

# Across the Metaverse: Policy priorities

28 June 2022

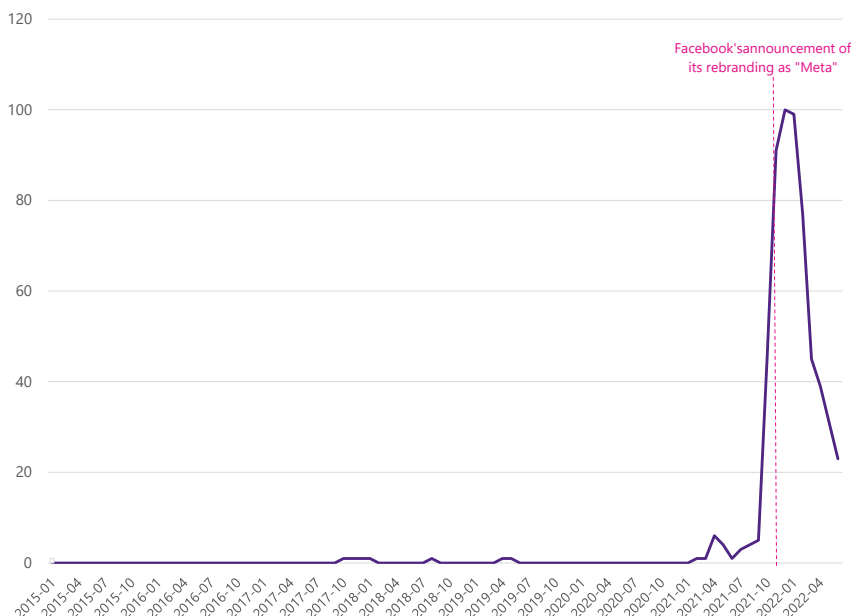
## Abstract

*There are different visions of what the Metaverse is and how it will evolve which makes it a fuzzy and ambiguous concept. This paper identifies the undisputed features of the Metaverse and proposes a conceptual framework to better understand the Metaverse value-system. Policy issues that may arise in both the virtual and the digital worlds are discussed to emphasize the important role of policymakers in the development of this technology and key priorities for policy intervention are proposed.*

## 1 Introduction

The term 'Metaverse' has been put to the forefront of all discussions when Facebook's CEO M. Zuckerberg changed his company name to 'Meta' as shown in Figure 1. However, those who are well versed in sci-fi literature may have been familiar with the concept long ago as the term originated back in 1992 in the 'Snow Crash' novel by Neal Stephenson. The Metaverse is presented there as a virtual place where people interact using digital avatars of themselves.

Figure 1: Global interest about the Metaverse based on Google search requests (2015-2022)



Source: Google trends

Note: Data is indexed to 100, where 100 is the maximum search interest for the time and location selected. In this chart, the high search of interest globally since 2015 was recorded in November 2021.

Today, the Metaverse may be the “next big thing” in the tech world (and in our lives, considering the impact of technology on society), but it is mostly a controversial ‘hot topic’. There is of course the excitement and the hype, driven by lofty promises (and frankly by a symptomatic “Fear of Missing Out (FOMO)”), but there is also the ambiguity, and the scepticism.

The Metaverse is envisioned in different ways: some imagine a single virtual world that is accessible to everyone, while others expect that numerous Metaverses will emerge. In any case, multiple companies are building the Metaverse and both the investments and the decisions that are being made today will shape its future. Considering the potential far-reaching implications on our lives and our economies, as well as a wide spectrum of issues, I believe policymakers should be involved – sooner rather than later – in shaping the technology. Most importantly they need to adopt a forward-looking approach and anticipate as much as possible any upcoming issues to reduce potential risks and harms to society.

This paper discusses the concept of the Metaverse and provides a framework to analyse the variety of stakeholders involved in its development, including industry players, policymakers, and users. An opinion on the Metaverse is developed and key policy issues are highlighted to encourage policymakers to step-in. It is structured as follows:

- In Section 2, I provide a description of the Metaverse, its core undisputed features and the conflicting visions.
- In section 3, I draw a personal view of what the Metaverse is likely to look like and discuss potential implications.
- In Section 4, I elaborate on key policy issues that may need to be addressed and highlight key priorities for policymakers.
- Section 5 provides concluding remarks.

## 2 What are we talking about ?

As of now, the Metaverse is an ill-defined concept, and it is hard to find an accurate description or definition for it. The Metaverse means different things depending on whom you ask as shown in Figure 2 below.

**Figure 2: Various definitions of the Metaverse**

The Metaverse is a slang term used to describe a virtual representation of reality implemented by means of virtual reality software. <b>(Oxford Reference)</b> <sup>1</sup>
The Metaverse is a digital reality that combines aspects of social media, online gaming, augmented reality (AR), virtual reality (VR), and cryptocurrencies to allow users to interact virtually. Augmented reality overlays visual elements, sound, and other sensory input onto real-world settings to enhance the user experience. In contrast, virtual reality is entirely virtual and enhances fictional realities. <b>(Investopedia)</b> <sup>2</sup>
A simulated digital environment that uses augmented reality (AR), virtual reality (VR), and blockchain, along with concepts from social media, to create spaces for rich user interaction mimicking the real world. <b>(XR Today)</b> <sup>3</sup>
Metaverse is essentially about creating games. It is about being able to put people, places, things [in] a physics engine and then having all the people, places, things in the physics engine relate to each other. You and I will be sitting on a conference room table soon with either our avatars or our holograms or even 2D surfaces with surround audio. <b>(Satya Nadella, CEO, Microsoft)</b> <sup>4</sup>

<sup>1</sup> <https://www.oxfordreference.com/view/10.1093/oi/authority.20110803100153307>

<sup>2</sup> <https://www.investopedia.com/Metaverse-definition-5206578>

<sup>3</sup> <https://www.xrtoday.com/mixed-reality/Metaverse-meaning/>

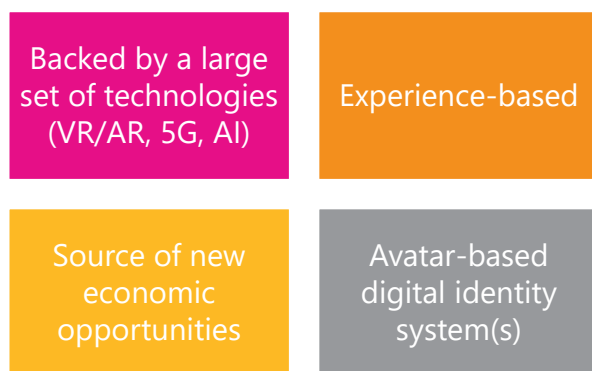
<sup>4</sup> <https://www.ft.com/content/7d2a185c-7ab1-4fb2-80ca-aaa1fa7267ba> and <https://www.androidauthority.com/what-is-the-Metaverse-3107774/>

<p>The Metaverse is a set of virtual spaces where you can create and explore with other people who aren't in the same physical space as you. You'll be able to hang out with friends, work, play, learn, shop, create and more. It's not necessarily about spending more time online — it's about making the time you do spend online more meaningful. <b>(Andrew Bosworth, VP, Facebook Reality Labs and Nick Clegg, VP, Global Affairs)</b><sup>5</sup></p>
<p>If you want a simpler way to think about the Metaverse, you can imagine it as the Nightmare Before Christmas – you can walk into any experience or activity, and potentially address almost any of your needs, from a single starting point or world that's also populated by everyone else you know. This is why hypertext is such a key example. But what's important is to recognize the Metaverse isn't a game, a piece of hardware, or an online experience. This is like saying World of Warcraft, the iPhone, or Google is the Internet. They are digital worlds, devices, services, websites, etc. The Internet is a wide set of protocols, technology, tubes and languages, plus access devices and content and communication experiences atop them. Metaverse will be too. <b>(Mathew Ball, Managing Partner, EpyllionCo)</b><sup>6</sup></p>
<p>The Metaverse is not “a” Metaverse. It is the next generation of the Internet: a multiverse. The abundant adventures in this space will surround us both socially and graphically. <b>(Jon Radoff, CEO of Beamable)</b><sup>7</sup></p>
<p>The Metaverse is a shared virtual 3D world, or worlds, that are interactive, immersive, and collaborative. <b>(Brian Caulfield, Chief Blogger, Nvidia)</b><sup>8</sup></p>

This ambiguity around what the Metaverse *is* reveals that there are diverging visions of what the Metaverse *should be*. Meta's CEO M. Zuckerberg for instance, believes that the Metaverse will be the successor of the mobile internet.<sup>9</sup> Bill Gates<sup>10</sup> on the other hand considers a more practical future and predicts that within the next two or three years, “most virtual meetings will move from 2D camera image grids to the Metaverse, a 3D space with digital avatars”.<sup>11</sup> Nvidia is also working on developing its own version of the Metaverse (Omniverse) and has a different vision for it as its CEO indicated in an interview<sup>12</sup>.

Nevertheless, we can identify some undisputed features of the Metaverse. These are represented in Figure 3 and discussed below.

**Figure 3: Key undisputed features of the Metaverse**



Source Author

<sup>5</sup> <https://about.fb.com/news/2021/09/building-the-Metaverse-responsibly/>

<sup>6</sup> <https://www.matthewball.vc/all/theMetaverse>

<sup>7</sup> <https://medium.com/building-the-Metaverse/the-Metaverse-value-chain-afcf9e09e3a7>

<sup>8</sup> <https://blogs.nvidia.com/blog/2021/08/10/what-is-the-Metaverse/>

<sup>9</sup> <https://twitter.com/trtworldnow/status/1453817596327850002>

<sup>10</sup> In fact, Bill Gates' vision seems to be consistent with Microsoft's which is looking to build a work focused Metaverse called Mesh and inside which customers would be able to use its popular offerings related to work productivity such as Teams and outlook.

<sup>11</sup> <https://www.gatesnotes.com/About-Bill-Gates/Year-in-Review-2021>

<sup>12</sup> “[...] The primary use of Omniverse, I think, is going to be for digital artists who are doing things that are pretty great, where they need a lot of technology to do it. Everything has to be simulated from scratch, because creating it is otherwise too difficult. And industrial use. That's where I see our strong base today”. See: <https://venturebeat.com/2021/08/21/jensen-huang-interview-the-physical-world-and-the-Metaverse-can-be-connected/>

## The Metaverse is backed by a large set of technologies

The future development of the Metaverse relies heavily on various technologies at different levels. At the infrastructure level for example, the Metaverse requires low latency, high bandwidth networks to work properly. Connectivity technologies such as Fibre, WI-FI, 5G and 6G will therefore constitute an important backbone for the Metaverse.

Virtual Reality headsets or other apparatus will also be essential to dive into the virtual environment offered by the Metaverse. AI technologies are crucial for automating IT operations processes, analysing the massive amount of data to be generated and providing actionable insights. The role of AI is also essential in guaranteeing an inclusive access to the Metaverse through Image Recognition for people with visual disabilities and automatic translation.<sup>13</sup>

## The Metaverse is experience-based

There would be no point to dive into a virtual world if there is nothing to do there. The experience feature of the Metaverse can be thought of as the 'content feature' of the modern Internet: it is what drives user's take-up and adoption.

The Metaverse proponents expect that many physical experiences would be transferred to a virtual space. This would include not only work-related activities, but also learning experiences, shopping experiences, cultural experiences, and gaming experiences.

## An avatar-based digital identity system

Because the Metaverse is a three-dimensional social environment, users will need to create their digital self to interact with each other and explore the Metaverse. Users can customize their avatar to fit their aesthetic taste. It is however unclear at this point whether users will have a consistent avatar they will use across all experiences (or across all Metaverses).

## New economic opportunities

According to the Metaverse enthusiasts, an entirely new economy will emerge in the Metaverse, and it will not be all about tech companies. More traditional corporations will have space and opportunity to develop or adapt their products and services to digital savvy customers and some pioneers are already preparing for this. McDonald's<sup>14</sup> for example has already filed a series of trademarks for a virtual restaurant that will deliver food online (this is still an enigma for me) and in person.

There are other features attributed to the Metaverse besides the four key ones identified above but these are less consistent: For example, the decentralisation component is often mentioned as a key feature of the Metaverse and suggests that the Metaverse will be built upon community-based standards and protocols and an open-source platform. There is however no consensus on either the degree of decentralisation needed or how this would work in practice. The use of blockchain technology and blockchain-based currencies is also often cited as a feature of the Metaverse. Some parties believe that these technologies and the Metaverse are

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<sup>13</sup> <https://www.analyticsinsight.net/why-ai-counts-as-the-biggest-factor-behind-Metaverse-growth/#:~:text=The%20Metaverse%20AI%20has%20become,for%20this%20new%20digital%20world.>

<sup>14</sup> <https://www.businessinsider.com/mcdonalds-metaverse-virtual-online-restaurant-trademark-delivers-food-web3-nft-2022-2?r=US&IR=T>

intertwined<sup>15</sup> but there is no wide agreement on that. Based on the above, we can identify two main visions for the Metaverse:

- **The first vision is that of a unified Metaverse.** A collection of virtual environments that are interconnected based on openness and interoperability where users (or avatars) can move seamlessly, transfer their data (or digital assets) and interact with other users whatever their location.
- **The second vision is that of multiple Metaverses.** Multiple virtual environments developed and created by specific companies that would coexist the same as there are multiple social networks or several streaming platforms.

### 3 A personal take on the Metaverse

Sixty years ago, no one could have predicted the Internet evolution and its impact on society. Similarly, no one could accurately predict what the Metaverse will look like and how it will change our lives. If we go beyond the hype, we can see that some of the most innovative (and biggest) companies in the world (including Meta, Epic Games, Niantic, Nvidia and Microsoft to name a few) are working on developing it. They are injecting billions of dollars of investments and attracting tech talents from all over the world. This means that even if the Metaverse world is virtual, the money that is being invested in its development by those companies (as well as the money that it is expected to bring) is quite real and considerable.

Now the big question is how all this might unravel and what should we expect? What vision of the Metaverse will dominate? I will take a position of caution and not predict the doom of what may be the next big thing in tech. Instead, I will elaborate a personal opinion on what is the most likely scenario based on the current situation and its implications.

The unified Metaverse vision is certainly the most revolutionary and the most ambitious one. To be achieved it would require a considerable effort of collaboration between the different companies building the Metaverse and an unprecedented level of interoperability. If the tech industry trends are any indication, we can hardly imagine companies like Meta or Microsoft being eager to share their data, resources, and intellectual property with other companies.

In this scenario, interoperability and open standards principles should be built-in from the start and the Metaverse should be constructed with an “open-source” approach. This way, every organization can have access to the “source-code”, add new features and resolve issues. In other terms a unified Metaverse would only be possible if it is developed in a decentralized and collaborative way. This by the way, is how the ARPANET<sup>16</sup>, which would later become the foundation for the modern internet was developed.

What we are seeing now is completely different.<sup>17</sup> Companies such as Meta, Microsoft and Decentraland<sup>18</sup> are working in silos to produce their own Metaverse which makes the vision of a unified Metaverse unlikely to be achieved straight away. Does this mean that the vision of multiple Metaverses that separately coexist is the one that will materialize? It appears that we are heading into that direction, but in this case, we are far from the “future of the internet” promised by some Metaverse advocates. At best we would have substitutable and (slightly differentiated) digital products or services proposed by competing companies the same way we have Messenger and WhatsApp. Subsequently, the economic dynamics of these new platforms won't be much different of those characterising the current digital platforms (networks effects, economies of scale and scope, winner-takes-most markets, tipping markets, gatekeeper behaviour, etc.) and by extension, the issues that policy

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<sup>15</sup> <https://www.fool.com/investing/stock-market/market-sectors/information-technology/Metaverse-stocks/Metaverse-crypto/#:~:text=Crypto%20coins%20and%20tokens%20used,or%20participate%20in%20a%20Metaverse.>

<sup>16</sup> The Advanced Research Projects Agency Network

<sup>17</sup> Recently, leading standards organizations and companies from all over the world have announced the launch of the Metaverse Standards Forum, which is the first serious attempt at working towards interoperability in the Metaverse. It is however too soon to assess the real impact of such an organization on the development of the Metaverse. See: <https://metaverse-standards.org/>

<sup>18</sup> Decentraland offers a 3D open-source platform

makers struggle to deal with in the (actual) digital era such as data protection, privacy, competition would also apply in a (future) digital era where Metaverses are the new big thing. In fact, these issues are likely to be amplified while others such as mental and physical issues may emerge.

### Proposal of a value system of the Metaverse

In any case, whatever the shape and the scale of the Metaverse, it will not be built by a single company, and Meta which is spearheading this quest seems to uphold this statement.<sup>19</sup> Instead, I am convinced that there will be numerous stakeholders involved in the development of the Metaverse, either focusing on achieving their own virtual immersive world, developing one or multiple features or designing the underlying technologies.

Jon Radoff, in an article called “the Metaverse value chain”<sup>20</sup> has proposed an interesting description of the digital ecosystem building the Metaverse and has broken it down into seven layers as shown in Figure 4.

**Figure 4: The Metaverse seven-layers’ value chain by Jon Radoff**



Source: The Metaverse Value-chain. Apr 2021. Jon Radoff

Furthermore, I believe this value system<sup>21</sup> is uncomplete as it only accounts for the industry players and dismisses two other key categories of stakeholders that will (and should) play a significant role in the development of the Metaverse: users and policy makers.

To better understand the relationship between policy makers, industry players and users in and within the Metaverse I have developed a simple framework building on Jon Radoff’s value-system and introducing the two missing components.

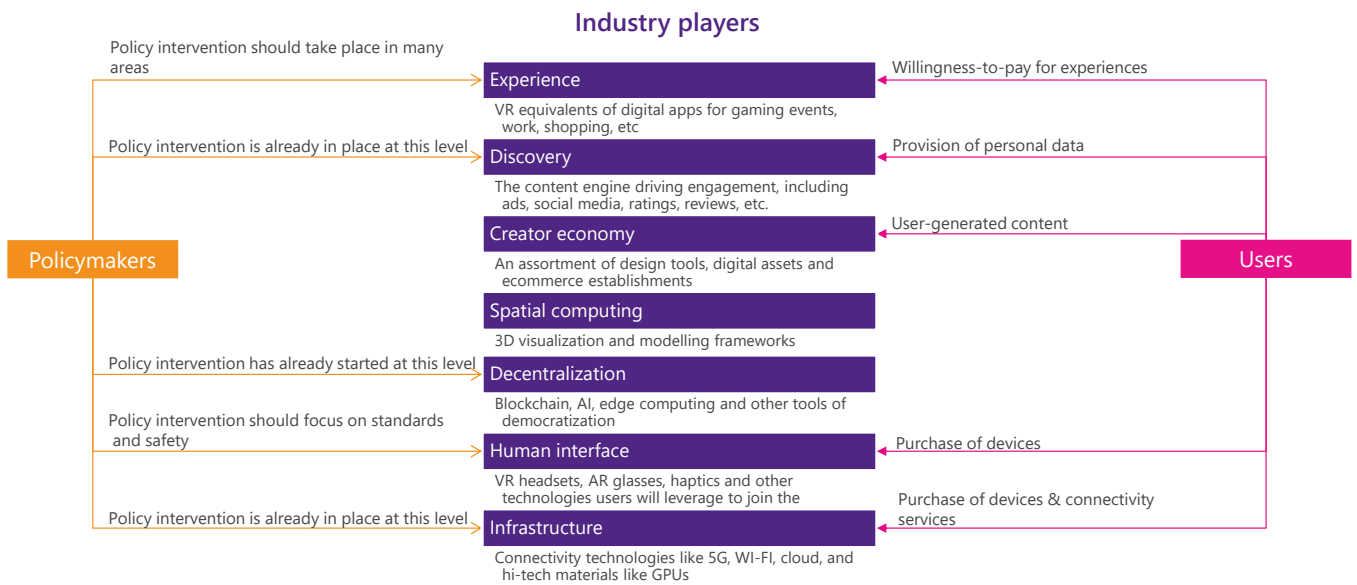
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<sup>19</sup> <https://about.fb.com/news/2021/09/building-the-Metaverse-responsibly/>

<sup>20</sup> <https://medium.com/building-the-metaverse/the-metaverse-value-chain-afcf9e09e3a7>

<sup>21</sup> His use of the term “value-chain” however may not be the correct one to qualify this diverse group of stakeholders as there is not necessarily a direct link between stakeholders at the successive layers. A more appropriate term would then be “value-system” as these seven layers represent the network of organizations involved in the production and delivery of an offering: the Metaverse. For a discussion on the value-chain vs value-system see: Porter, M. E. The Competitive Advantage: Creating and Sustaining Superior Performance. NY: Free Press, 1985. (Republished with a new introduction, 1998.)

Figure 5: Framework for analysing the relationship between the Metaverse stakeholders



Source: Author

### Final users as part of the Metaverse value system

Assuming that the technology required at the different layers is sufficiently mature to deliver an optimized experience, user-adoption will certainly be the ultimate key to the success of the Metaverse. Unsurprisingly, there are plenty of user-adoption barriers.

To enjoy the immersive 3D virtual experience offered by the Metaverse users would first need to purchase adequate devices, including smartphones, VR headsets or haptics. On the connectivity side, applications such as the Metaverse are likely to be data-intensive and would require a high-bandwidth, low latency internet connectivity. Furthermore, depending on the business models adopted for the Metaverse (we shouldn't forget that billions of dollars are invested, and companies will expect returns), users may need to pay for the experiences that are available in the Metaverse. The user's willingness to pay for these services is still a puzzle that should be further explored. It is however possible that these services or at least some of them will be offered for free which would strongly imply that users' data will be harvested in a larger scale than it is the case today with digital platforms.

Furthermore, another key adoption-barrier that the Metaverse promoters will need to tackle is the general public interest in the Metaverse. As it is advertised, the Metaverse is not exclusively intended for the gaming community, the tech-savvy amongst us, or the sci-fi fans: It is intended for the masses. Personally, while I would be curious to take a quick dive in the Metaverse to experience 3D gaming, I would hardly put on a cumbersome headset to socialize in a virtual café for hours. Also, if I am given the choice to conduct a work-related meeting in either a cartoonish setting with "legless office-based" avatars or an actual office with actual lively people, I would gladly choose the latter.

Nevertheless, I do believe that the Metaverse (or at least the immersive 3D virtual applications) may provide exciting opportunities in areas such as education and training but for now the whole concept just doesn't seem appealing to everyone.

### Policy makers as another part of the Metaverse value system

Polymakers represent the second key component of the Metaverse value system described in this paper. If the Metaverse is to materialise, it would be with or without polymakers. Policies, laws and regulations usually take

time to catch-up with technological progress and innovation. When technological progress and innovation may drive or cause some issues it is never too late to catch-up but then the harms have already been committed.

As the Metaverse is still in its infancy stage, policymakers should get involved in the debate regarding what the Metaverse will look like. They should learn from experience (mainly regarding digital platforms) and be at the forefront of the debate in order to anticipate potential issues... and there will be plenty. In fact, policymakers would need to deal with issues in both the real world and the virtual world.

## 4 The key policy concerns and priorities

Policymakers should take the Metaverse seriously now because the upcoming challenges are spanning a wide range of areas. As mentioned above, there will be issues both in the virtual world as well as in the real world.

For example, how intellectual property rights will be protected in the Metaverse is still an open question although companies and celebrities<sup>22</sup> alike have already started investing in virtual lands and properties. Will it be possible to commit a homicide on an avatar and if so, how this will be treated? How will governments and regulators grapple with misinformation and fake news? Besides, a case of sexual harassment on Meta's VR social platform has already been reported<sup>23</sup> which raises the question of protection and safety in the Metaverse. Even more worrying, how will children be protected when they are immersed behind their VR sets? To be dealt with, these issues require a clear liability framework: Who would be legally responsible in case of harmful behaviour in the Metaverse?

In parallel, real-world issues can touch upon many areas. Physical infrastructure for example will undoubtedly be impacted by millions of people all over the world interacting in virtual 3D environments at the same time. The amount of traffic that would be generated by let's say a live virtual concert open to millions of people is likely to be significantly more than what we currently witness on the Internet. What infrastructure should be in place for both transmission and storage of data and who would need (or be asked) to pay for that?

Additionally, mental health issues may also grow in importance. Video games and social media as we know them can already cause or exacerbate issues such as anxiety, irritability, depression, and can be highly addictive. An excessive use of a digital experience as the one promised by the Metaverse, may accelerate these issues in the population.

The list of concerns is significantly greater than what is mentioned above<sup>24</sup>. The only certainty is that policymakers will have their plate full. It is therefore crucial that governments and regulators can anticipate the upcoming challenges and start addressing these issues. As of now, there is no suitable policy, legal or regulatory framework that could be developed adequately, because the concepts that these frameworks will need to deal with are fuzzy and amorphous.

Therefore, the key priorities for policymakers should be the following:

- **Research and prospective studies:** Governments and regulators should start studying the technology to better comprehend it. The effort should be global as the issues span beyond geographic borders.
- **Private sector and civil society engagement:** Policy makers should participate in the debate and engage with tech companies and citizens to better understand the opportunities and the risks. This is the only way to ensure effective, proportional, and adequate policy intervention.

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<sup>22</sup> <https://www.cnbctv18.com/cryptocurrency/these-celebrities-have-their-own-virtual-space-in-metaverse-12971232.htm>

<sup>23</sup> <https://www.technologyreview.com/2021/12/16/1042516/the-metaverse-has-a-groping-problem/>

<sup>24</sup> Other policy issues include data protection, privacy and competition in the Metaverse



## 5 Conclusion

Will the Metaverse be the next revolution of the digital era? Only the future can tell us. At this stage the technology is not all there yet but companies are already investing billions of dollars in achieving their vision of the Metaverse. Whatever the outcome of this Metaverse saga, I believe it shouldn't move forward without policymakers being involved because the underlying issues concern multiple areas. First steps for governments and regulators should be to focus on understanding the technology and anticipating the issues as well as engaging with the private sector and civil society. What is coming may be full of promises, but potential issues are too serious to dismiss.