others based in the United States and China. The draft report by the Committee for Internal Market and Consumer Protection points to the “challenges posed by the accumulation of power by foreign digital giants” and to “the EU lagging behind in the global digital race” and notes that “most companies leading the development of virtual worlds are established outside the EU” [2022/2198(INI), pp. 3, 4]. This asymmetry and concentration of influence raises concerns about the EU’s ability to actively shape global metaverse standards, and potentially limits its competitiveness in the market for metaverse standards. In order to achieve at least some influence, the Commission should therefore ensure that the EU is influentially represented in international organisations and initiatives working to develop common standards for the metaverse, including the Open Metaverse Alliance for Web3 (OMA3), the World Wide Web Consortium (W3C), the Open Metaverse Foundation (OMF), and the “Defining and Building the Metaverse Initiative”, set up by the World Economic Forum.⁵ A good example of the Commission’s new approach to shaping the international governance of the metaverse is its recent participation at the Internet Governance Forum, a key venue for debates on internet policy issues, in Kyoto in October 2023. The Commission’s participation focused on emerging virtual worlds, notably through a dedicated panel entitled “The Virtual Worlds we want: Governance of the future web”, which called for technical standards enabling “open, stable, free, inclusive, global, interoperable, reliable, secure, and sustainable” virtual worlds.⁶ As technical standards for virtual worlds might be of strategic importance (see below), the EU should also ensure more transatlantic policy coordination regarding standardisation in the EU-US Trade and Technology Council (TTC).

In times of geopolitical tensions and overt EU efforts to achieve greater sovereignty and resilience in all its policy areas, including digital and technology policy, the economic assessment of this type of asymmetry could be extended beyond pure efficiency considerations and questions of regulatory influence on the development of standards. For instance, as described in the EU’s Digital Decade Policy Programme 2030, the general objective is to become a more digitally sovereign, resilient, and competitive EU.⁷ From this perspective, it is worth asking whether there could be a strategic interest in promoting a decidedly European metaverse ecosystem, either to defend European values in virtual worlds or to gain autonomous access to this new stage of the internet. Next-generation virtual reality headsets are a case in point. The recent releases of Apple’s Vision Pro, which sets technical standards and with its high price is likely to be aimed primarily at industrial customers, and Meta’s Quest 3, which is significantly cheaper and will serve the mass market, clearly show that access to the metaverse via XR headsets will probably be monopolised by American or Chinese (ByteDance’s Pico 4 includes similar features) companies. This situation is comparable to the gatekeeper role of non-European companies in the field of social media. Another critical area concerns cloud computing, a market that is almost completely dominated by US providers (such as Microsoft, Amazon, and Google) – also in Europe. As significant parts of the metaverse infrastructure will rely on edge computing connections in mobile communications and will not therefore be viable without a cloud connection, there is also the threat of a geopolitically problematic dependency in this area, again conflicting with the EU’s objective of strategic sovereignty in the digital sector. Overall, if the promises about the metaverse’s economic potential are credible, there are thus good arguments to be made – from a geopolitical perspective – for promoting XR-headsets, gigabit infrastructure, especially related to the development of edge nodes,⁸ and other technical means of accessing the metaverse through European channels, as there might be strategic and economic spill-over effects from these metaverse-related innovations. However, in order to complement the necessary private investment with public investment, clear market failures must be identified, and the applicable State Aid rules have to be respected.⁹ Moreover, it should be emphasised that trade relations with the US continue to be quite frictionless and the full development of the metaverse is still ten

⁵ See: [Interoperability in the Metaverse | World Economic Forum \(weforum.org\)](https://www.weforum.org/).

⁶ [IGF 2023 Open Forum #45 The Virtual Worlds we want: Governance of the future web | Internet Governance Forum \(intgovforum.org\)](https://www.intgovforum.org/).

⁷ Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030, OJ L 323, 19.12.2022, p. 4–26.

⁸ For the current state of edge cloud offers in Europe, see: ETNO, The State of Digital Communications 2023, February 2023, [Reports \(etno.eu\)](https://etno.eu/).

⁹ See, e.g., the revised Guidelines on State aid for broadband networks, OJ C 36, 31.1.2023, p. 1–42.

to twenty years away. Finally, it is worth bearing in mind that the extent to which the metaverse will prevail over other concepts, such as the ambient intelligence techniques referred to by the Commission, remains unclear.

1.3 Lack of competence in fostering skills development

The strategy's approach to skills development appears to be top-down rather than recognizing the bottom-up nature of talent attraction. Partly, this is born out of necessity, as the EU lacks some legal competencies in the area of labour and migration. However, skilled computer scientists are, above all, attracted to innovative firms with cutting-edge technologies, and these are unlikely to be generated by bureaucratic programs or visas. The EU should foster an environment that encourages innovation and attracts talent organically, and this requires more funding opportunities (see Section 1.4). In addition, cooperation with the Member States must be increased, as they possess the core legal competencies when it comes to migration. The EU Digital Decade program envisions that Member States should collectively more than double the average increase of ICT specialists in the coming years,¹⁰ but this is easier said than done. Again, attracting (and keeping) talented individuals not only requires better working conditions, both in a monetary and a non-monetary sense, but also a more positive business climate overall.

1.4 Competition policy and funding aspects are omitted

The lack of explicit proposals in the strategy regarding competition policy, and especially merger control, is noteworthy, given that the Commission's initial interest in the development of virtual worlds seems to have been driven by the competition worries of Single Market Commissioner Thierry Breton, who publicly vowed to avoid a "new Wild West or new private monopolies" in the metaverse.¹¹ While the EU has certainly enacted numerous new rules for digital markets in recent years, ranging from updates of the traditional competition policy toolkit to the DMA and the DSA, the metaverse's emergence might enable new gatekeepers and new competition problems, including novel ways of bundling, discriminatory practices, a lack of interoperability, and anti-competitive information sharing.¹² Moreover, the dynamic virtual worlds will complicate the detection of market power in merger cases, challenging competition authorities to address these concerns with existing tools. In particular, the fact that the EU Merger Regulation (EUMR), including Art. 22, is currently not well equipped to handle so-called "killer acquisitions" (in contrast to the Member State level)¹³, raises concerns about the potential acquisition of EU-based metaverse companies by non-EU players. This has happened repeatedly in the past: the virtual world-building game Minecraft, originally developed by a Swedish company, was acquired by Microsoft for EUR 2.5 billion in 2014, Beat Games was acquired by Facebook's Oculus division, and, most recently, the Commission cleared Microsoft's purchase of Activision. As it is currently difficult to predict whether similar situations might happen again in the future, and whether new issues of dominance, such as closed platforms, will emerge in the metaverse, EU policymakers should concentrate on enforcing current competition policy norms and potentially updating existing regulations, such as the EUMR and the DSA, before considering specific competition policy legislation for the metaverse (e.g. in the form of a "Metaverse Act").¹⁴ However, this is not sufficient in itself as even independent EU firms still need enough capital to scale their metaverse products. EU-based VR companies have a bigger struggle to raise funding than their US-based peers. This might be addressed, at least in part, by some of the strategic investments coming through the EU's Digital Decade Policy Programme 2030 (see Section 1.3).

1.5 Addressing regulatory gaps

The strategy overlooks the need for a clear regulatory framework for the metaverse. Some parts of the strategy document read like a summary of existing regulations and existing funding schemes, in order to give the impression that the EU is already active in this area and that emerging threats are sufficiently covered. However, virtual worlds will introduce new economic models, such as NFT markets and decentralized computing, requiring

¹⁰ European Commission, 2023 Report on the state of the Digital Decade, [Shaping Europe's digital future \(europa.eu\)](#), p. 26.

¹¹ Blog of Commissioner Thierry Breton (2022), "People, technologies & infrastructure – Europe's plan to thrive in the metaverse", https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT_22_5525.

¹² See: [Contemplating the metaverse: Opportunities and risks \(linklaters.com\)](#).

¹³ The key problem is that "killer acquisitions" typically do not meet the turnover-based thresholds of the EUMR. In contrast, some Member States, like Germany and Austria, have introduced size-of-transaction tests. The EU therefore aims to circumvent this problem by using the power of Member States to refer transactions, so-called Art. 22 referrals. However, the Commission's assertion of extended jurisdiction under Art. 22 has been labelled "unlawful, unconstitutional, and ultimately unsustainable" by competition lawyers, raising concerns that this tool will not be suitable for handling numerous metaverse-related killer acquisitions. See: [Killer Acquisitions and Article 22: A Step Too Far? - Kluwer Competition Law Blog](#).

¹⁴ See similar assessments in: [Platform antitrust/regulation in 2023: Our eleven predictions - The Platform Law Blog](#); [Innovation Should be the Priority as the EU Tip-Toes into the Metaverse – Center for Data Innovation](#).

legal clarity. GDPR compliance is also vital to address privacy concerns but will create novel legal questions in metaverse-settings. While the Communication assumes that the GDPR, as a technology neutral regulation, will be applicable without problems, the rapporteur argues that “the General Data Protection Regulation might not be enough to address the challenges posed to data protection in virtual worlds” and “calls for greater attention to be paid to the data protection implications of user-generated content” [2022/2198(INI), p. 5]. Before developing comprehensive regulations to ensure sustainable and secure growth of the metaverse, the EU should focus on ensuring that there will be robust enforcement of existing legislation in the metaverse. For this, the Commission must equip new departments, e.g. related to the DMA and the upcoming AI Office, with sufficient numbers of experts.

1.6 Holistic approach required

The strategy document appears disjointed and lacking a cohesive leitmotif to tie its components together. Some of the Commission’s Actions remain very vague (see for instance Action 4: “explore the launch of a new European Partnership”). Similarly, the accompanying Staff Working Document, which covers more than 100 pages, reads like a large glossary and contains numerous concepts, such as ambient intelligence, NFTs, and smart contracts, whose relevance for the metaverse is still unclear. To create a viable and realistic strategy, the EU should present a more comprehensive perspective with specific and actionable recommendations.

2 Legal Assessment

None of the Actions announced in the Metaverse-Strategy violate a priori the division of legislative competences or constitute an infringement of the principles of subsidiarity or proportionality with respect to Member States. In the end, however, it will depend on the concrete design of the individual legislative measures.

The EU-Metaverse-Strategy does list the numerous areas of law that will also be crucial for the metaverse. One key example is related to the question of legal and economic identity, as in a completely immersive space, identities might disappear. The same is true for different form of assets, which is why a functioning metaverse will necessitate some form of economic interoperability between different virtual world ecosystems. In respect to these questions of identity management, the Communication refers to the European Digital Identity, a planned secure European e-identity which “will give users full control over their digital identities”.¹⁵ In this sense, the Commission sees the problem mainly in communication and not in new regulatory gaps per se. This is why the subsequent recommendations focus on a virtual worlds toolbox for the general public that is tasked with, inter alia, the use of trustworthy digital identity and digital wallet solutions for safe and secure authentication, virtual transactions, and management of digital data and assets.¹⁶

However, the metaverse will bring a multitude of innovative functions, data and opportunities in the course of its dynamic development, posing a real challenge to the application of existing regulatory regimes.¹⁷ Many of today’s laws still have to be made “metaverse-ready”¹⁸ And as aspects of the metaverse materialise, groundbreaking legal issues will arise that are not yet foreseeable.¹⁹ The process will not take place all at once but will be dynamic and constant. Additionally, it will be mostly sector-specific which means that a uniform EU “Metaverse Act” – as currently being discussed in reaction to the EU-Metaverse-Strategy – does not have a precise target at this point in time. Ultimately, clarifying technological issues such as identity management or asset transfer in the metaverse does not require a European solution but international agreement, which reinforces the point made earlier, namely that the Commission needs to increase its influence in setting international metaverse standards.

Moreover, irrespective of sector-specific issues of substantive law²⁰, which are not restricted to data protection but in fact arise in every area of law,²¹ it is above all the enforcement of law that will be crucial here. The EU-Metaverse-Strategy, however, lacks a deeper, more comprehensive examination of this aspect which is

¹⁵ See COM(2023) 442, p. 5 as well as https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-digital-identity_en.

¹⁶ Action 3, announced for Q1 2024, see COM(2023) 442, p. 8.

¹⁷ In a similar vein, see Bender-Paukens, L. / Werry, S. (2023), Datenschutz im Metaverse, Datenschutzrechtliche Herausforderungen im Zusammenhang mit der DS-GVO, in: ZD 2023, p. 127 ff.

¹⁸ With regard to a specific example from the healthcare sector see Küsters, A., / Stockebrandt, P. (2023), The Right Recipe for the Metaverse, [cepInput 8/2023](#), p. 19.

¹⁹ See also Norton Rose Fulbright (2021), The Metaverse: The evolution of a universal digital platform.

²⁰ Meaning that part of the law dealing with the rights and duties of people, organizations, etc. rather than that which deals with legal processes; see Cambridge Dictionary, [substantive law](#).

²¹ See Wagner, E. /Holm-Hadulla, M./Rutloff, M., Metaverse und Recht, 2023.

something that both the EU and the Member States will have to deal with. In terms of legal policy, it is therefore less a matter of creating new regulation, but rather of ensuring effective enforcement of existing regulations.²² In this respect, isolated solutions under national laws of the Member States (e.g. national procedural law, court jurisdiction and compulsory enforcement)²³ do not seem very effective in the case of the (potentially borderless) metaverse. European – if not global – standards are needed to ensure that the rights of individuals, regardless of their type, e.g. consumer, employee or data protection rights, and regardless of where a person lives within the EU, can actually be enforced, especially in cross-border cases.

D. Conclusion

The European Commission’s metaverse strategy outlines measures to foster the growth and utilization of virtual worlds within the EU, aligning with the goals formulated in the EU’s Digital Decade program. Their objective is to establish Web 4.0 and virtual environments that adhere to EU values and fundamental rights, ensuring safety and the protection of the rights of individuals, while also facilitating the development of innovative European businesses in this field. However, from an economic and legal perspective, the strategy raises several concerns. Firstly, the use of ambiguous terminology without a universally agreed definition may lead to misunderstandings and hinder international cooperation. Clear and universally accepted concepts are crucial for fostering international collaboration, which is necessary, as the unilateral imposition of standards via a “Brussels effect” in the metaverse field seems increasingly unlikely.²⁴ Secondly, the strategy lacks clarity on how Europe can gain influence in shaping metaverse standards, especially when non-EU firms like Meta and Epic Games dominate the field. This concentration of influence raises concerns about the EU’s competitiveness but also sovereignty in accessing a future metaverse. To counter this threat, the Commission should pro-actively contribute to international organisations that develop common standards for the metaverse, such as the Open Metaverse Alliance for Web3 (OMA3), the World Wide Web Consortium (W3C), and the Open Metaverse Foundation (OMF), and consider strategic public investment in gigabit infrastructure, especially related to the development of edge nodes. Thirdly, the approach to skills development appears top-down and may not attract talent organically. The EU should focus on fostering an innovation-friendly environment and cooperate closer with Member States to attract and retain skilled individuals. Fourthly, the strategy does not explicitly address competition policy and omits crucial funding aspects. As it is currently difficult to predict whether new issues of dominance and gate-keeping will emerge in the metaverse, EU policymakers should concentrate on enforcing current competition policy norms and potentially updating existing regulations, such as the EUMR and the new DSA, before considering specific competition policy legislation for the metaverse. Fifthly, regulatory gaps in the metaverse are not adequately addressed, especially relating to the enforcement of existing rules in this new digital space. The lack of staff also throws doubt on robust enforcement of existing legislation, in this field, such as the GDPR. Moreover, some of the Commission’s Actions remain vague. Lastly, the strategy lacks a cohesive and comprehensive approach, with various components appearing disjointed. To be effective, it should provide more specific, and above all actionable, recommendations for truly establishing a European metaverse ecosystem.

At the same time, however, such an actionable approach towards fostering a European metaverse does not yet require the formulation of comprehensive obligations in any sort of EU “Metaverse Act”, as currently being speculated. This is especially true since the metaverse will not just come into being in one fell swoop – there will be no “before the metaverse” or “after the metaverse”. Instead, it will emerge over time as different products, services and capabilities are integrated and merge with each other.²⁵ As aspects of the metaverse materialise, ground-breaking legal issues will arise that are not yet foreseeable. The process will not take place all at once but will be dynamic and constant. Additionally, it will be mostly sector-specific which means that a uniform “Metaverse Act” would have no precise target at this point in time. It is in fact the enforcement of law that will be crucial but the EU-Metaverse-Strategy lacks a deeper and comprehensive examination of this aspect, which

²² Generally, the EU has addressed or is addressing the issue of enforcement of individual rights partly with regard to some specific fields of law; see, e.g., Directive on the better enforcement and modernisation of Union consumer protection rules [(EU) 2019/2161] or, e.g. netzpolitik.org (2023), [EU will DSGVO-Durchsetzung verbessern](#). A thorough and comprehensive examination regarding the metaverse remains necessary though.

²³ Thus, questions of civil procedure, arbitration and enforcement law that will arise in the future under national or European law in the metaverse context must be addressed. In particular, the issue of enforcement based on the member state monopoly on the use of force, encounters challenges in a metaverse more characterised by private actors. Moreover, it is to be expected that not only the proportion of cross-border actions but also the proportion of cross-border enforcement measures will increase. This also raises several new questions. See altogether: Quinke, F. / Wagner, F. / Ebert, B., Gerichtliche Zuständigkeit/Konfliktlösung, in: Wagner, E. /Holm-Hadulla, M./Rutloff, M. (eds.), Metaverse und Recht, 2023, especially p. 1, p. 15 and p. 17.

²⁴ For the Brussels effect, see: Bradford, Anu (2020), The Brussels Effect: How the European Union Rules the World (New York).

²⁵ Ball, M. (2020), The Metaverse: What It is, Where to Find It, and Who Will Build It.

is something that both the EU and the Member States will have to deal with. In terms of legal policy, it is therefore less a matter of creating new legislation but rather of ensuring the effective enforcement of existing regulations. European – if not global – standards are needed to ensure that the rights of individuals, regardless of their type, e.g. consumer, employee, or data protection, and regardless of where a person lives within the EU, can actually be enforced.