

## Metaverse & Risk Management

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### ABSTRACT

All along the year 2022 it seems that the flavour of the year was "metaverse." It was probably prompted by Facebook's rebranding at the end of 2021 as every specialist was providing his/her vision for digital worlds where all mankind will be invited to work, play and socialise through one all-encompassing holistic platform.

More recently, artificial intelligence has resurfaced as the main topic while the metaverse has seemingly been overshadowed as Mark Zuckerberg has chosen to shift focus from the metaverse to AI. However, decision-makers and researchers would be ill advised to forget that the metaverse is a development to be reckoned with for organisation wishing to remain relevant by mid-century.

In fact when it comes to early adopters, there's still much attention to the metaverse, and what may be the impact of its development on humankind daily lives. The future of metaverse may prove to be a black swan as the rupture it may generate is still in great uncertainty; the risk may still prove to turn into threat or opportunity. One key factor is the acceleration of the power of computing and networking abilities, but also how fast users will dare to enter the "metaverse" as there is no past experience to draw from to estimate the speed at which it will go from the "happy few" to the general public and in what parts of the world.

However, it becomes clearer and clearer that, as with search engines and social media (the technological enablers of web 1.0 and 2.0), marketing and advertising will be the key enabler to project web 3.0 - the metaverse - into the mainstream. Although the concept is yet to really emerge, some mega international businesses players have already begun building their metaverse presence. Furthermore, aside from its power as a marketing tool, the metaverse should provide platforms, tools, and entire virtual worlds where business can be done remotely, efficiently, and intelligently thus providing added agility to enhance resilience.

In spite of a relative lapse in media attention, the year 2023 offers a unique opportunity for the metaverse due to technological leaps in software and hardware aligned with growing consumer interest.

However, there are still many challenges to overcome before the metaverse fits into the physical world and in our daily lives. We must call for a holistic approach to build the metaverse, because we have to consider that the metaverse will occur like another huge entity in parallel to physical reality. By examining the most recent works of various technologies and ecosystems, it remains to be hoped that we have initiated a broader discussion within the community of metaverse and risk management professionals if they want to remain relevant within their respective organisations.

**Keywords:** Metaverse, Web 3.0, blockchain, crypto-currency, security, identity, e-security, Sandbox, Cryptovoxel.

### INTRODUCTION

"We are convinced that the metaverse<sup>1</sup> will succeed the mobile Internet. We will be able to feel present, as if we were physically together, little no matter how far apart we are." (Mark Zuckerberg<sup>2</sup>).

Who hasn't come across the term "metaverse" in professional papers headlines recently, but what does the concept really covers? What is it and why is it important for all managers? Here is an explanation of how whose digital experience will evolve into something that blurs the lines

<sup>1</sup> Metaverse combines the prefix "meta" (meaning transcendental) with the world "universe", used to describe a synthetic and hypothetical world linked to

the physical or real world.

<sup>2</sup> Opening remarks at the CONNECT meeting on October, 28 2021

between digital and the physical! Seriously, what does "Metaverse" mean?

To understand how vague and complex a concept "metaverse" can be, here is an exercise which consists of mentally replacing the expression "metaverse" in a sentence by "cyberspace". Nine times out of ten, the meaning will not change. This is because the term does not really refer to a particular type of technology, but rather to a general (and often speculative) change in how we interact with technology. And it is quite possible that the term himself would eventually become obsolete, when the specific technology he was describing becomes common.

This is why the words "vague" and "complex" in reference to the concept "metaverse" are an extreme understatement for ideology because it simply does not exist yet.

When Mark Zuckerberg informed the world of Facebook's name change to "Meta" in October 2021, "Metaverse" became the buzzword that circulated around the whole world. However, many observers remained in the dark about the concept and its impact and Microsoft are investing heavily in its development.

The coining of the term "Metaverse" is credited to author Neal Stephenson of his science fiction novel "Snow Crash" in 1992. The novel imagined the next iteration of the Internet where realistic virtual avatars connect to each other through environments of virtual reality and realistic 3D buildings. Since then, advances in technology have allowed the development of the metaverse with a combination of computers, portable technologies and machines, such as virtual reality headsets, augmented reality glasses, sensors movement and game consoles where users are able to "live" in a universe digital.

Today's Internet experience is a two-dimensional scrolling and browsing experience on a screen. On the other hand, the metaverse is in 3D, which makes it possible to "walk" through both worlds intertwined by means of connected glasses or headphones that result in the construction or participation in any desired universe in the digital world. In more simple terms, instead of browsing through a clothing store or online store, the website is transformed into a three-dimensional

shopping centre or a building where users can interact as in-game characters or avatars.

This a world changing evolution as the metaverse does not necessarily refer to a specific type of technology, but rather to the changing interaction that actors have with it to make their virtual space seamlessly integrated with reality. Michelle Cortese<sup>3</sup> explains that the metaverse is essentially "a spectral layer above our existence." It is represented by avatar interactions, and constructed experiences, ultimately altering the way actors interact online, how crypto is adopted, how brands advertise, everything by providing a hyper-real alternate world where people can co-exist.

The concept has been embraced by technology enthusiasts but insofar as it satisfies a desire for a decentralized virtual world and offers a place that is aligned with the physical world, the metaverse has now begun to penetrate the mainstream landscape. Virtual experiences have increased dramatically with millions of people indulging hour after hour in as digital avatars in virtual social spaces such as Fortnite and Roblox or TNT digital and crypto currencies.

Victoria Petrock<sup>4</sup> said: "This is the next evolution of connectivity where all these things begin to come together in a transparent and dual universe, so that you live your virtual life the same way you live your physical life."

The core of the Metaverse, also known as Web 3.0, is the evolution and generation that tracks the current Internet, including how users control their online identities and their digital assets through blockchain and crypto-currencies.

"The technology will be so good that it will be very difficult for people to watching or consuming something that was not designed for them. (Eric Schmidt, President of Google)

### WHAT IS WEB 3.0?<sup>5</sup>

"The metaverse is here, and it's not just transforming the way we see the world, but also the way we participate in it – from the factory to the meeting room. (Satya Nadella, CEO of Microsoft)

To understand Web 3.0, it is important to first understand the issues inherent in centralized

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<sup>3</sup> Michelle Cortese, Canadian creator, artist and futurist of Virtual Reality living in Brooklyn (New-York)

<sup>4</sup> Vice-president, Main Strategist Content - FINN Partners: specialist of internal information, Victoria heads research in demographic data and subjects

linked to diversity, equity and inclusion.

<sup>5</sup> For this section see: "What is the Metaverse and How it Works - Metaverse Explained" - **Branyce Wong** - <https://blog.portion.io/what-is-the-metaverse-and-how-it-works-metaverse-explained/>

applications and how the Internet has evolved through its various stages.

"Web 1.0" was essentially desktop computing on a global scale, leading to the rise of web browser, banner advertising, e-commerce checkout and wider consumer adoption of the desktop web.

"Web 2.0", or the Internet as it exists today, has created a read/write environment that allows users to interact with the web and easily send data around the entire world. This phase is mostly rooted around mobile computing. However, he lacks a shared "state" tied to the user's identity. In the absence of this shared state, the centralized service providers (e.g., Google, Facebook) were able to accumulate the user data and accumulate all the resulting value. This centralization of data has led to many unfortunate and negative consequences for users, as evidenced by various hacks, breach of trust and inappropriate sharing.

At the heart of Web 3.0, the perceived next iteration of the Internet, the goal is to empower users by allowing them to interact while controlling their data, their identity and the protection of their privacy through an open and uncontrollable network.

Thus, Web 3.0 would effectively break down the data silos of centralized service providers and put users back in control. Google and Facebook would no longer own the sensitive and personal data of their users because the data would be encrypted and decentralized. For the first time, a person on the Internet can have a self-sovereign identity, no longer depends on a centralized entity (company or government).

Michelle Cortese describes the stages of the web and the progress it took to reach the web3.0 more clearly. "When we say Web 3.0, we are referring to the three stages of the Internet: [1] dial-up desktop computers of the 1990s; [2] socially mobile Internet flow from the 2000s and 2010s; and [3] the incarnate Internet "or Metaverse - this next generation of the Internet anticipates that people will interface with the web in a more embodied, virtual way."

Not only does Web 3.0 offer endless possibilities, from the commercial world to education and healthcare world, but the key structure will revolve around the use of non-fungible tokens (NFT). NFT are unique and irreplaceable data stored in a digital register of block chains that can represent a variety of digital assets. The convergence between Web 3.0 and NFT will provide businesses and users with myriad opportunities to bring real assets to the digital 3D

universe. As software developers continue to improve their skills, the metaverse will develop into a more immersive and realistic experience over time, making the virtual and real worlds to be almost inseparable.

The world is currently going through the "investment cycle". Many investments are made in consumer hardware, content, creator ecosystems and even band-width infrastructure to enable consumers and businesses to live their experience. There is an abundance of attention on the subject, leading more actors to engage and to invest.

**Metaverse and Online Games:** Currently, the most common ways to participate in a metaverse-like environment are video games. Roblox describes itself as a highly interactive simulation game company. Dan Sturman, chief technology officer of Roblox, has explained that the company plans to design a metaverse that meets the needs of a gamer by developing its features.

For example, in the spirit of the traditional Easter egg hunt, Roblox held a "Metaverse Champions" event during the month of April where players could plunge in 48 matches each week and win mystery boxes, eggs, bundled items or the ultimate grand prize and be crowned the winning champion. The company has planned to create more events like these to continue giving their community the tools that maintain relationships and connections as they exist in real life.

Similarly, Fortnite, an online royal battle game developed by Epic Games, is at a key advantage to lead the Metaverse race. Their virtual world has already hosted concerts and events for artists like the infamous Ariana Grande and Travis Scott. Epic Games has already communicated plans for a Fortnite metaverse and their latest introduction to Fortnite Party Worlds, designed as a social space to meet new friends, thumb them up no more towards the next generation Internet.

Roblox and Fortnite each have different ideas of what the end result of the metaverse game will look like, but with each additional activity brought to the platforms; they strengthen their investment in bringing new experiences to people around the world. In the years to come, more and more companies will begin to deliver what consumers might reasonably want to materialize in the metaverse.

**Virtual Worlds in Block Chain:** An Essential Feature of a Working Metaverse is the ability to move an avatar from the virtual world to the real world. With the help of these blockchain-based

platforms, the metaverse may be produced sooner than many observers think:

- **Decentraland:** It is a thriving decentralized virtual reality platform where users can create avatars, buy properties and market clothes while experiencing events in the booming real estate market. Each plot individual is represented by an ERC-721 NFT, found at a constant coordinate and from size exactly 16x16 meters. Transactions within this online world are made with MANA, Decentraland's native crypto-currency, and proof of ownership virtual is verified through ETFs. Whether a user is a MANA holder or landowner, he is able to participate more within the community in the governance of Decentraland.
- **Cryptovoxels:** It is a virtual world on the Ethereum blockchain, built by Nolan Consulting Limited, which allows players to create interactive avatars, build stores, assemble art galleries with BNTs (*Bancor Network Token*)<sup>6</sup>, and buy virtual land. This world is characterized by pixelation and cubic shapes, similar to video games Minecraft and Roblox. Everything you need to immerse yourself in this square ETF metaverse it is an Ethereum wallet and a piece of land. The land layout is similar to Minecraft where you can build your own architecture and purchase a few acres suited to your shape, size, and location, but with crypto (ETH<sup>7</sup>). Each user lives in the "home town", where the plots belong to those who buy them and where the streets belong to the Corporation. In addition, with the advantages of Ethereum blockchain technology, the plots are unique and can be easily located and protected by smart contracts.
- **Sandbox:** Sandbox is a metaverse blockchain-based decentralized on Ethereum where people can trade goods, monetize voxel assets, play games to earn tokens and more. This gaming ecosystem was designed to disrupt traditional gaming markets in which the rights of creators and game players were limited to controlling the platform. Their native token, SAND, powers all transactions and interactions and will serve as a governance token in the near future for holders who wish to add comments on the evolution of the "Sandbox".

*"Our goal is to completely decentralize this world within two or three coming years, enabling users to participate and add value to this world; to rule it and own it," said Sebastian Borget, co-founder and CEO of Sandbox.*

These digital spaces are home to numerous art galleries, such as the Museum of the decentralized portion (50,100), conference rooms, games, nightclubs, and more, where users can get together with friends to enjoy social events. Whether it is a domain in Decentralization or a single plot in Cryptovoxel, owning land allows the user to monetize and build on 3D metaverse space, similar to the real world.

**How to Buy Land in the Metaverse:** Real-World Real Estate is an Asset growing popularity, which is now expanding into the digital realm. Virtual pieces of land can be purchased with the land-specific currency in the form of plots with a number of properties selling for records of millions of dollars. To buy a property, one must register on a metaverse platform like those described above, Decentraland, Cryptovoxel, The Sandbox, or others.

So, one must have a digital wallet to buy the specific crypto-currency allocated to the chosen platform. For example, MANA is the Decentraland currency used to purchase virtual real estate but is not transferable to Cryptovoxel; however, other platforms may accept the use of Ethereum directly or in exchange for their native currency. Once you have a well-funded digital wallet, it is possible to link it to a platform account to buy, rent or sell properties in the metaverse. The purchased land will then be stored as a TVN and can be viewed in the portfolio.

**Examples Of Brands That Are Present On The Metaverse:** Some very well-known brands have already joined the metaverse such as:

- **Nike:** In November 2021, Nike, the footwear and apparel giant, collaborated with Roblox to launch an online gaming zone called Nikeland for fans to create avatars and play sports in the virtual space. Accompanying this collaboration, the company dove deeper into the metaverse by acquiring RTFKT studios, a retailer that sells virtual sneakers for people to dress up their avatars on line on various platforms. Nike Chairman and CEO John Donahoe said the deal "[will] accelerate Nike's digital

<sup>6</sup> See: <https://learn.bybit.com/altcoins/what-is-bancor-bnt/>

<sup>7</sup> ETH refers to the blockchain which is *the lifeblood*

*of Ethereum.* When you send ETH or use an Ethereum application, you'll pay a fee in ETH to use the Ethereum network.

*transformation and [allow us] to serve athletes and creators at the intersection of sport, creativity, play and culture". With the era of Web 3.0 on the horizon, traditional clothing brands will quickly join the momentum of virtual fashion, which will continue throughout 2023.*

- **Gucci:** In May 2022, Gucci entered the metaverse with a virtual art installation Gucci Garden on Roblox, an online gaming platform. Their virtual event was a production of the actual Gucci multimedia installation that took place at the Gucci Palace in Florence, Italy, where users had the chance to purchase Gucci accessories in limited edition hidden in the virtual Gucci garden. Senior Product Manager of Roblox, Morgan Tucker, explained that the metaverse experience added *"a level of immersion that would match, if not exceed, what you see in the real world [Gucci Palace], and really pushes the limits of what the platform is capable of."*
- **Charli Cohen and Pokémon:** To celebrate 25 years of Pokémon, designer Charli Cohen and immersive storytelling production house, Yahoo RYOT Lab, have joined forces with British department store Selfridges to launch Electric/City, an experience of immersive shopping for gamers and fashion lovers. Selfridges has been one of the first malls to get involved with AR, allowing fantasy to enter in real life for long-time gamers, Pokémon fans, and traditional fashion consumers. The immersive video experience brought buyers around the world to discover and buy limited edition clothing from the Charli Cohen X Pokémon range, allowing fans to dress up their avatars in AR.

**Moving to the Metaverse:** The biggest hurdle to overcome is associated with creating a cohesive global ecosystem. A shared interface must be developed to connect the virtual spaces and the physical world. The basic elements to achieve this are not yet clear, but metaverse enthusiasts agree that virtual and augmented realities and collective metaverse are becoming more and more present in our real lives.

**Portion<sup>8</sup> & Publicis Sapient:** Portion participated in this technological step by partnering with Publicis Sapient, a digital transformation

company to collaborate on two initiatives and help extend brands across Web 3.0 and the metaverse. Publicis Sapient and Portion will design a unique metaverse experience that will serve as a transmission channel for the channels traditional brands to extend their brands to this new digital frontier. The collaboration will enable businesses to evolve and attract a new generation of consumers who have higher expectations of user experience, including how user transactions are processed, products are tested and digital interactions are recorded:

- The first initiative will focus on one of the biggest and most important challenges costs faced by Publicis Sapient clients today, namely the identity resolution – or the construction of a coherent and omni-channel vision of a single consumer.
- The second initiative creates an experience that is an extension of the ability of any brand to deliver dynamic product experiences in the metaverse, connecting both Web 2.0 and Web 3.0.

These two initiatives and the collaboration with Publicis Sapient are described in more detail on Portion's blog<sup>9</sup>.

**The Playground of the Future:** The metaverse is still very early in its development, but like the Web 3.0 is becoming a more functional foundation, people can expect to see amazing applications and use cases for this technology. Many tech companies, including Portion, already have their eyes set on the metaverse and are actively working to build new experiences in virtual worlds and to open new channels for participants to interact, socialize and collaborate.

It is reasonable to think that the digital economy will continue to grow and that the virtual economy will thrive within and alongside it. Going forward, interoperability is essential, and, over the next few years, we will see platforms that are fully accessible to navigate realms and build new paradigms, which pave the way for adoption and cement the importance of digital assets for future generations.

In the metaverse, each individual user has his personal avatar, analogous to his physical self, to experience an alternative life in a virtual world that is a metaphor for its real worlds. To achieve this duality, the development of the metaverse

<sup>8</sup> According to their own assertion, Portion is the auction room of the 21<sup>st</sup> Century

<sup>9</sup> <https://blog.portion.io/>

must go through three sequence stages, namely (I) the digital twins, (II) the digital natives, and finally (III) the coexistence of physical-virtual reality or namely surreality.

*“With the metaverse, we go from a 2D world that watches the Internet to a 3D world. (Dave Waters<sup>10</sup>)*

### HOW TO SEE TRUST IN THE METAVERSE?<sup>11</sup>

*“The metaverse is best understood as the passage from computing and the interaction of a device in your pocket to a virtual simulation. »(Matthew Ball<sup>12</sup>)*

When an organisation decides to enter the metaverse, it could face a major new challenge: The old rules for gaining trust in your transactions, assets, data, and experience of brand and above may not apply. This challenge was born because the metaverse is evolving to become a new three-dimensional digital world, unbound by geography and currently without clear rules and regulations. In this world, the organisation and its stakeholders will be able to interact in new ways: buy and sell, recruit and train, collect and monetize data, sign contracts and enforce them, sponsor events, monetize virtual products and more.

The metaverse is still under construction. But, as the culmination of a trend of long standing at the convergence of multiple emerging technologies, it is advancing rapidly - and from many metaverse concepts are already relevant to business. Already, new trends are emerging for metaverse economics, governance, user experience and more. More will come soon. You may need to rethink the way your business builds and promotes trust.

Here are some guidelines to help address six key metaverse trust challenges. They can help move forward with confidence in an immersive digital world, where it will be possible soon perhaps to conduct many of the same business activities as in real life— and some news too.

- **The Economy of the Metaverse: Building New Modes of Verification**

Most metaverse platforms encourage the use of crypto-currencies, tokens non-fungible assets (NFT) and other digital assets, which could soon become the main metaverse form

of value exchange. This can pose a technological and skills for those unfamiliar with cryptography. It can also pose a trust challenge. Traditional intermediaries (such as banks and clearing houses) may not be affected.

Regulators may not have a good idea of these transactions and do not have a clear jurisdiction over them and exchanges that represent them. Like the value is stored in crypto wallets, and that digital asset pools are traded and managed under smart contracts, hackers could potentially siphon assets by exploiting flaws in infrastructure or code software.

Some companies may also promote a metaverse "creative economy", where users monetize their own creations or receive financial rewards for their commitment. They may face other trust challenges if they do not have control to ensure rewards are distributed as promised and to protect users against abuse or manipulation. Risk postures may need to be revised, improving all three lines of defence (activities, risk management and internal audit) with the necessary skills to verify transactions and regulatory compliance for digital assets.

For financial assets, this defence should probably include physical security for crypto wallets as well as teams that can verify contracts intelligent to spot flaws, vulnerabilities or hidden exploits. It may be necessary ensure board's involvement to harmonize financial transactions with the organisation's overall risk appetite.

Within the framework of this new posture, it is necessary to envisage new partnerships. The fintech companies and traditional financial institutions offer crypto-currency and digital currency services. As in the case of transactions in traditional financial services, it will no doubt be necessary to call on trusted third parties to provide additional control and verification.

- **Navigate an Interoperable Metaverse: Update Data Strategies:**

The ultimate goal of the metaverse is to become fully interoperable: customers and

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<sup>10</sup> Founder and manager of PAETORO, brings more than twenty-five years of experience in the global mineral exploration and production industry

<sup>11</sup> Fort this development see: “Trust and risks in the metaverse: 6 key considerations” - [https://www.pwc.com/us/en/tech-effect/emerging-tech/metaverse-tru](https://www.pwc.com/us/en/tech-effect/emerging-tech/metaverse-trust-and-risk-considerations.html)

[st-and-risk-considerations.html](https://www.pwc.com/us/en/tech-effect/emerging-tech/metaverse-trust-and-risk-considerations.html)

<sup>12</sup> Matthew Ball is the managing partner of Epyllion Co, which operates a start-up venture capital fund and a business advisory services division. His latest book is entitled « *THE METAVERSE: And How It Will Revolutionize Everything*

employees will likely be able to take their identities, assets, experiences and data from a platform to another one day. Although nothing is certain at this time, it is expected that they can shop anywhere, browse social networks and attend any meeting. The idea is that the current system of "walled gardens", where each supplier of platform controls the data and sets the rules, disappears.

This vision of total interoperability may turn out to be utopian. But even a movement partial towards a relaxation of the transitions between the platforms can create new trust challenges. Without walled gardens, an organisation and its partners risk losing the data control. In response, it may be necessary to consider a new approach in data collection, governance, analysis and security – an approach that can follow stakeholders wherever they go, while protecting their privacy and inspiring trust that encourages data sharing. This approach should include clear rules, especially for consent, so that users understand who uses their data and for what purposes.

- **Governance in the Metaverse: Rethinking Security**

The metaverse will need rules to govern security, user interactions, tax collection, data governance, regulatory compliance and more. These rules are not yet established, but already, metaverse platforms can pose new governance and security challenges.

A new, less centralized digital world will likely offer new surfaces of attack for malicious actors, including on connection devices such as portable devices. Three-dimensional experiences could make some cyber-attacks deeply traumatic. New metaverse-specific crime types are also emerging, such as “pump and dump” ETFs and other investments fraudulent in metaverse involving project-specific cryptographic tokens.

Even though the Metaverse itself has no clear "rules of the road" today, there will be a direct interest not only in the organisation's own security, but also in the security of all its users in the virtual space offered to them by the organisation.

The answer is to consider security at the service level, so that security can be maintained regardless of where the goods and services go. If clients entrust assets financial institutions, it may be necessary to require special protocols for protection and procedures to make reimburse them if they are victims of a financial crime in virtual spaces of the organisation.

Suppliers and partners will need to be reassessed. Platform providers and cyber security companies may not have updated their security guide for the metaverse. Consideration should also be given to working with regulators to help shape the metaverse rules that follow. Need to update on Decentralized Autonomous Organisations (DAOs)<sup>13</sup> – built on rules voluntarily agreed upon by a computer program that runs on a blockchain – which will likely play an increasing role in metaverse governance. Throughout these efforts, it will be necessary to set up a continuous and transparent communication with all the stakeholders on progress, limitations and new risks.

- **Who's Who in the Metaverse: Understanding and Shaping Identity**

In the metaverse, users are expected to own their digital identities, with data, history and assets they can use anywhere. It would be different from today's Internet, where your customers and employees can have an identity just for a specific company, a particular platform or a specific application. The assets and Metaverse organisations will also have identities that belong to them and will travel to through the platforms. Even if this vision does not fully materialize, development is accelerating on digital identities that belong to users.

One way is to help consumers decide which aspects of their identity to share, allowing them to be anonymous or pseudonymous. Companies or third parties can also perform this role on their behalf. In the event of a lack of control over the key players' identities, it will probably be more difficult to trust them and to protect them against phishing and other fraudulent activities.

To increase trust in metaverse identities, one can consider services blockchain-based

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<sup>13</sup> A decentralized autonomous organisation (DAO) is an emerging form of legal structure that has no central governing body and whose members share a common goal to act in the best interest of the entity. Popularized

through crypto-currency enthusiasts and blockchain technology, DAOs are used to make decisions in a bottoms-up management approach.

authentication and metaverse versions of multi-factor authentication. For very sensitive transactions, signature checks could be required multiple, in which several identities must be confirmed before the closing of the transaction. Anomaly detection software and bots can also help protect identities and identify theft. Consider joining one of the coalitions that design and deliver digital services to help shape these identities in order to meet the needs. It is also possible to monitor the activities of other coalitions in order to be able to adapt data governance strategies and authentication.

- **The Metaverse Experience: Protecting Against Misinformation and Abuse**

The customer experience and the “employee” experience will change when offered through a virtual reality (VR) or extended reality (XR) headset. Users can expect new sights, new sounds, new moves and potentially new emotions. A breach of privacy or assault could be escalated, if it occurs when immersed in a three-dimensional world.

When stakeholders enter virtual spaces, they will expect to be protected by the organisation. If they suffer from abuse or misinformation in the metaverse environment of organisation, its brand/reputation could pay a high price.

When an organisation plans to offer or participate in metaverse environments, such as virtual showcases, meetings or entertainment, it must consider new protocols and controls, including third-party monitoring, as well as teams of unbiased content moderation to help keep the experience in the metaverse space free of misinformation, harassment and abuse. Privacy may also need to be rethought for a digital world that can enable its users to do much more, and reveal much more, than they can do on the internet today. Finally, in a digital world that often makes the illusion easy, the organisation must focus on authenticity: A key way to instil trust in metaverse is that the presence of metaverse aligns with the values and purpose of the organisation.

- **The Persistent Metaverse: Building Trust for When Nobody's Looking**

Even when there is no one, it is always there: it is true for the physical world, and it is

assumed to be true for the metaverse as well. Even after customers or employees have withdrawn their VR or XR headsets, any activities they participated in will persist. The contracts smart devices will continue to enforce business agreements and assets. Products will remain on the digital tablets, ready to be purchased by other digital users. Virtual machines will continue to produce virtual widgets.

To ensure that virtual activities, investments and company presence can work as intended in this persistent digital world, it may require rethinking digital services and reinforcing monitoring and controls.

New technologies can help. Blockchain combined with artificial intelligence (AI), for example, can in some cases automate the authentication of identity, assets, transactions and contracts, which helps to establish trust in the activities of metaverse by Classes. This is why serious consideration should be given to the possibility of using teams independent, internal and external, to verify both the code of smart contracts and the underlying hardware and software infrastructure.

*“I think that a significant part of the population of developed countries, and eventually from all countries, will have AR experiences every day, almost like eating three meals a day. It will become part of you.” (Tim Cook, Apple CEO)*

### WHAT ARE THE RISKS OF RECREATING REALITY IN THE METAVERSE?

*“We have to win the fight against platform monopolies because Apple and Google currently have rules in place to prevent the metaverse from existing on the Google Play Store and on IOS. They have rules that prevent web browsers to exist — you are only allowed to use their web browser.” (Tim Sweeney<sup>14</sup>)*

In Neal Stephenson's 1992 science fiction novel "Snow Crash", the world was offered its very first taste of a parallel digital universe. Before non-fungible tokens, the metaverse has been part of the literary and entertainment canon for almost 30 years now. Often portrayed as a virtual escape from the confines of reality, the metaverse is seemingly a logical next step as we watch where we are headed as that society.

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<sup>14</sup> Tim Sweeney is co-founder and CEO Cary, North Carolina game developer Epic Games. The company

is the developer of Fortnite, one of the most popular games in the world



Given that so much of the lives of millennials are already lived online — from their own digital representations hosted on social media platforms until whether they depend on online marketplaces to shop for their hobbies or needs —,the infrastructure is already there. But even as projects, start-ups and large companies hope to cash in on the metaverse trend, all generations need to take the time thinking and wondering about the risks to come.

- **Is This Real Life Or Just A Fantasy?**

South Korea is now experiencing the appearance of a new phenomenon. With the rise of property prices, socio-economic inequalities and dire career prospects following the devastating impact of the coronavirus pandemic, the MZ generation is racing towards the metaverse. In the metaverse, buying and selling parcels of land becomes suddenly a very real possibility and when combined with the monetary value of the real world, it serves as a levelling force in a society where the odds are not necessarily equal.

Defined as the age group that has grown up with digital connectivity since birth, generation Z combines millennials and generation Z. This new segment of society has had to deal with the realities of a “contactless” economy more than ever, because it is a “contactless” situation which is appropriate, given the repercussions of a pandemic which has demanded social distancing.

Without contact (Untact) is a concept that describes a future where people interact more and more online and where companies are replacing humans with machines to immunize themselves against the effects of rising wages and the rapid aging of the workforce. South Korea is already committed to becoming a leader in the development of technologies and infrastructure for an increasingly wild world. Of course, its citizens are some of the world’s main users on metaverse platforms such as Earth 2 and Decentraland.

South Korea, as well as other markets like the Philippines, where citizens flock to virtual worlds like those offered by Axie Infinity, show how inequalities persistent structural causes people to look for alternatives. The world may not be going through a dystopian time, but the catalysts are similar. This is a

similar trend that we have seen with digital assets, in a context of rising inflation, currency devaluation and economic instability, people will want to maximize their returns in the hope of making gains.

*“I think that a significant part of the population of developed countries, and eventually from all countries, will have AR experiences every day, almost like eating three meals a day. It will become part of you. » (Tim Cook, Apple CEO)*

### WHAT ARE THE RISKS OF RECREATING REALITY IN THE METAVERSE?

*“We have to win the fight against platform monopolies because Apple and Google currently have rules in place to prevent the metaverse from existing on the Google Play Store and on IOS. They have rules that prevent web browsers to exist — you are only allowed to use their web browser.” (Tim Sweeney<sup>15</sup>)*

In Neal Stephenson's 1992 science fiction novel "Snow Crash", the world was offered its very first taste of a parallel digital universe. Before non-fungible tokens, the metaverse has been part of the literary and entertainment canon for almost 30 years now. Often portrayed as a virtual escape from the confines of reality, the metaverse is seemingly a logical next step as we watch where we are headed as that society.

Given that so much of the lives of millennials are already lived online — from their own digital representations hosted on social media platforms until whether they depend on online market places to shop for their hobbies or needs —,the infrastructure is already there. But even as projects, start-ups and large companies hope to cash in on the metaverse trend, all generations need to take the time thinking and wondering about the risks to come.

- **Is The Digital Divide Widening?**

Similarly, when it comes to accessing the metaverse, what about the inequalities that could happen there? Much has been said about Facebook's foray into space, in large in part through its Oculus business unit. Critics were quick to point out that the entry of big tech into the metaverse only distracts from the principal fundamentals of the rise of Web 3.0, a more decentralized and fairer online ecosystem. With Facebook in the driver's seat, the metaverse is likely to become, but another

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<sup>15</sup> Tim Sweeney is co-founder and CEO Cary, North Carolina game developer Epic Games. The company

is the developer of Fortnite, one of the most popular games in the world

opportunity. Leverage ever-growing swaths of user data for monetization while referring to the same issues of oversight and accountability around the world virtual.

Meanwhile, the growing inequalities already seen in terms of the digital divide could very well be amplified in the metaverse. Equal access to the same tools and infrastructures during immersive and continuous 3D landscapes will probably require not only great computing power, but also high-speed Internet access and high-end helmets. Similarly, since advertising is probably an element key to “closed” funding or corporate-backed metaverse, will inequality be determined by who can afford an ad-free version of a metaverse or whose avatar is of better quality? Is there not a risk of creating a new accessibility gap between haves and have-nots?

With so many aspects of life now being lived online, through education, career, and even dating, levelling these infra-structural access points to the metaverse will be critical.

- ***Is There A Bug In The Matrix?***

French philosopher and sociologist Jean Baudrillard coined the term hyper-reality, the state in which reality and simulation are so intertwined that the distinctions between the two are lost sight of. Baudrillard argues that, ultimately, the simulated world matters more than the “real,” because it becomes the site from which all meanings and value is derived. Just like Generation Z who now finds that they now derive more satisfaction from knocking down real estate in Decentraland. Will there ever be a state in which we never want to be hooked up?

Eventually, if it turned out that the idea of the metaverse simply became reality in itself, where upon should it be based? If “Snow Crash” is to be taken as a warning, what the world finally knows is the rise of city-states governed by the interests of large corporations — inequality eventually prevails, and the metaverse serves more as a virtual escape, of idealistic distraction from the ruins of reality. Are we then really far from “1984”<sup>16</sup>?

As a collective blockchain ecosystem — be it NFT projects, games to be won or virtual worlds — each individual has the possibility, in collaboration with a growing number of programmers and UX designers from around

the world, to create something really great. Armed with an ideology of decentralization, it is possible to develop a metaverse that is accessible, fair and beneficial to all, no matter who they are, and where they could be. It would be a shame to waste the opportunity, without the need to borrow from the reality; it is possible to do better.

However, there is no shortage of prophets of doom, and some believe that the metaverse generates “terrifying dangers”, and that we must figure out how to control it now before it is too late. In fact, while some observers are sceptical of how the metaverse could turn out to be revolutionary, Mr. David Reid, professor of AI and spatial computing at Liverpool Hope University, is adamant he will change our lives immeasurably, from same way the internet did.

This is why he calls for urgent conversations to begin without delay on how to protect metaverse users, before the technology becomes a reality within five to the next ten years. Professor Reid, from the Department of Mathematics, Computer Science and genius of Hope, indeed argues that *“the metaverse will have enormous repercussions — it offers fantastic benefits and terrifying dangers. And we need a very robust system in place to control the metaverse. We are clearly in the very early stages, but we need to start talking about these issues now before we go down a path without return. It is vital for the future of humanity.”*

According to Professor Reid, the risks posed by the metaverse are cantered on global control as well as on the collection and protection of data and he points out that:

*“People have talked about how the rise of artificial intelligence (AI) is going to change society and everything we do significantly; and that's true. But the metaverse is at least as big, if not bigger, than the rise of AI because if you think about how that works, the ultimate goal of the metaverse is not only virtual reality, or augmented reality, this is mixed reality (MR). It mixes the digital and the real world. In the end, this mixture can be so good, and so pervasive, that the virtual and the real become indistinguishable. And the market for this is gigantic. Whoever controls it, will essentially have control over all of your reality.”*

*Many current prototypes of MRI systems feature face-tracking technology, eyes, body and hands.*

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<sup>16</sup> Science fiction novel by Georges Orwell written

between 1945 and 1949 and published in June 1949

*Most have sophisticated cameras. Some even include electroencephalogram (EEG) technology to detect brain wave patterns. In other words, everything you say, manipulate, watch or even think can be monitored in MR. Data this will generate will be vast ... and extremely valuable. And that's why we need a system in place for the police. No company should ever exercise a single check - it's just too bad to let happen. »*

*"It has to be a cooperation, using open standard protocols, where a standard is freely available to be adopted and shared by others, similar to the World Wide Web (WWW) has evolved."*

Professor Reid points to the fact that the Internet has the World Wide Web Consortium (W3C), influenced by the open attitude of the founder of the Web, Sir Tim Berners-Lee. The metaverse needs its own equivalent, and he needs it fast. He warns that the W3C encourages participation, sharing knowledge, and thus builds trust on a global scale. This influences the functioning of the Internet. It's not a business, it's not a government, and it is an independent organisation that deals with standards.

The metaverse needs the W3C equivalent and these conversations need to happen now, because every tech company I know sees this as part of their coming. Acting now also gives the world a chance to combat the risks of security in the metaverse, as well as the threat of intimidation or social media stacks in this universe of mixed reality. Professor Reid adds:

*"If you think about how much data a company could collect from the web per hour currently, compared to what it could collect with the metaverse, there is simply no comparison. But think about it: if you have your avatar in the virtual world, do you own it? Do you really own your appearance? Could you hijack someone's avatar and appear like someone else? How do you know you're really talking to the person a who do you think you're talking to?"*

*It's coming to the internet now and the threat will be much greater with the metaverse. You are able to own things and have possessions in the metaverse — how protect? People are worried about the influence Twitter can have on politics right now. But in a completely immersive*

*environment, what influence can you have on someone, when you can transport someone to a war zone and show them precisely what is going on there?"*

*Likewise, to what extent do social media pilings or online bullying could become more dangerous in the metaverse? I would say it has the potential to be a lot, much more extreme. The visceral experience of immersion can be exceptionally emotional."*

But there is better news for the industry, as Professor Reid suspects the metaverse could be a huge boost when it comes to the rise of the Northern Powerhouse. He estimates that he thinks the metaverse is the next platform computer science. It is not a white elephant. This is the next stage of evolution, not only for the Internet, but for computing as a whole. Also, no one knows how many jobs the metaverse will create, but it will spawn a whole new industry. And, of course, for all the downsides, there will be huge upsides:

*"For me, it might even be the way the country 'steps up'. If you can move virtually, you don't need to live in London. You don't need to be physically located anywhere. The Northern Power Plant should be based around the virtual reality and artificial intelligence because these are two technologies where you can actually level you up, because location doesn't matter, provided that you have enough bandwidth."*

***"The metaverse is coming. Metaverse isn't just a place to play. The world's future will be photo-realistic, will obey the laws of physics and will be inhabited by human avatars and AI beings. We will create a future in these metaverse before downloading the plans that will be fantasized in the physical world."*** (Jensen Huang, CEO of Nvidia <sup>17</sup>).

### HOW TO MANAGE RISKS IN THE METAVERSE?

***"If you keep your eyes open and your brain blank while interacting with people that offer you possibilities, you probably won't deny that possibility."*** (Anuj Jasani<sup>18</sup>)

In risk management, AI must be understood from the point of view of risk and we can think of the

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<sup>17</sup> Nvidia is a software company specializing in Artificial Intelligence, inventor of the GPU, which creates interactive graphics on laptops, workstations, mobile devices, laptops, PCs, and more.

<sup>18</sup> Anuj Jasani founded the best and innovative online

business platform in the world, FEN India, which runs on FAN single franchise concept, e-commerce, and network marketing and eventually it will become one of the youngest men in the world in the field of brokering and name the founding industry

algorithms that power the technology. How was the technology created? How is she exchanged? What basic data are used? As organisations resort to blockchain technologies, understanding the mechanics of the ecosystem is essential for businesses (crypto-currency still involves contracts!).

The metaverse offers the possibility of decentralized communication. In the metaverse it is possible to sit in a virtual bar together or run through a virtual forest and pull things together. We could play against the AI for a virtual opponent. The metaverse is where the Humans made of flesh have lifelike relationships with AI-powered synthetic humans.

Virtual girlfriends or boyfriends are on the rise globally as robots deliver increasingly realistic conversations. People are starting to form real connections emotional with virtual avatars; substitutes for genuine human ties could lead to alienation throughout society.

Immersive technologies originally developed to provide entertainment or games weren't built for business, they're not secure by design. For the regulated industries, how do you know if the necessary controls exist when you put a VR headset? Policies and processes need to be kept in mind as the experiences become more immersive.

Moreover, identity is an important concept. With the ability of devices, every human being has multiple personas. Is it a self-dominant identity? Can everyone choose who has or does not have access to its data? It is essential to understand the relationship with business partners, third-party vendors, customers and customers of customers. Who should be presented in these experiences and to which identity to attach?

Data protection is essential because immersive experiences and equipment generate more data. Analytics and social media are one thing, telemetry from headphones is another. Who gets the data of every minute of facial movement, composition and expression of the pupil? The attack surface for data is expansion.

In addition, bioinformatics (technologies used to collect, store, analyze and disseminate biological data and information) is subtle enough to diagnose early Parkinson's disease or dementia. These data could have serious consequences on the confidentiality of medical data.

In terms of systematic risk, our children are growing up in a space where they can be whatever they want, but only online. This generation may

never learn the value of cultivating personal relationships.

One must be fully aware of the terrorism that could be perpetrated by the metaverse. The American army is used to using video games as training and recruiting tool. That what happens when terrorist regimes force children to become radicalized through games immersive? Children are sensitive to feelings of power and would be coerced into participating in in-person military games.

It is essential to understand the speed at which the business is changing. You should check with the financial director who spent internally on equipment, trace the money and thus see who is investing in services or technologies to create a prototype and begin its journey in the metaverse. This is how it is possible to get an idea of the skills and abilities risk assessment that will be needed to manage risks in the metaverse.

For years, billions of Euros have entered the accounts of companies thanks to the time, money and content offered in exchange for the dopamine of a social media "like" or "go". Now we need to present social media platforms with a perspective and a common framework that signals risks have been assessed and that each organisation has determined what it needs for these systems to be secure.

Brands try to get into the metaverse, but often have no idea how to get there and do so successfully, which poses risks to their safety. Blockchain technology is connected to hot wallets (wallets connected to the Internet). There are huge risks potential from a computer security perspective.

The metaverse has stimulated the creative economy (a software-enabled economy that enables creators to derive income from their creations). Creators can digitally group their work and call it an asset, and that's an abstraction. As for the IP (Internet Protocol Address) of each business, including how it generates and nurtures its brand, is a digital asset in this economy?

With incredibly successful and creative one-man businesses starting in the metaverse, for any risk manager, it becomes essential to know the technologies that the organisation uses, understand the maturity of these technologies and know who is behind the technologies. Third-party risk management may be new to the metaverse, but Snoopdog has been around for a while. The Doggfather's "Next Generation Unique Avatars" are long exhausted.

In such a context, is it possible to identify the ten main risks associated with metaverse even as the Internet experience explodes with the entry into a virtual world where men will be able to do everything, or almost everything, that they do today in the physical world. Although the technology is still in the making for a few years, it is becoming increasingly clear that the ground work is underway for the new Metaverse-based Internet.

However, just like the Internet today, there are inherent risks and security issues that will need to be addressed as the world moves into the age of digital connectivity. While the full potential of virtual reality worlds is still unfolding development and evaluation, metaverse security consultants urge caution in listing the top ten risks the metaverse traveller will be confronted with:

- **Cyber-Bullying and Harassment**

The issue of mental health and mental well-being in the Metaverse has made the news before. Cyber-bullying remains a serious threat to young adults and teenagers. In fact, the effects of cyber-bullying are well documented and can include everything from low feelings of self-esteem to suicidal tendencies, especially among teenagers. In February 2022, a woman claimed that she (her avatar) had been harassed in a virtual game by 3-4 male avatars. Experts suggest that because human experience in the metaverse is as real as our experience in the real world, the pain and suffering is just as real and just as intense.

- **Mental Disorders**

There are other threats that are more difficult to avoid in a virtual world. For example, the advertisements are used to stimulate the development of many free games. The individual malware could theoretically replace ads with images that can induce motion sickness or even epileptic seizures. Such images could be streamed to a person's virtual reality headset.

- **Identity Theft**

Many experts are concerned about the possibility of identity theft becoming even easier in the metaverse if strict security measures are not implemented. The flight ID is already a multi-billion dollar industry in the real world; according to one study published

last month, losses related to identity theft amount to approximately 24 billion dollars. Worse still, the number of cases has increased by more than 50% compared to the figures of 2020, according to cyber security research.

- **Unauthorized Data Collection By Agencies**

Legitimate companies also collect personal information. However, the virtual reality has the potential to take information gathering to a point that can be at some no limits for some people. For example, virtual reality headset theoretically allows third parties to collect more and more personal information more sensitive, such as voiceprint data, biometric information and even facial geometry.

- **Ransomware Attack**

Ransomware is a type of malware that has the ability to encrypt your files personal information and prevent you or anyone else from accessing it. It will then display a message urging you to pay a certain amount of money to get your data back, hence the name ransomware. You can probably imagine how problematic this could be in a metaverse parameter. Any metaverse profile contains much more information than a simple standard social media profile; it will also contain all kinds of sensitive information. Imagine not being able to access your bank accounts or even your personal data. This can become very problematic in a metaverse context.

- **Evolution of the Perception of the Real World**

A study by researchers at Stanford University<sup>19</sup> found that the virtual reality and augmented reality, two of the cornerstones that will form the basis of the metaverse, can impact how people perceive the real world. For example, the participants in this study avoided sitting in a chair where they had seen an avatar generated by computer sit in their AR (augmented reality) environment.

- **Deepfake Videos**

In a world that thrives on the consumption of information, experts worry also false information campaigns disseminated by audio and video clips that threaten the security of our country. Deepfakes are video or audio clips that have been manipulated to look like

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<sup>19</sup> For this development see: New Stanford research examines how augmented reality affects people's

behavior <https://news.stanford.edu/pressreleases/2019/05/14/augmented-reality-avator-real-world/>

someone else. Deepfaking works the same way than face swapping but uses sophisticated artificial intelligence algorithms to collect data on individuals from different angles so they can be overlaid to the existing video.

- **Social Engineering Attacks**

Social engineering involves psychologically manipulating people into disclosing sensitive information. With the amount of personal data that will be stored in the metaverse, it could become a gold mine for hackers looking to sell personal information on the Dark Web. Ultimately, the basis of security management metaverse will be education. You can have the best security system in the world, but if the operator does not know how to use the system or if he is irresponsible, it will not help him.

- **Risks Specific to Shared Spaces**

The metaverse is driven around bringing people together. Although in some ways it may be a good thing, it can also present concerns. In today's Internet, you can find groups of like-minded people and create fantastic communities. In the metaverse, however, one must also interact with people who have opposing ideals. Studies have shown that people act differently in a virtual world versus the real world. This manifests rather strongly in the game world of massively multiplayer online role-playing game (MMORPG), where experienced players tend to denigrate new players and even bully women and men?)

- **Validation of New Applications**

Just as on the Internet today, new applications have the potential to cause havoc on our digital lives. In a metaverse context, however, the damage can become even more disastrous with the sheer amount of sensitive data that will be preserved. Therefore, measures should be developed to check whether all new applications contain malicious code.

The above list identifies only the ten main metaverse risks, articulated around the security concerns. The list will surely grow and evolve as

we build our real virtual life where almost everything will be gradually realized in the digital world<sup>20</sup> and it will become increasingly essential for the risk-management team to recruit millennials who are likely the only ones with the skills to identify and assess the risks in the metaverse!

*“The distorted reality created by humans on earth has fooled so many of us, because God created the earth as reality and we created virtual reality. A world in a world that distorts the truth misleads people and corrupts the souls.” (Aiyaz Uddin<sup>21</sup>)*

### HOW TO ADDRESS DIGITAL SECURITY IN THE METAVERSE?

*“The metaverse can bring many life-changing applications to our daily life and which will benefit us. However, our lives become more important than our physical lives; it is not the kind of life we should all want to lead.” (Arian Adeli Koodehi<sup>22</sup>)*

As the noise around the metaverse increases, many are raising concerns at the subject of potential risks in an environment where the boundaries between the physical and virtual continue to fade. It is therefore necessary to take into account the need to build trusted ecosystems within the technologies developed for the metaverse. These trustworthy ecosystems will constitute the integration of algorithms, structures, frameworks, regulations and policies in hardware and software development cycles for address the distinct elements of security, privacy and privacy security in the DNA of technology.

How data is shared in virtual worlds will need to be analyzed very carefully to ensure confidentiality. A second dimension to be examined in the privacy considerations of metaverse development is to eliminate the biases that will lead to non-inclusive or malicious adaptation of the real world. Engage in the metaverse will be a use of integrative emerging technologies. This requires an overall open-box security validation process of the protection provided in the environments against breaches of the confidentiality, integrity or other aspects of

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<sup>20</sup> For more information see the video Metaverse Security Center et la certification Certified Metaverse Security Consultant (CMSC) - <https://metaversesecuritycenter.org/>

<sup>21</sup> Aiyaz Uddin, a young entrepreneur from Hyderabad, Telangana has earned his name and reputation in many fields and industries such as IT,

digital media, brand management, communications and corporate social media planning

<sup>22</sup> Arian Adeli Koodehi, founder and CEO of Crunchbase, is a young entrepreneur who founded his first organization, Rivo Trading, at the age of 16 and also published his first book, The Quantified Fortune at the same age

## Metaverse & Risk Management

the security; clearly, within the European Union for example, we need a new reinforced GDPR for the virtual world of the metaverse.

These trusted ecosystems will help create a stable, inclusive and purposeful existence of a virtual and immersive existence.

### How Might These Risks Play Out in the Metaverse?

To understand how security risks could multiply in the metaverse, a key construction of this digital future should be shared: “At the heart of the concept of metaverse is the idea that 3D virtual environments that are accessible and interactive in real time will become the transformative medium of human engagement. For them to become practical, these environments will depend on the widespread adoption of extended reality. »

Even if it's not a fully immersive existence, it's likely that a lot of people spend more time mixing offline and virtual interactions, moving towards a mixed reality (MR). Privacy and security breaches can compromise security interactions and users. For example, it could take the form of a person who poses as a doctor to gain access to surgical room technology to digital surgeries.

You can get a good idea of the potential risks in some existing applications that create “virtual worlds” like on many gaming platforms. It is clear that significant security challenges have already arisen in these environments. For example, re-enactments of the 2019 Christchurch mosque shootings targeting very young children have been repeatedly found on the Roblox platform, despite efforts important on the part of the company to stem the tide of this content.

Violent extremist and terrorist content is not the only evil in such virtual worlds. Recently, on Facebook's Oculus Quest VR headset, an employee experienced a racist tirade which lasted several minutes while playing Rec Room and was unable to identify or report the user. Groping has also been an issue that has emerged in the metaverse, for various reasons.

### Where Are We On Digital Risks Today?

By stepping back and observing the current digital environment, the risks of harm are already increasing. According to the latest Global Threats Assessment Report from WE Protect Global Alliance, 1 in 3 respondents (34%) to its global Economist Impact survey, was asked to online sexually explicit acts that he/she was uncomfortable with during his/her childhood.

Additionally, the Internet Watch Foundation saw a 77% increase in content "self-generated" sex of children between 2019 and 2020.

In order to develop a comprehensive approach to security as the metaverse emerges, one must establish public-private partnerships bringing together governmental, industrial and academic experts and from civil society.

Even before the COVID-19 pandemic, more than half of girls and young women had been victims of online abuse, according to a global survey conducted last year by the Web Foundation, an organisation co-founded by Web inventor Tim Berners-Lee. The sharing images, videos or private information without consent - known as doxxing - was the most concerning issue for girls and young women in the world, according to the Web Foundation survey. One in four black Americans and one American in ten Hispanics has experienced online discrimination because of their race or gender ethnicity, compared to just three percent of white Americans. The risks are already high, especially for vulnerable groups.

“Contributing to the metaverse responsibly will require research, collaboration and investments in security with regards to XR. For example, we invest in controls that allow users to manage and report content and conduct issues, as well as safety tools designed for immersive experiences. But we cannot do it alone. In order to address security holistically as the metaverse emerges, we need to partner with others in government, industry, academia and civil society. » Explains Antigone Davis, Global Head of Safety at Meta.

This is important given that digital hazards in the metaverse will be felt as more real depending on how our brains interpret the immersive experience; Mary Anne Franks, president of the Cyber Civil Rights Initiative, in an article about the virtual and augmented reality, mentions that research indicates that violence in virtual reality is “*much more traumatic than in other digital worlds*”.

### How Might The Risks Be Exacerbated In The Metaverse?

There are many ways the current risks could be exacerbated in the metaverse. First, depending on how these digital spaces are governed, there are risks of unwanted contact in a more intrusive multimodal environment. Today, if someone we don't know or with whom we don't want to communicate contacts, she communicates by message, friendship or otherwise trying to communicate with us on platforms like

Instagram, Facebook, etc. His ability to communicate is mostly limited to spreading text messages, photos, emojis, etc.

However, imagine that an unwanted person could enter the virtual space of someone and "get closer" to that person in the metaverse. Without robust mechanisms to report, prevent and act in real time, this could lead to unwanted behaviours. With haptic technology<sup>23</sup>, the risks that harm the metaverse will feel more "real" isn't far-fetched given that many companies are working to integrate the touch as an additional sensation in an immersive reality.

For example, haptic gloves developed by many organisations aim to provide tactile feedback to give a more precise and realistic feel to any movement. Goodsure, it can create a better sense of reality and increase connectivity in a virtual environment, but this can also be potentially abused by bad actors in ways that may not yet be fully understood.

Harmful content that proliferates too quickly in today's digital lives canal so result in the metaverse to more graphic, 3D, and unwanted auditory content that feels more intrusive and has a greater impact due to the multi-sensory nature of the environment in which it is propagated.

The rise of virtual currencies can often present another challenge in the proliferation of harmful content and activities online. For example, it is claimed that the children use their avatars to do lap-dances in virtual strip clubs in exchange of virtual currency, "Robux". Crypto-currencies are a popular option for those who buy child sexual exploitation material (CSAM), because their control decentralised and their independence from financial institutions also ensure anonymity, according to an Active Fence report.

Given the role that digital currencies are supposed to play in the metaverse, financial incentives and payment structures that lead to the proliferation of harmful content are likely to increase in size and complexity with the transition to this WEB 3.0.

There is an additional risk already highlighted above related to the monitoring and conservation of biometric data, by providing platforms with "*a new quality of information that understands your true identity combined with stimuli – indicating what you may be thinking, to love and to want in*

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<sup>23</sup> In simple terms, this means that haptics is the science of transmitting and understanding information through touch. The mechanism that stimulates touch

*a unique way*" according to Brittan Heller, specialist in technology and human rights; in his document Reimagining Reality: Human Rights and Immersive Technology, she uses the term "*biometric psychographic*" and exposes implications potential of new data collection with immersive technologies for rights, privacy and self-censorship.

### *So, What Can Be Done To Contain These Threats?*

Many companies, academics and experts from civil society, organisations regulations, advocate enacting laws and establishing new regulations to what is prohibited in the real world is also criminalized in online spaces. By example, Bumble is pushing to criminalize cyber-flashing. Their CEO, Whitney Wolfe Herd has asked lawmakers: "*If indecent exposure is a crime on the streets, then why is it not on your phone or computer?*"

Human rights lawyer Akhila Kolisetty said India, Canada, Grenada, Britain, Pakistan and Germany were among a small number of countries that banned image-based sexual abuse, when private photos are shared without consent. Many countries do not have laws against emerging forms of digital abuse such as "deepfakes", where the face of a woman or a man can be superimposed on a pornographic video and shared on messaging platforms.

Australia's eSafety Commissioner supports victims of such abuse, but many other countries lag behind in these regulatory mechanisms and functions. The same is true for protecting children online. "Our society says we will protect children in the physical world, but we have not yet seen it in the same way in virtual worlds," said Steven J. Grocki, who leads the operations and child obscenity at the Department of Justice. Updating laws to apply them in a digital context will be a key element of the governance of the metaverse.

Professor Hoda Alkhzaimi added that there is a constant evolution of the means we build attack mechanisms on a virtual platform. It's never a cycle of fixed development. We should become fully aware of the way in which the software and hardware elements of the technology are constructed to include the security elements to protect the integrity of the content developed.

at the origin of information transmission is called haptic technology, whereas the transmitted information is called haptic return



The interactions created the users in the environment and overall stability of the presented virtual world. It is not possible to limit oneself to a single factor to be taken into consideration here, because the relative aspects confidentiality, integrity, authenticity, accessibility, protection of privacy and security must all be developed. Attacks on virtual devices have been built in the past through an open-source platform like Open VR by Valve.

### ***How Would It Be Possible To Ensure That This Will Not Be A Recurring Occurrence In An Essential Virtual Infrastructure?***

Civil society organisations such as Access Now and EFF are calling on governments and other stakeholders to address the issue of human rights in the virtual and augmented reality background. The other big area that can be improved is that of the policies, law enforcement and global moderation mechanisms that the platforms adopt.

For Brittan Heller<sup>24</sup>, specialist in technology and human rights: “The platforms of virtual reality and augmented reality need specific terms of service for immersive environments, depending on how this technology interacts with our brain. We cannot simply apply existing social media rules to the Metaverse. This is important because the governance of platforms in the digital worlds must regulate behaviour, in addition to content. »

Currently, one of the most common forms of governance in virtual world is a reactive and punitive form of moderation. This does not prevent damage from occurring in the first place and often the consequences can be circumvented as bad actors become more sophisticated in how they toe the line policies. Find ways to encourage better behaviours and perhaps rewarding positive interactions could become a bigger part of a safer digital future, especially given the increased security risks in the metaverse.

***“Metaverse is the next level of the 'try before you buy' concept, and it offers new vectors for advertisers and marketers, and they shouldn't be underestimated no matter what we think of a virtual universe.” (Simone Puerto<sup>25</sup>)***

<sup>24</sup> Technology and Human Rights Specialist and founder of the Centre for Digital Civil Rights – see: <https://www.wired.com/story/what-mark-zuckerberg-gets-wrongand-rightabout-hate-speech>

<sup>25</sup> Simone Puerto is a former hotel general manager, consultant, author of three bestselling books on hotel marketing, contributor to major industry blogs, and

## **WHO ARE THOSE WHO WOULD STILL DOUBT THE STRATEGIC IMPORTANCE OF THE METAVERSE?**

***“People are social creatures and the new opportunities for socialization are almost never turned down.” (Johanna Faigelman<sup>26</sup>)***

While the Metaverse concept has existed for a few decades, the interest of economic agents for the virtual world surged at the end of 2021, following a surge in sales of non-fungible tokens (NFT), as well as announcements from big tech players, including their interest in space, is highlighted by their investments in this area.

Many factors are driving investor enthusiasm, including continuous technologies progression the infrastructure required to run the metaverse; The favourable demographics actors; increasingly customer-focused marketing and engagement consumers; and increase market readiness as users explore the first version of the metaverse, largely powered by the game (some games with tens of millions of active gamers), with emerging apps encompassing the socialisation, physical fitness, commerce, virtual learning and others.<sup>27</sup>

At the same time, a study published by Citi<sup>28</sup> (Global Investment Bank and Financial Services) places the potential of the metaverse in the range between 8,000 and 12,000 billion USD on the horizon2030, with 5 billion active users on the platform.

And for those who still doubt the reality of the Metaverse, and especially its impact on the lives of organisations in all sectors, two illustrations in the insurance sector should convince them to reflect on its potential reality for their markets and their partners in a near future.

### **• Why Does AXA Choose To Invest In The Metaverse?**

AXA France takes its first steps in the metaverse thanks to the acquisition of a plot, from The Sandbox, a Hong Kong-based video game company. This is the first actor of the French financial sector (banking and

MBA associate professor for schools like Les Roches, ESSEC and LUIS

<sup>26</sup> Johanna Faigelman, founding partner and CEO of the market research company Human Branding

<sup>27</sup> See bibliography N° 18

<sup>28</sup> See: Metaverse and Money: Decrypting the Future - [https://icg.citi.com/icghome/what-we-think/citigps/insights/metaverse-and-money\\_20220330](https://icg.citi.com/icghome/what-we-think/citigps/insights/metaverse-and-money_20220330)

insurance) to establish himself in this new virtual world. Through this initiative, the insurer puts into practice its ambition to better understand this universe and to animate its AXA Tech, Digital and Data community of more than 2,000 people.

AXA France plans to create sharing spaces for its employees and customers on the metaverse and welcome hundreds of new talents. The French subsidiary of the insurance group will be accompanied by The Sandbox, Excelsior and Metaverse Studio, for the development of his plot. So, the situation will be worth following.

- **Why Does The Roam Enter The Metaverse?**

The Roam (Association of Mutual Insurance Bodies) announces the creation of its own space in the metaverse. Called “Meta-Roam”, developed in partnership with the start-up French Work adventure. The space is accessible to its 71 members of mutual insurers since July 4, 2022. It is therefore for these mutual insurance companies a shared entry path in the Metaverse.

Aware of the importance of the metaverse as a relational channel of the future, Roam is embarking on this universe to introduce its members to the web of tomorrow. Once familiar with this ecosystem, mutual companies will be able to think about how to exploit the potential of the virtual world.

*“Change is inevitable, and it is consistent with reality. Metaverse evolves by nature. Change makes holy sinners and vice versa. Likewise, the dust becomes men, men become gods, and the gods turn into dust.” (Robert Charles Wilson<sup>29</sup>)*

## CONCLUSION

### Will The Metaverse Revolutionize Our Lives?

*“Augmented reality will change the world more than many other technologies. Travelling to meet people will be much less important if you can stand in a room and chat with a virtual representation of a person who is so close to reality – it will be a whole new level.” (Tim Sweeney<sup>30</sup>)*

When the Internet came into being, it started with a series of technological innovations, such as the

ability to let computers talk to each other over great distances or the ability to hyperlink from one web page to another. These technical characteristics were the elements of base which were then used to create the abstract structures for which we know Internet: websites, applications, social networks and everything else that relies on these elements of base. And that's not to mention the convergence of interface innovations that do not strictly part of the Internet, but are still needed to make it work, such as displays, keyboards, computer mice and touch screens.

With the metaverse, there are new building blocks in place, like the ability to host hundreds of people in a single instance of a server (the idealistic predictions of metaverse assume this will increase to thousands or even millions at a time, but that might be too optimistic), or motion tracking tools that can distinguish where a person is looking or where their hands are. These new technologies can be very exciting and futuristic.

However, there are limitations that may be impossible to overcome. When technology companies like Microsoft or Meta show fictional videos of their visions of the future, they often tend to gloss over how people will interact with the metaverse. The VR headsets are still very bulky, and most people suffer from motion sickness or physical pain if they wear them too long. Augmented reality glasses facing a similar problem, in addition to the not inconsiderable question of understanding how people can wear them around in public without looking like big boobies. And then there are the virtual reality accessibility challenges that many companies turn a blind eye to.

So how do tech companies show the idea of their technology without show the reality of bulky helmets and outdated goggles? So far, their main solution seems to be to just make the technology out of whole cloth. What about the meta-presentation holographic woman? No doubt we must dare to say that the king is naked and shatter the illusion, because that's just not possible with even very advanced versions of existing technology.

Unlike motion-tracking digital avatars, which are a bit limited right now but who could be better one day, there is no limited version to pop an image three-dimensional outdoors without

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<sup>29</sup> Robert Charles Wilson, born in Whittier (California), is a Canadian science fiction author of American origin.

<sup>30</sup> Ibid note 9

tightly controlled circumstances. No matter what Iron Man tells you! Perhaps they are meant to be interpreted as images projected by glasses — the two women in the demo video are wearing similar glasses, after everything — but even that assumes a lot about the physical capabilities of the compact glasses, which Snap says isn't an easy problem to fix.

This kind of concealment of reality occurs frequently in video demos of the way which metaverse might work. Another Meta demo showed characters floating in the space. Is this person attached to an immersive aerial platform or is he just sitting at a desk? A person represented by a hologram — does he have a helmet and if so, how is his face scanned? And at times, a person grabs virtual objects, but then holds those objects in what appears to be their physical hands.

In the months since Facebook's rebranding, the concept of "metaverse" has served as a powerful vehicle to repackage old technologies, overemphasise the benefits of new technologies and capture the imagination of speculative investors. But money pouring into a space does not necessarily mean a massive paradigm shift is just around the corner, as everything from 3D TVs to delivery of Amazon drones and Google Glass can testify to it. The history of technology is littered with the skeletons of failed investments.

That doesn't mean there isn't anything cool on the horizon. VR headsets like the Quest 2 are less expensive than ever and finally weaning off expensive desktop or console rigs. Games video and other virtual worlds are becoming easier to build and design. And personally, I think that advances in photogrammetric — the process of creating digital 3D objects from photos or videos — is an incredibly cool tool for digital artists.

But to some extent, the tech industry as a whole depends on the futurism. Selling a phone is fine, but selling the future is more profitable. In reality, it may be that any real "metaverse" is little more than virtual reality games and digital avatars in Zoom calls, but mostly something that we still see as Internet.

The issue of trust in the platform is important. Many companies have used already the cloud as their primary infrastructure and have allocated their workforce accordingly, so from moving the desktop to a virtual world reality be a logical next step (even if the technology still has to evolve

considerably to make the idea of being in RV 8 hours a day attractive).

Those whose operations involve the processing of personal data or classified information may want to continue to rely on in-house solutions and not expose the identity of their employees on a blockchain.

This means that if the metaverse really becomes a new paradigm, it must probably keep the "if" in line with the above, the fundamentals of threat reduction will be the same: protect accounts using password managers and 2FA, use a reliable cyber security solution to prevent malware and attacks phishing, and stay alert at the level of managers and all employees, on cyber-security best practices. When using crypto-currency, you must invest in a hardware wallet.

Of course, the metaverse is still far from being a concrete, everyday reality, but when it enters in daily life, not all brands will be able to grow in these competitive markets. Like the people who control them, avatars will have little time, opportunity and energy to interact with companies. Brands that hope to thrive in tomorrow's metaverse must explore its limits and possibilities today and bet before if there are no more virtual worlds to conquer as Nike and Gucci already do, for example.

Finally, it should never be forgotten that tech giants such as Apple and Google have ambitious plans to materialize the metaverse. With the commitment of emerging technologies and the progressive development and refinement of the ecosystem, our virtual worlds (or digital twins) will be radically different in the years to come. Today our future digitized will be more interactive, more alive, more embodied and more multimedia, thanks to the existence of powerful computing devices and smart wearable.

However, there are still many challenges to overcome before the metaverse fits into the physical world and in our daily lives. We must call for a holistic approach to build the metaverse, because we have to consider that the metaverse will occur like another huge entity in parallel to physical reality. By examining the most recent works of various technologies and ecosystems, it remains to be hoped that we have initiated a broader discussion within the community of metaverse and risk management professionals if they want to remain relevant within their respective organisations.

Reflecting on the main topics discussed in this article, it appears that the fundamental challenges

and the research agenda are to shape the future of metaverse in the next decades. There is an urgent need that, with the help of young millennials, the global community of risk-managers and their associations are addressing these issues, as well as those relating to the climate, to justify and confirm their prospective role for the benefit for the economic and governmental actors to ensure a safer and fairer world for young people generations.

*“The metaverse word to watch is continuity. The feeling that when you go from place to place, there are certain things that... identity comes with you. The avatars are so important... your digital assets come with you... Your friends can they come with you? Can you travel together? Can you stay in communication while moving from place to place? (Andrew Bosworth<sup>31</sup>)*

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