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THE CONSUMER METAVERSE

Consumers in the immersive digital world

FORESIGHT PROJECT

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We believe in the power of ideas. That's why we fund and help Finnish companies grow quicker and develop their innovations to become global success stories.

This report has been prepared by Copenhagen Institute for Futures Studies for Business Finland

COPENHAGEN INSTITUTE FOR FUTURES STUDIES

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INTRODUCTION

In August 2023, Ralph Lauren's CEO, Patrice Louvet, conveyed his unwavering commitment to virtual realms despite the overshadowing AI buzz, stating to Bloomberg, *"The media headlines have moved on, but the consumer has not."*[1] Ralph Lauren's expansion into Fortnite showcases the growing fusion of games, virtual worlds, and brands. In August 2023, they opened their own island in Fortnite that sells a limited-edition physical version of a digital boot that originally debuted within Fortnite and references classic moments in the brand's archives.[2]

The Metaverse, though still under development, has already garnered global interest. Prominent companies from diverse sectors are actively engaging with the Metaverse; among them, Meta, Google, Microsoft, and last but not least, Apple is investing heavily in its infrastructure, while most larger brands are establishing their presence within this virtual realm.

In an era where digital innovation reshapes our lives, businesses, and society, the line between the physical and virtual worlds becomes increasingly blurry, leading to a paradigm shift for consumer-oriented businesses. Understanding and engaging with today's convergence of our physical and digital lives, defined as the metaverse is not just about technology; it's about the fundamental shift in how we interact, work, play, and exist in a digital-first world. The implications for consumer behaviour are potentially profound, making this an essential area of focus and exploration. What social dynamics will arise that are unique to the metaverse? How do we create and support human-centric meaningful metaverse experiences? How might the introduction of AI Agents and other new technologies change the way we interact and purchase in the metaverse?

This foresight project is an initiative from Business Finland aimed at establishing a framework for the evolving dynamics of the consumer metaverse. Hence, this initiative will focus on the consumer aspect of the metaverse, rather than the industrial metaverse.

The introduction of immersive technologies has not just broadened digital horizon, but are fundamentally altering consumer expectations.

> The future of the metaverse is about direction, not just the current technologies.

The field of the metaverse is filled with diverse opinions and beliefs that are closely bound to a number of key uncertainties that will have a high impact on the development, and in this project, we will navigate these uncertainties using the framework of future studies.

The future of the metaverse is about direction, not just the current technologies. The technologies we use today are merely tools that will evolve and be replaced over time. The true essence of the metaverse lies in its trajectory – how it grows, adapts, and integrates into the fabric of our digital lives. By employing foresight methodologies, we aim to map the rapidly expanding landscape and use cases of the metaverse, looking for directions which will enable businesses to be prepared for customer behaviour from a short- and long-term perspective.

It is imperative for consumer businesses to not only keep pace with the changes happening today, expand current capabilities in order to grow. At the same time companies need to prepare for new capabilities, innovate, and build entirely new business opportunities that can embrace the shifts in consumer expectations and behaviours.

The goal of this project is to discover the opportunities contained inside the consumer metaverse for Finnish businesses, as well as to identify potential barriers and drivers in the contextual environment that may shape the future of consumer businesses in a Finnish perspective.

The transition from traditional digital interactions to immersive and spatial metaverse experiences is a gradual process, influenced by technology adoption, cultural shifts, and the evolution of consumer needs and preferences. A great deal of critical questions need to be addressed to fully comprehend the area; When (if ever) will users fully embrace the consumer metaverse? What behaviour is already adaptable to the metaverse? How should consumer companies prepare for these changes and what business opportunities are there for consumer business in this transition? What solutions can boost the company by making it more profitable competitive and relevant? And for this project particularly; where are the business opportunities for the Finnish companies? Additionally, we look at adoption from a consumer perspective in order to help Finnish companies navigate the shift toward the consumer metaverse.

> As our understanding of the metaverse expands and develops, it becomes increasingly important to understand its potential to change the ways consumers shop, socialize, and derive meaning from their digital interactions.

As our understanding of the metaverse expands and develops, it becomes increasingly important to understand its potential to change the ways consumers shop, socialize, and derive meaning from their digital interactions. Here we will draw on the knowledge of the younger generations that show radically changing consumer needs and expectations.

Moreover, this study will explore the role of AI, particularly Generative AI and the social implications of AI within the metaverse, examining its influence on consumer behaviour and the ensuing business opportunities within the consumer sector.

In focusing on the Finnish market, this project aspires to spotlight the unique business opportunities available to Finnish companies at the forefront of digital innovation. By providing an in-depth analysis of current trends and forecasting future developments, this foresight project is positioned to offer strategic insights that will not only inform but also inspire Finnish companies to embrace the digital future with confidence and creativity, navigating the uncertainties with the help of futures research.

As the Austrian philosopher Ludwig Wittgenstein once stated: *"The limits of my language mean the limits of my world."* In the complex and volatile environment surrounding immersive technologies, the lack of a vocabulary and a common understanding has led to a lot of confusion and ambiguity, with the term Metaverse becoming almost meaningless. We simply cannot envision possible futures if we don't have a language to talk about them. It is time for a new vocabulary for the future.

CIFS' FORESIGHT FRAMEWORK

The future is inherently unpredictable, and many factors may come together in complex ways to create surprising futures in a non-linear world. There are no definitive answers about what the future will hold. Instead, we must start preparing for the possible futures and create a prepared mindset, implementing a long-term perspective.

With futures thinking we are trying to learn about the development through the lens of the future, in contrast to, per default, trying to understand the future primarily from the perspective of the past and the present. It is a structured approach that allows organizations to consider alternative future outcomes representing novel perspectives and contexts. Hence, futures thinking can help organisations widen their strategic perspective and devise strategies that are more resilient across different futures.

Futures thinking adopts an 'outside-in' approach, focusing on potential changes in the external environment – including outcomes 'beyond the numbers' that might otherwise be overlooked. This, in turn, influences the strategic environment and consequently strategic decisions. The process is both explorative and deductive: it aims to derive an understanding of plausible and consistent futures through the close examination of driving forces and critical uncertainties.

Our approach to futures thinking is anchored in co-creation and broad participation and follows a structured, multi-step process. This specific foresight project unfolded over three project phases.

FORESIGHT PROJECT PROCESS

PHASE 1: UNDERSTANDING FUTURE CONSUMER DYNAMICS IN THE METAVERSE FOR BUSINESS FINLAND

This initial phase was dedicated to gathering insights on the drivers of change for consumers in the metaverse, aiming for a thorough and insightful understanding. Recognizing what drives change requires looking beyond the immediate scope of consumer interaction within digital realms, as many influential factors will originate from outside the current focus areas of businesses targeting the Finnish market.

The external environment influencing future consumer dynamics in the metaverse encompasses two distinct 'layers'. The first layer, the contextual environment, involves macro-level factors such as megatrends in technology, demographic shifts, societal transformations, economic conditions, and political landscapes. These are areas over which individual businesses have minimal control, yet they profoundly affect the landscape of future consumer behaviours in the metaverse.

The second layer, the operational environment, is more closely related to the immediate interests of B2C businesses. It includes developments in consumer behaviour, market trends, and innovations within and adjacent to industries focusing on the metaverse and digital consumer engagement. This layer also takes into account the ripple effects from adjacent sectors that may influence consumer expectations and behaviours in the digital and virtual worlds.

The analysis in this phase aimed to build a comprehensive understanding of relevant future issues concerning the external environment that Finnish businesses must navigate. Future issues are complex phenomena that encapsulate the interactions, frictions, and sometimes paradoxes among underlying driving forces. These issues are characterized by ambiguous or unclear future developments, yet they hold significant implications for the broader future of consumer engagement in the metaverse and, more specifically, for Finnish businesses looking to innovate in this space.

Change is a multifaceted process that does not occur in isolation; the forces shaping the future of consumer behaviour in the metaverse are deeply interconnected and interdependent. This phase, therefore, adopts a nuanced approach to understanding change, going beyond merely identifying immediate industry trends. It involves dedicated research (scanning) and a preliminary analysis of forces external to the Finnish market. The findings are then cross-referenced with industry reports to assess their relevance and explanatory power concerning current trends in consumer behaviour and technological adoption in the metaverse.

PURPOSE OF THIS PHASE

To identify key future issues of relevance related to the external environment to the metaverse in Finland.

KEY ACTIVITIES IN THIS PHASE

Research and analysis of trends and driving forces

Synthesizing a compilation of future issues for the consumer metaverse

TOOLS AND FRAMEWORKS USED

'Futures Storm' (internal multidisciplinary CIFS workshop)

External environment scanning

Driving forces analysis

PHASE 2: UNDERSTANDING THE CRITICAL UNCERTAINTIES

A fundamental premise in strategic foresight is to acknowledge uncertainty. Being able to identify the key external uncertainties and tensions that matter the most for the future outlook is paramount.

In this phase we work directly with participants in a workshop setting to assess and prioritize strategic impact and uncertainty inherent to the identified future issues. Essentially, the aim was to identify strategically important critical uncertainties – high impact and with uncertain outcomes. Critical uncertainties are characterized by their unpredictability and the lack of consensus or clarity about their future direction or outcomes. This makes them the foundation for shaping alternative futures and allows them to influence the success or failure of strategic plans.

RESUME FROM WORKSHOP WITH FINNISH STAKEHOLDERS

The workshop was held in Helsinki and facilitated by CIFS. It brought together Finnish stakeholders from various B2C industries to share insights on their view of the future of the metaverse. Participants engaged in deep discussions about the challenges and opportunities that lie ahead in this rapidly evolving space. Key questions guided the workshop, focusing on potential blockers and enablers for development, the impact of consumer behavior uncertainties, and the implications for different sectors.

KEY ISSUES ADRESSED

Participants highlighted trends such as technological fragmentation trust issues, concerns about data usage, compliance with new regulations, transparency in product sourcing and sustainability as well the influence of younger demographics. The participants also delved into the uncertainties surrounding how consumers will interact with the metaverse, emphasizing the high impact of unknowns related to value, ethics, and the human perspective. Questions about whether immersive technologies will lead to increased isolation or connection were also raised. A balance between innovation and consumer protection through regulation was mentioned as crucial. The challenge of technology fragmentation and the necessity for constant updates and learning were underscored as well as young people's preferences and behaviors driving the change.

The workshop underscored the complexity and multifaceted nature of the consumer metaverse's possible futures, highlighting the need for collaborative efforts across industries to navigate the challenges ahead. The stakeholders concluded that a balanced approach, considering both the potential risks and benefits, is essential for the sustainable development of the metaverse in B2C industries.

PURPOSE OF THIS PHASE

To understand impact and uncertainty surrounding future issues and identify strategically important critical uncertainties as the outset for scenario building

KEY ACTIVITIES IN THIS PHASE

Co-creation workshop with focus on impact and uncertainty

Qualification of critical uncertainties

Defining axes of uncertainty as the outset for scenario building

TOOLS AND FRAMEWORKS USED

Impact/uncertainty assessment (workshop activity)

Critical uncertainties prioritization (workshop activity)

PHASE 3: UNDERSTANDING IMPLICATIONS & IDENTIFYING RECOMMENDATIONS

Foresight outcomes are not strategies in themselves but provide valuable insights and input for strategic planning. Hence, the value of foresight lies in the application leading to action and execution.

In the final phase, we look to make the transition from foresight into identifying recommendations for Finnish businesses to strategically consider across different levels of their organization. The aim is to identify and navigate the spectrum of challenges, opportunities, and strategic implications.

It is important to note that the implications identified will never be an exhaustive list. However, the recommendations can be used in different strategic settings to drive futures-oriented discussions, and, depending on the strategic context, unveil a broader spectrum of strategic implications.

PURPOSE OF THIS PHASE

To identify and describe key implications for Finnish businesses

KEY ACTIVITIES IN THIS PHASE

Qualification of strategic implications

Finalise report

TOOLS AND FRAMEWORKS USED

Focus on challenges and identifying opportunities

THE STATE OF THE CONSUMER METAVERSE

The development of the metaverse is influenced by continuous advancements in technology and the adoption by the users, with the wording playing a crucial role in shaping its trajectory.

Various terms have been employed to characterize the development since the very beginning: From cyberspace to virtual reality to augmented reality and, most recently, spatial computing with the launch of Apple Vision Pro. Apple have decided not to use terms like XR, VR, AR or metaverse; instead, it's all about spatial.

However, in our opinion, the crucial aspect to focus on is the direction it is taking, regardless of the terminology used, which is the convergence of our physical and virtual lives.

THE ORIGIN

The term metaverse was first used in the science fiction novel 'Snow Crash' from 1992 written by Neal Stephenson to describe a three-dimensional virtual world that draws on a representation of the physical world where programmable avatars interact with each other and software agents. During the COVID-19 pandemic, we were all placed in isolated settings and the word Metaverse resurfaced after over thirty years, with Mark Zuckerberg heavily investing in technologies underpinning the metaverse in their Reality Labs, ending with the rather radical decision to change Facebook's name to Meta in an overall attempt to own (and essentially colonize) the term.

However, the introduction of concepts like virtual worlds and the application of immersive technologies dates back much earlier. In the late 1950s, cinematographer Morton Heilig created the Sensorama, which aimed to completely immerse the viewer in a short multisensory picture. So, it's evident that the direction has been going through quite some s-curves and hype cycles in the last century.

But it's safe to say that the Metaverse's definition remains subject to multiple interpretations attempting to capture its dynamic and evolving nature, and the term will continue to be challenged as new technologies enter the market. We believe our chosen definition embraces the vastness and future perspectives of the term. The European Commission uses the term web4 to describe this convergence, adding to their point the structural online changes that it will lead to.

In this project we have chosen to keep using the term metaverse. A term that is broader than 'immersive worlds' since we believe it's at the intersection of many technologies that the future lies. Up until now the industrial metaverse (B2B) has seen the biggest growth and has added the most value and return on investment. In this project, we will concentrate on the consumer metaverse, that we define as *"a seamless convergence of our physical and digital lives in relation to consumer related activities"*. This convergence encompasses a set of interoperable, virtual environments where individuals can engage in various activities, from work and learning to socializing and shopping, and consequently, these spaces will foster a sense of belonging as they become bigger parts of our lives.

As the understanding of the metaverse is continuing to expand, accompanied by new technologies such as Generative AI and new types of AI-wearables, the primary driving force in the development of the consumer Metaverse currently lies in games, boasting over 300 million active users in games that offer virtual worlds and social interactions.[3] Case in point, the company behind the immersive game Fortnight, Epic Games, has played a pivotal role in this environment by creating Unreal Engine and establishing itself as one of the most widely used engines in virtual production sets.[4]

DEFINITION OF CONSUMER METAVERSE

A seamless convergence of our physical and digital lives in relation to consumer related activities.

UNCERTAINTIES SHAPING THE CONSUMER METAVERSE

There are many uncertainties related to the development and possible futures of the consumer metaverse, which can lead to very different scenarios.

In 2022, the Copenhagen Institute for Futures Studies outlined four potential scenarios for the development of the metaverse. One key uncertainty was whether the metaverse gatekeepers would rely on open, non-proprietary protocols or if it would evolve into centralized, commercial, and proprietary metaverses, potentially with one or a few dominating the market, like Google, Amazon, Facebook/Meta, Apple, and Microsoft in the Web2 era.[5] In 2024, this uncertainty appears to be leaning heavily towards the few centralized, commercial players occupying the space where we see entertainment companies like LEGO and Disney as well as retailers and brands choosing to invest heavily in Epic Games (Fortnite) and Roblox instead of smaller players.

When identifying the most essential uncertainties, we try to focus on those that have the potential to significantly change the organization, market, or business environment, as well as those with considerable uncertainty over the future direction.

For Finnish businesses to navigate the potential futures of the consumer metaverse, we identified the following critical uncertainties in this project as having the most significant impact on the development.

“When identifying the most essential uncertainties, we try to focus on those that have the potential to significantly change the organization, market, or business environment, as well as those with considerable uncertainty over the future direction.

THE SPEED OF CONSUMER ADOPTION

HIGH SPEED OF ADOPTION

In a high-speed adoption scenario, the consumer metaverse quickly becomes a significant part of daily life for a vast majority of the population. This rapid embrace is driven by advancements in technology, increased accessibility, and compelling content that draws users into the metaverse for both personal and professional interactions. Brands and companies that are early movers gain a competitive advantage, capturing significant market share. Businesses that adapt quickly to the metaverse can explore innovative business models, virtual product offerings, and new marketing strategies. There is a strong emphasis on creativity, digital literacy, and agility.

VS.

SLOW SPEED OF ADOPTION

In a slow adoption scenario, consumer uptake of the metaverse is gradual, with scepticism (see 'Techlash in the horizon' on page 23), technological barriers, and the lack of compelling content slowing its integration into everyday life. Businesses will have more time to observe, learn, and plan their entry or expansion into the metaverse. Technological advancements and infrastructure improvements are incremental, with persistent barriers to entry for certain demographics due to cost, complexity, or accessibility issues. Businesses might need to focus more on niche markets or specific use cases within the consumer metaverse. The slower pace allows for more thorough research and development, potentially leading to more polished and user-friendly metaverse experiences.

RELEVANCE FOR FINNISH BUSINESSES

For Finnish businesses, understanding these scenarios is crucial for strategic planning. In a high-speed adoption scenario, agility, innovation, and early investment in metaverse capabilities are key. In contrast, a slow adoption pace allows for a more measured approach, focusing on long-term value creation and the development of sustainable metaverse offerings. Both scenarios require a keen eye on evolving consumer preferences, technological trends, and the regulatory landscape to navigate the future successfully.

ENGAGEMENT IN IMMERSIVE EXPERIENCE

DRIVEN BY SOCIAL ACTIVITIES AND COMMUNITY (VIRTUAL WORLDS)

In this scenario, the primary driver of immersive experiences is the human desire for social connection and community building within virtual worlds. These platforms become vibrant ecosystems where users can interact, collaborate, and share experiences in a multitude of ways, mirroring and extending the complexity of interactions in the physical world. Engagement is driven by user-generated content, social events, and collaborative projects that provide a space for identity exploration and expression, enabling users to customize avatars and environments, thus enhancing the personal and emotional connection to the digital space and its entities. The emphasis on social connections and shared experiences fosters a sense of belonging and community, making virtual worlds appealing for those seeking social interaction beyond the physical constraints.

VS.

DRIVEN BY IMMERSIVE INTERFACES (XR)

In this scenario, the advancement of XR technologies acts as the main driver, transforming immersive experiences into a new paradigm for human-computer interaction, where the physical environment becomes our interface. This includes advancements in visual fidelity, haptics, and spatial audio. The drivers for user engagement in immersive experiences is in the applications in practical and productivity-oriented contexts, such as remote work and augmented shopping experiences.

RELEVANCE FOR FINNISH BUSINESSES

Understanding the difference between social and community-driven experiences and the evolution of XR as a new computer interface is crucial. While virtual worlds emphasize the social and communal aspects of digital interaction, XR technologies focus on enhancing the interface between humans and computers, offering a broad spectrum of applications. Both drivers are not mutually exclusive but rather complementary, each pushing the boundaries of what is possible in immersive experiences. As these technologies and their uses evolve, they will continue to shape the future of digital interaction, offering rich opportunities for innovation, engagement, and connectivity.

THE ROLE OF FINNISH BUSINESSES

CONTENT PROVIDERS & USER OF SERVICES

In this scenario, Finnish businesses concentrate on creating and disseminating digital content or leveraging existing digital services and platforms to offer unique experiences or solutions. This role involves excelling in producing original content, including everything from digital media, building virtual e-commerce products, entertainment to niche markets that reflect Finnish values and aesthetics. These businesses become adept at utilizing global platforms for distribution, marketing, and sales, reaching an international audience without the need for extensive physical infrastructure, adding value through localization, personalization, and enhanced user experiences.

VS.

BUILDING SOFTWARE & HARDWARE

This scenario sees Finnish businesses at the forefront of software and hardware innovation, contributing to the global technology ecosystem through the development of proprietary technologies. Finnish companies invest heavily in R&D to develop cutting-edge software and hardware solutions, positioning themselves as leaders in emerging technologies such as 6G and AI (E.g. Large Language Models) that can compete on the global stage. The focus on building software and hardware fosters a robust ecosystem of startups, research institutions, and established companies driving forward technological advancements.

RELEVANCE FOR FINNISH BUSINESSES

The future role of Finnish businesses can diverge significantly based on their focus and strategic positioning and whether they primarily act as content providers or users of services or taking the lead in building software and hardware. Finnish businesses could serve on both market arenas, but the uncertainty depends on market positioning, core competencies, and long-term vision. As content providers and service users, Finnish companies can capitalize on their creative strengths and the global digital economy's scalability. Conversely, by building software and hardware, they contribute foundational technologies that shape the future of the global tech landscape, offering significant opportunities for growth and influence, although the risk of losing to larger stakeholders is large. Each path requires a different set of resources, skills, and partnerships, underscoring the importance of strategic alignment with Finland's broader economic and technological goals.

REGULATION IN THE CONSUMER METAVERSE

HEAVILY REGULATED CONSUMER METAVERSE

In a heavily regulated scenario, the consumer metaverse operates under strict regulatory frameworks akin to those established by the EU's Digital Services Act (DSA), Digital Markets Act (DMA), and regulations under the AI Act. These are implemented to ensure the digital space is safe for all users and safeguarding fundamental rights, as well as creating a level playing field for businesses, preventing monopolies and ensuring smaller entities have fair access to the market. The regulations also restrict the use of technologies considered high-risk, such as cognitive behavioural manipulation, real-time biometric identification, and profiling based on sensitive data. At the same time, global inconsistency in these regulations challenges businesses, and not many nations outside the EU are likely to have equally strict regulations.

VS.

MODERATELY REGULATED CONSUMER METAVERSE

Alternatively, a moderately regulated scenario provides a more flexible regulatory framework. This approach still aims to protect users and ensure fair competition but with a greater emphasis on fostering in-novation and technological advancement. Here regulations focus on critical areas such as data protection, consumer rights, and transparency, without overly prescriptive restrictions on technologies and business practices. This allows for a more experimental approach to developing consumer metaverse experiences. Businesses and industry groups may play a larger role in developing best practices and self-regulatory standards, promoting responsible innovation.

RELEVANCE FOR FINNISH BUSINESSES

Each scenario has different implications for how businesses operate within the metaverse, how users interact with digital services, and the overall innovation landscape. For Finnish businesses navigating the consumer metaverse, the regulatory environment will play a crucial role in shaping operational strategies, technological development, and market opportunities. A heavily regulated scenario may offer a safer and more equitable digital space but at the potential cost of innovation speed and flexibility. On the other hand, moderate regulation could spur innovation and market growth, though it requires careful management of ethical considerations and user trust. Balancing these factors will be key to harnessing the full potential of the metaverse for businesses and consumers alike.

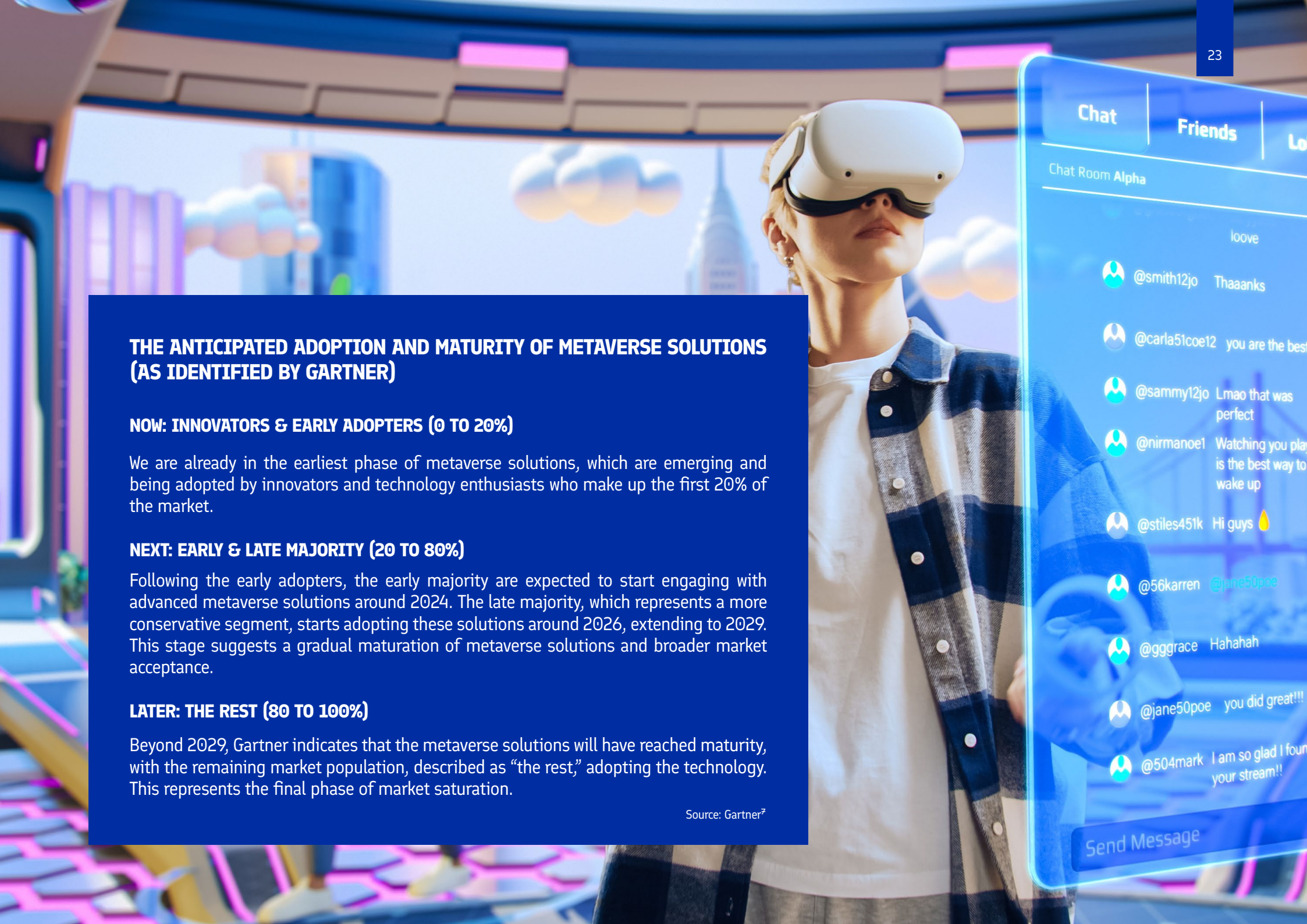
MATURITY AND ADOPTION

Predicting the maturity and adoption trajectory of the consumer metaverse is a challenging task due to the inherent uncertainties just described. Numerous analytical firms have attempted to quantify the adoption and projected value for businesses whenever new technologies arise, but their estimates are rarely accurate. At the Copenhagen Institute for Futures Studies it is not our goal to predict the future, but rather to be prepared for the possible futures.

A tool like the Gartner Hype Cycle[6] can be a useful tool in understanding the dynamics, and the time horizon in which it is expected to mature. The metaverse entered in 2022 as an innovation trigger with a 10 + year horizon to reach the Plateau of Productivity, where both technological development as well as consumer adoption have matured. The 2023 edition no longer included the Metaverse, since it primarily covers emerging technologies and concepts in their infancy or early stages. The primary focus in 2023 was on Generative AI and other trends associated with AI. Maybe we will see spatial computing somewhere on the curve in their 2024 edition.

In our view, the development of the consumer metaverse will eventually look more like an ongoing s-curve with ups and downs for the companies involved, with an understanding that many of the technologies supporting the metaverse are still very immature and a broader adoption is not to be expected on the short term. Investing in the metaverse is not a short-term safe wager that will yield a quick return, but rather an ongoing journey towards the next internet.

Back in 1962 E.M. Rogers developed something called the Diffusion of Innovation (DOI) Theory, which is one of the oldest social science ideas. It originated in communication and described how an idea or product gains traction over time and diffuses (or spreads) among a certain demographic or social system. As a result of this fragmentation, people within a social system accept a new concept, behaviour, or product. Adoption occurs when a person does something different than they have previously done (for example, purchasing or using a new product, learning and performing a new behaviour, etc.). The key to adoption is for the user to perceive the concept, activity, or product as novel or inventive. It is through this that diffusion is possible – and that a behaviour in the consumer metaverse, will naturally evolve around innovators and early adopters, before moving to the majority and the rest. One of the obvious reasons being that the technology simply isn't ready yet for the mainstream market with mature solutions even though products like the Apple Vision Pro could potentially be a kick-starter for this with its upcoming iterations.



THE ANTICIPATED ADOPTION AND MATURITY OF METAVERSE SOLUTIONS (AS IDENTIFIED BY GARTNER)

NOW: INNOVATORS & EARLY ADOPTERS (0 TO 20%)

We are already in the earliest phase of metaverse solutions, which are emerging and being adopted by innovators and technology enthusiasts who make up the first 20% of the market.

NEXT: EARLY & LATE MAJORITY (20 TO 80%)

Following the early adopters, the early majority are expected to start engaging with advanced metaverse solutions around 2024. The late majority, which represents a more conservative segment, starts adopting these solutions around 2026, extending to 2029. This stage suggests a gradual maturation of metaverse solutions and broader market acceptance.

LATER: THE REST (80 TO 100%)

Beyond 2029, Gartner indicates that the metaverse solutions will have reached maturity, with the remaining market population, described as “the rest,” adopting the technology. This represents the final phase of market saturation.

Source: Gartner[7]

NEXT-GEN TECH ADOPTION

Many of the new XR hardware devices supporting the development of the consumer metaverse are currently too expensive for the mainstream, but still, we see the young generations embracing the technologies the most. Instead, the consumer metaverse is more likely to grow from within the gaming industry and the younger consumers.

A study from Deloitte coins the differences well: *"While we wait for the metaverse to materialize, young people are already there"*.[8]

Generation Z (born 1997-2012), which accounts for 30% of the worldwide population, is the first generation to have been raised entirely digitally. With a large online presence, they rely significantly on online sources, with 46% using livestream commerce with influencers.[9] Platforms such as YouTube, TikTok, and Instagram appeal to their shopping preferences. However, 42% of Gen Z's purchasing remains in physical stores, highlighting the importance of merchants providing seamless omnichannel experiences and utilising next-generation technologies. Generation Z grew up with smartphones and easy access to information, whereas Generation Alpha (born 2012-2025) – also called the iPad generation - is being raised in a completely digital landscape, rapidly adapting to advanced technologies such as AI and AR, and is expected to have even more sophisticated expectations about purchases and brand relationships.

The younger consumers are weaving together fragments of the metaverse using an array of tools, services, and platforms. They utilize social networks, video games, augmented reality technologies, and digital currencies to immerse themselves in digital experiences, enhancing relationships, elevating emotional well-being, and finding meaning.

A significant number of Gen Zs and Millennials are actively exploring virtual experiences, with approximately 40% having engaged with VR technology for various purposes, including gaming, attending events, or work and school-related activities. This corresponds with survey results indicating that about 40% of Gen Z and Millennial respondents own either a smartphone-based VR headset or a stand-alone VR headset. The introduction of next-generation VR hardware, promising more immersive experiences, is expected to drive increased VR content production and adoption across generations.

The inclination towards adoption of immersive experiences, encompassing both hardware and software, is not surprising, given that half of Gen Zs and Millennials believe online experiences are meaningful substitutes for in-person interactions. The metaverse hence makes space for self-exploration for the consumers where they can play with their identity and even be 'more like themselves'. In a survey from 2022 more 52% of Gen Z gamers stated that they feel more able to be completely themselves in the virtual world rather than in their physical world.[10]

For younger generations, particularly digital-native Gen Zs and Alphas, the line between "online life" and "physical/real life" is increasingly blurred, and they are actively seeking integration between the two. The behaviours embraced by these younger generations could play a pivotal role in shaping the development and refinement of the emerging metaverse. As the necessary technology and infrastructure converge to advance the consumer metaverse, these consumers are anticipated to lead the way.

Younger individuals are also active participants in various online activities providing opportunities for connection. A majority of Gen Zs and Millennials (75%) identify as gamers, engaging in story-driven or multiplayer combat games that offer interactive and immersive experiences. Additionally, a significant portion of this demographic uses social media, viewing experiences in these digital spaces as crucial for socializing and community building. Nearly 50% of Gen Zs and Millennials indicate spending more time interacting with others on social media than in real life, with 40% spending more time socializing in video games than in real life.[11] To align with the preferences of these young consumers, VR experiences (currently primarily single-player) may need to evolve to become more social.[12]

Consumers aren't intrigued by technologies as such but are driven by the problems they can solve and the experiences they can provide. As with physical brick-and-mortar consumption and experiences, we consume to express what we are and what we are not. The same goes for our virtual consumption and experiences, and for the increasing blurred lines in the metaverse ecosystem. As such, consumer patterns will also increasingly reflect a behavioural ecosystem which does not account for which world we are in, but how seamless and interconnected it feels. Brands will need to focus on connecting the dots as connectivity takes on a new emotional meaning alongside a tech-focused one, driving their focus on how one product or purchase can improve multiple parts of one's life by finding patterns that would be difficult to spot alone or with the assistance of technology.[13]

TECHLASH ON THE HORIZON

As a wider gap develops between early adopters and tech-resistant consumers, creating greater friction, it will become increasingly important to address and understand the challenges and resistances the late adopters perceive. Present surveys suggest that data and privacy matters, tech transparency, and uncertainty surrounding the potential negative consequences of new technologies such as Generative AI and potentially AGI are some of the primary concerns that leads to very existential questions as to what the role humans will have in the future. This might influence consumers in becoming more aware and critical towards the systems used in the digital solutions applied by companies.

New waves of techlash and technostress are on the rise with a talk on mental obesity[15] and a society of abundance where the concept of scarcity needs to be redefined. Consumers will need time to adjust and learn how to make technology more applicable at the individual level, sparking new discussions and innovations around how to be intentional about blending the digital and the physical. A new 'made-by-human' label might emerge, giving greater influence to artisans who can take on the creative spirit that exists outside an algorithm.

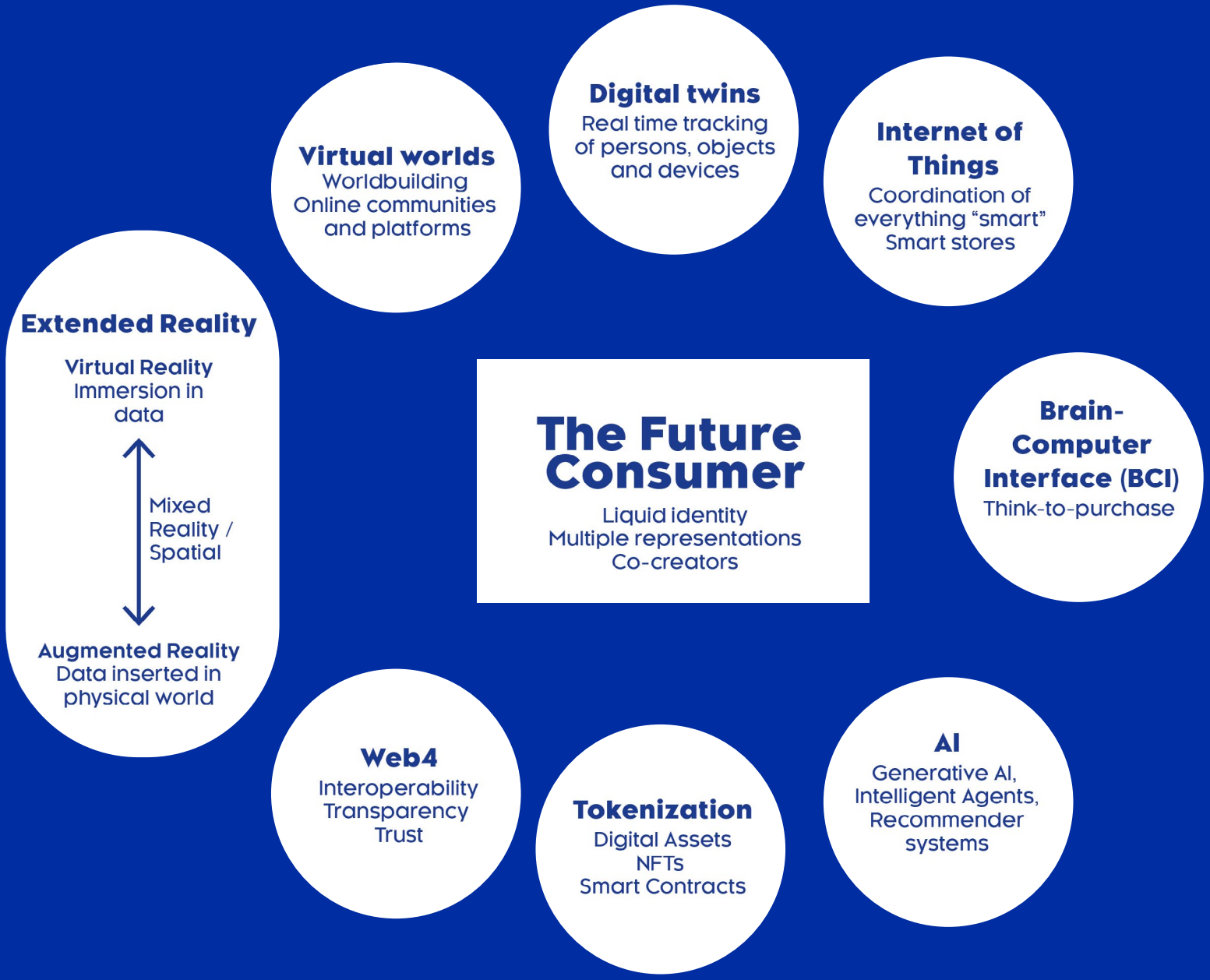
The profound societal impact of the metaverse extends to norms, values, and community cohesion. There is a risk of proliferating hate speech, harmful content, misinformation, and polarization during interactions within its virtual realms. These multifaceted challenges at both societal and individual levels, highlight the need for a thoughtful approach, implementation of regulation, education, responsible development, and ongoing research to ensure the metaverse contributes positively to the collective mental health and well-being of its users.

UNDERSTANDING THE CONSUMER METAVERSE ECOSYSTEM

Understanding the metaverse is not so much about defining the single parts but more about understanding the direction. Still, it can be helpful to have an overview of the different elements that we believe is included in the development of the metaverse.

For an in-depth understanding of the metaverse ecosystem, CIFS have mapped a basic metaverse map[16] in order to illustrate the complexity of the metaverse. For this project, we have created a modified version focusing on the consumer metaverse.

It is important to stress that for consumer businesses it is not sufficient to merely pay attention to the development of the technologies, but instead try to combine it with the implications and applications from a consumer behaviour perspective. Hence, in this section, we combine this overview with how it may influence future consumers behaviour as well as giving a short rundown of the market leaders in each of the areas in the current market of 2024. It's important to note that new players are continually entering the market, while existing companies expand their offerings. Understanding the stakeholders of the future consumer metaverse requires consistent market monitoring.


Extended Reality
Virtual Reality
Immersion in data
Mixed Reality / Spatial
Augmented Reality
Data inserted in physical world
Virtual worlds
Worldbuilding
Online communities and platforms
Digital twins
Real time tracking of persons, objects and devices
Internet of Things
Coordination of everything "smart"
Smart stores
The Future Consumer
Liquid identity
Multiple representations
Co-creators
Brain-Computer Interface (BCI)
Think-to-purchase
Web4
Interoperability
Transparency
Trust
Tokenization
Digital Assets
NFTs
Smart Contracts
AI
Generative AI, Intelligent Agents, Recommender systems

THE FUTURE CONSUMER

In this report we will try to understand the consumer from a futures perspective. Historically we have witnessed huge shifts in consumer behaviour with the introduction of new technologies going way back to the printed press, radio and television to today's smart devices - and it's safe to say that the future consumer will be constantly transformed with the new technologies at hand.

Rapid change and uncertainties have become an intrinsic element of our daily lives. We are facing a future of continued and dramatic changes in values, beliefs, and lifestyles, pushed forward by an increasingly polarised global society and great uncertainties when it comes to global unrest, challenged economies and climate threat awareness. This also affects us as consumers.

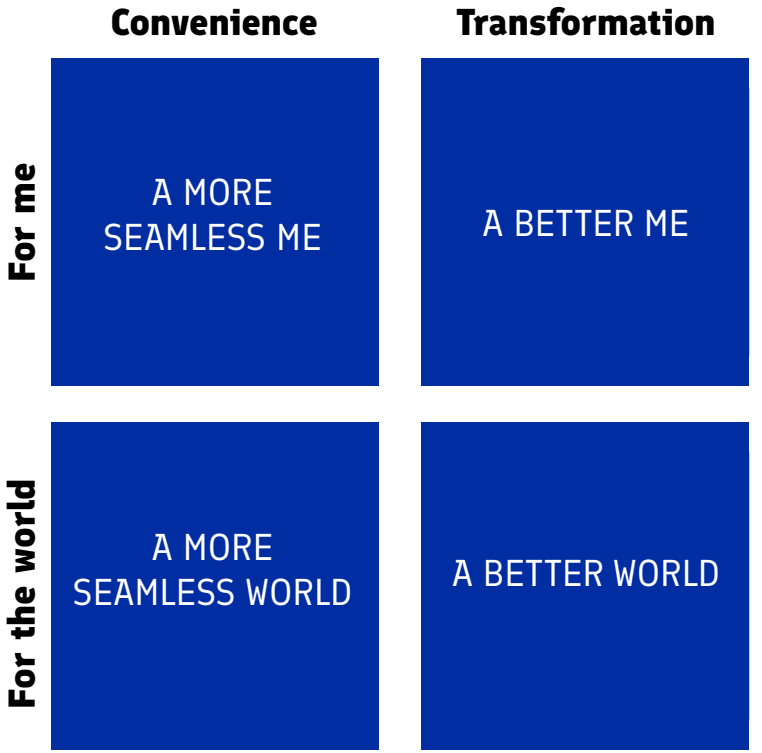
The social fragmentation and the demographic development that we are witnessing, along with the rise of digitalization and increased mobility are constantly transforming the retail-spheres and consumer lifestyles. We live in a world that is increasingly 'post-truth', in which institutions, brands, and consumers actively collaborate to create narratives. Consumers are increasingly seeking knowledge and information within their online communities. In this fragmented world, achieving a shared understanding of reality is challenging, as it is largely shaped by our individual experiences and an almost abundant variety of narratives.

When attempting to understand future consumer behavioural drivers, it's essential to explore the development of our values, needs, ways of representing ourselves and what creates our sense of belonging. Future consumers will be increasingly driven by *liquid identities*[17] that tend to be temporary and context dependent. Two major competing trends are shaping the future belief systems specifically: more community or individual-oriented values driving behaviour, needs, aspirations and lifestyles.

LIQUID CONSUMERS

Liquid consumers, characterised by more fluid identities and consumption patterns, prioritise convenience, real-time personalization, and seek to align purchases with personal values and societal impact. They desire experiences that foster both self-improvement (*"A better me"*) and societal contribution (*"A better world"*). With the decline of traditional social norms, consumers are empowered to define their identities, yet risk being overwhelmed by a myriad of choices. Their demand for seamless experiences is accelerated by technology. As AI matures, it anticipated needs and offers tailored experiences. A notable increase, from 60% in 2021 to 72% in 2022, reveals consumers are more tech-comfortable and literate, intensifying the trend.[18]

With the decline of traditional social norms, consumers are empowered to define their identities, yet risk being overwhelmed by countless choices. Liquid consumers have an infinite pool of options to choose from. Therefore, curation, seamlessness and convenience are elements that will drive consumer decision-making and behaviour more and more. One driver towards an increased push for convenience is technology – people are more connected and exposed to various options than previously. At the same time, technology - particularly AI and intelligent algorithms – has matured enough to be able to anticipate our needs and deliver personalized real-time experiences and services.



"The Liquid Consumer Matrix", Copenhagen Institute for Futures Studies

Liquid consumers also expect active participation in brand processes, that combine the roles of producers and consumers of content in a more collaborative environment. This trend ranges from personalized services to co-creation, which strengthens emotional connections and brand loyalty.

This leads to a more symbiotic consumer-brand relationship, as already seen in the music industry's collaborative fandoms, where platforms such as TikTok amp up user engagement through challenges and AR filters. Empowered consumers, assisted by algorithms, will soon co-create their ideal products prompting 3D models, reshaping brand dynamics. In the future, empowered consumers will be able to co-create and tailor their ideal products, both consciously and subconsciously - and with the help of AI.

While the concept of liquid customers aims to redefine market segmentation, there are noticeable generational disparities in the speed at which they are anticipated to embrace new technology. The demand for seamless experiences is accelerated by technology and as the consumer metaverse matures, it anticipated needs and offers tailored experiences.

The development of the consumer metaverse poses new elements to retail spaces, altering our relationships with physical and virtual assets, and reshaping the nature of brand attachments, our sense of community and even our sense of selves. In a liquid society where consumers can swipe in and out of lifestyles, being real and authentic will also possess new value.

The convergence of the physical and virtual worlds is already blurring and is beginning to challenge our sense of reality, as our traditional understanding of physical reality as 'more real' than virtual realities might no longer be sufficient. While older generations will have a hard time grasping this, younger generations already view virtual interactions, skins, and digital assets as being just as 'real' as their physical counterpart and having equal or often higher value than physical clothes and objects.

Preparing for the future also means embracing the fact that consumers are no longer constrained to one physical person but will have multiple representations in both virtual in-person avatars and as virtual AI agents acting on the consumers behalf.

> "While the concept of liquid customers aims to redefine market segmentation, there are noticeable generational disparities in the speed at which they are anticipated to embrace new technology.

EXTENDED REALITY

DEFINITION

The term *extended reality (XR)* is a broad term used to describe all physical-and-virtual combined environments and human-machine interactions generated by computer technology and wearables. This is also referred to as spatial computing. Virtual reality and augmented reality, as well as mixed reality are all part of this as well.

Virtual Reality (VR) is about immersion in data in an immersive, interactive, computer-generated environment. The word 'virtual' refers to a digital copy or simulation of a physical object. Users can be fully immersed in these simulated realities with the help of dedicated VR headsets, haptic devices, and even environmental feedback, enabling a virtual three-dimensional 360-degree view in a virtual world that people can experience and interact with.

Augmented Reality (AR) is about data inserted in the physical world creating an enhanced version of the physical reality created using technology to overlay digital information on an image of something being viewed through a device. Some examples of AR technology include Instagram filters, Snapchat's lenses and Pokémon Go.

In *Mixed Reality (MR),* virtual components are anchored to matching physical elements in your surroundings, or vice versa; you may still physically interact with things and surfaces, but their look and responsiveness may be augmented virtually or reproduced in virtual environments. Mixed reality experiences are neither purely physical nor purely virtual, but rather a combination of the two.

EXTENDED REALITY STAKEHOLDERS

Meta has obviously been occupying – and some might add colonizing - the space for the last couple of years with a massive effort. After the launch of its mixed reality headset Quest 3, they also introduced smart glasses together with RayBan introducing simple AR and AI features. Besides the user being able to livestream whatever they see directly to Facebook or Instagram, the smart glasses have an integrated Meta AI assistant, providing real-time information regarding the user's surroundings or hands-free navigation and taking photos with voice commands.[19]

The entry of Apple into the space with Apple Vision Pro has been much anticipated. Apple, known for its innovative expertise and market influence, do not refer to their technology as either the metaverse nor XR, AR or VR, but instead talk about the next era of the spatial internet with spatial video, spatial audio, and spatial everything. This move signifies not just an expansion of Apple's portfolio but a potential shift in how the metaverse is perceived and utilized by the masses.

Apple Vision Pro promised more than 1 million apps ready for their users from the get-go, and several content providers and IP owners such as Disney have already partnered with Apple to create spatial content, but other entertainment giants like YouTube, Netflix and Spotify have decided not to support this first version, as content consumption through the glasses is more limited than in other parts of the iOS ecosystem. Or, to put it another way: there are not enough users yet.

On a smaller scale we are seeing start-ups like Brilliant Labs presenting Frame glasses that supposedly offer AI visual analysis, translation, and web search right before your eyes.[20] This is a new competitor to e.g. Magic Leap, who, with their newest Version 2, is one of the leading players in AR glasses – although they are mainly betting for B2B solutions. The Finnish company Varjo has been world-leading in creating high-fidelity passthrough solutions that are used by large companies such as Volvo, but their solution is not directed towards end consumers as such, and hence does not compete in the consumer metaverse.

HOW IT MAY INFLUENCE CONSUMER BEHAVIOUR

Although VR is already acknowledged in the industrial metaverse, its broader consumer adoption will most likely remain confined to specific user bases, namely gamers and entertainment seekers in addition to selected business, medical, education and training applications. AR seems to be gaining more ground when it comes to the interaction with consumers through features on the smartphone, although more sophisticated hardware, such as the glasses is, still far from being applicable and ready for impact on a broader scale.

One of the biggest issues when it comes to these new hardware devices is that we are still very early in the adaption phase. The technology is still immature, and the glasses are still either large or not very functional. This has led to users complaining about headaches, overstraining of the eyes, and general discomfort. There are still a lot of issues to be addressed for it to be an everyday device like the smartphone.

At the same time, the 'killer app' or reason to use the technology on a more daily basis is yet to be identified and from a general consumer point of view, not many of the apps are really solving their problems and meeting their expectations yet.

While new digital innovations such as AR and virtual assistants expand, consumers continue to value physical shopping experiences, although challenging the notion of what a physical store should look like. To remain relevant, physical businesses are incorporating brand building and immersive technology such as smart glasses and AR mirrors, pointing to a future merger of digital and physical retail locations. Retailers may concentrate on developing interactive displays, in-store AR experiences, and in-store events that extend beyond traditional shopping.

VIRTUAL WORLDS

DEFINITION

In this project we define virtual worlds by being immersive, synchronous, persistent and unified 3D user experiences that enables mass content creation.[21] A virtual world is a computer-simulated environment that can be populated by multiple users who can create a personal avatar and simultaneously and independently explore and create in the virtual world, participate in its activities, and communicate with others. Unlike digital twins, virtual worlds are not bound to accurately represent real-world physics or real-time changes; they are designed more for user interaction and can be entirely fictional or fantastical.

STAKEHOLDERS

Virtual worlds are one of the most mature sections of the consumer metaverse, with global players like Roblox, Minecraft and Epic Games (Fortnite), who have invested heavily in creating and expanding their virtual worlds. Roblox had 71.5 million daily active users in 2023 being one of the most successful virtual worlds when it comes to building an in-game virtual economy with an averaged 15.9 million 'monthly unique payers' in Q4 2023, spending an average of $23.65 each a month on the Robux currency[22], the virtual currency used across the Roblox platform.

In contrast to the global players on the market, smaller virtual worlds are facing an uphill battle. With limited resources and fierce competition, these smaller entities are struggling to carve out a niche in the metaverse ecosystem. This struggle highlights the challenges of innovation and survival in an increasingly monopolized space. Many companies specialize in building branded content for the different virtual worlds for the B2C industry.[23]

There are also several local Nordic players providing virtual worlds like ZOAN, a Helsinki-based company that develops immersive virtual experiences and interactive showrooms to events and full-scale metaverse worlds.

Companies like Unity & NVIDIA are also worth paying attention to as they provide the game engines to build the virtual worlds. NVIDIA also have a strong position in building computer power which has made them to be one of the most valuable companies in the world, as well as creating their Omniverse Cloud platform for developing, deploying, and operating 3D and industrial digitalization applications at scale. They recently released a new function with GenAI-powered game characters that could lead to the next level virtual world chatbots bringing digital avatars to life with Generative AI with services like Audio-2Face[24].

Companies like Synthesia, Eleven Labs, Respeecher, Runway and other similar companies are specialising in virtual AI-generated, synthetic content on different levels but are not limited to virtual worlds, but rather in the interaction with the physical world.

HOW IT MAY INFLUENCE CONSUMER BEHAVIOUR

The success of the virtual worlds in gaming exemplifies the trend of established entities betting big on world-building and online communities, anticipating a future where virtual interactions with consumers become as common as physical ones.

The virtual economies that exist within the virtual worlds are expected to continue to grow as virtual marketplaces where users can purchase and sell virtual goods, services, and experiences. Social and community-based interactions will also play an important role in these virtual economies, including the ability to engage with friends and meet new people in virtual worlds (e.g. open spaces, events, meetings), enhance activities with live user-to-user and user-to-NPC (Non-playable character) interaction, develop additional applications as more activities become available (e.g. dating, attending festivals, professional networking), supplement or even replace an increasing number of physical social events over time (e.g. parties, weddings, sports games).[25] As a result, games function as social platforms, with playing often taking second place to the conversations and relationships they facilitate. Games like Roblox are about shared experiences rather than just gaming, reflecting the shifting nature of connection and community.

Consumers are also no longer confined to their physical identity. Advanced technologies are facilitating the rise of distinct digital selves, ushering in the “avatar economy”.

The direct-to-avatar (D2A) model sidesteps conventional logistics, enabling brands to target avatars directly, thereby rethinking retail and customer loyalty.

Virtual influencers further blur the lines between the physical and virtual world. These AI-generated personalities, free of human flaws and scandals, are quickly gaining traction for brand promotion.[26] With countries such as China investing heavily in these virtual entities, the stage is set for a future in which human influencers coexist, if not compete, with their AI counterparts in shaping consumer decisions.

A recent survey dived into people's preferences around the world, asking whether they prefer to engage with others via social media rather than in-person. Not surprisingly most consumers in the Nordic area prefer in-person contacts, with more than half disagreeing with the notion in Sweden (51%), and Denmark (59%). This is quite different in other regions in the world like the MENA region where almost half of the respondents said they often prefer to interact with people on social media than in person.[27] Even though this is a survey on social media this can also be transmitted to the interactions in more immersive environments.

While the promotion of products and services in the virtual worlds might mirror traditional online marketing strategies, avatar-based interactions for services will necessitate a new level of build-in trust in a world where we can no longer trust everything we see and hear. This might also mean a change of focus from thinking in traditional touch points with the consumers to building trust points such as explainability, transparency, security and privacy as well as an enhanced focus on the wellbeing and mental health of the consumers in the virtual worlds.

DIGITAL TWIN

DEFINITION

A digital twin is a *real-time virtual model of something in the physical world* - an environment, product, object or system used for testing without impacting its real-world counterpart. Digital twins and virtual worlds are both digital representations, but they serve different purposes and are built on different principles. In comparison to virtual worlds, digital twins are primarily used for monitoring, diagnosing, simulating, and optimizing the physical object or system they represent, and to not require synchronous shared user experiences.

STAKEHOLDERS

Some of the brands and companies known for their work in creating digital twins or contributing significantly to the digital twin ecosystem such as Siemens (with their Digital Industries Software), IBM (Digital Twin Framework), Microsoft (Azure Digital Twins), Cisco (Digital Twin Explorer), Amazon Web Services (with AWS IoT TwinMaker) and NVIDIA that provides GPUs and AI platforms such as their Omniverse Enterprise that support the high-performance computing required for digital twins.

HOW IT MAY INFLUENCE CONSUMER BEHAVIOUR

The use of digital twins is already creating a lot of value in the B2B ecosystem, but there are still not many use cases on its influence on the consumer metaverse for the B2C consumer journey.
But here's a few facts on 3D renderings of products directed at consumers[28]:

- More than 60% of US consumers say looking at 3D renderings of a product influences their decisions to buy
- Customers are expecting up to 8 images per product and 76% are willing to buy more if they could visualize product variations for instance through Augmented Reality
- Brands are shifting to real-time production thanks to 3D engines and Generative AI, creating content for in-the-moment experiences (agile marketing).

By leveraging the potential of artificial intelligence (AI) and data analytics, companies can use digital twins to construct dynamic models depicting their customers' preferences, buying patterns, and behaviours. A key advantage of adopting a DToC strategy lies in the unparalleled level of personalization it offers. Traditional customer segmentation methods often fall short in capturing individual nuances. With a DToC, businesses can tailor their offerings down to the finest detail, presenting customers with products and services that perfectly align with their needs and desires.

The digitalization of everything from our hearts to shops to city spaces to our entire planet is a game changer in how companies can interact and track consumers real-time. The *Digital Twin of the Customer* (DToC)[29], as the virtual representation of each consumer that not only mirrors their past behaviours but also simulates and predicts their future actions, is a transformative concept, whose revolutionary approach is set to redefine customer experience and reshape the way companies interact with their network, consumers and stakeholders. It has the potential to significantly improve the supply chain's capacity to reduce risk, handle supply and demand, and hence improve customer satisfaction.

Some of the brands and companies known for their work in creating digital twins or contributing significantly to the digital twin ecosystem such as Siemens (with their Digital Industries Software), IBM (Digital Twin Framework), Microsoft (Azure Digital Twins), Cisco (Digital Twin Explorer), Amazon Web Services (with AWS IoT TwinMaker) and NVIDIA that provides GPUs and AI platforms such as their Omniverse Enterprise that support the high-performance computing required for digital twins.

Digital twins can be used to perform what-if analyses, simulate different scenarios in virtual environments on synthetic customers, and predict future states by applying advanced analytics and machine learning algorithms. Through digital twins, brick n' mortar shop owners can experiment and interact virtually when it comes to store layouts, customer journey optimizations, and supply chain alterations that might be impractical or resource-intensive to execute physically. Where a simulation typically replicates a single scenario or process, a twin can also run multiple simulations simultaneously, studying various processes and outcomes at scale. The advantages reverberate: Rapid prototyping, risk-free experimentation, and the potential to uncover insights that could drive efficiency and innovation.

As the industry advances, the integration of digital twins is set to reshape operational paradigms. Digital twins signal in a new era of efficiency, agility, and informed decision-making by unleashing new insights, optimising processes, and responding quickly to changes. This transformation is consistent with the industry's ongoing embrace of edge computing and the seamless flow of real-time data, establishing digital twins as a key driver of progress in this dynamic landscape.

> "The "Digital Twin of the Customer" (DToC), as the virtual representation of each consumer that not only mirrors their past behaviours but also simulates and predicts their future actions.

ARTIFICIAL INTELLIGENCE

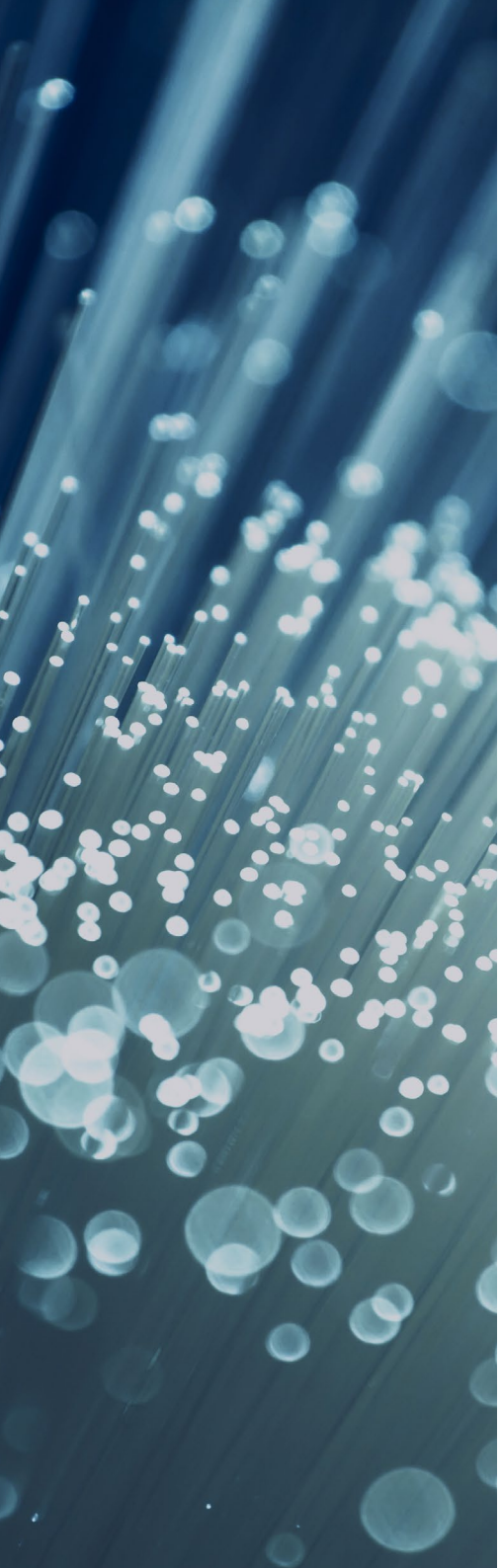
DEFINITION

Artificial Intelligence (AI) is a broad term for software that can perform tasks that have traditionally required human intelligence. Generative AI is a class of AI that is able to generate new content such as images, video, audio, text, etc. through simple instructions and input - so-called 'prompts'. The latest models are multimodal, which enables them to combine several different types of media at the same time, such as text, images, video and audio.

STAKEHOLDERS

AI is a broad field that encompasses a wide range of stakeholders. Among the most important stakeholders in relation to the consumer metaverse are currently OpenAI, Anthropic, Alphabet (Microsoft) and Google. There is a shortage of European players in the competition, but we see companies like the French Mistral entering the playing field. At the same time Microsoft just announced a 3.2 billion Euro investment in Germany, mainly focusing on AI-related projects.

Tools such as ChatGPT, Gemini, Co-Pilot and Midjourney are among some of the well-known for consumers. New platforms like Quillbot and Peppertype offer more specific marketeer related services in e.g. AI-generated content creation of articles, social media posts, product descriptions, emails, or any other type of original content.



HOW IT MAY INFLUENCE CONSUMER BEHAVIOUR

By 2026, it is projected that 90% of online content will be AI-generated.[30] And it's predicted that by 2025, 30% of outbound messages from big organizations would be synthetically generated, a significant increase from 2% in 2022.

As AI capabilities expand, its potential to autonomously generate advertisement, text and visuals raises a provocative question: Could AI become an accepted, independent creative entity in the future? And how will the relationship be to the consumers?

The growing impact of artificial intelligence (AI) on both our society and daily lives is increasingly noticeable with the rise of Generative AI. Similar to other influential technologies, AI is significantly shaping consumer behaviour. It is transforming the way businesses engage with their users, influencing purchasing decisions, and altering consumer behaviour through these interactions. Generative AI is already revolutionizing content creation within virtual spaces, enabling more dynamic, responsive, and hyper-personalized experiences in games as well as customer relations. Generative AI's potential to create endless amounts of hyper-personalized content based on real-time data is changing the way brands can interact and reach consumers. And if you combine that with GenAI-powered game characters (see virtual worlds) that could lead to the next level virtual world of intimate customer interaction.

OpenAI has had a significant impact, particularly at the consumer level. OpenAI launched its Generative AI model ChatGPT in November 2022 and acquired 1 million users in just 5 days and reached 100 million monthly active users just two months after launch, making it the fastest-growing consumer application in history. It reached over 200 million users in 2023 and has a faster adoption rate compared to previous technical advancements. Including the smartphone. Historically, many technological advancements, like personal computers and the internet, were initially adopted by enterprises before consumers.[31] In the case of ChatGPT, it has been reversed.

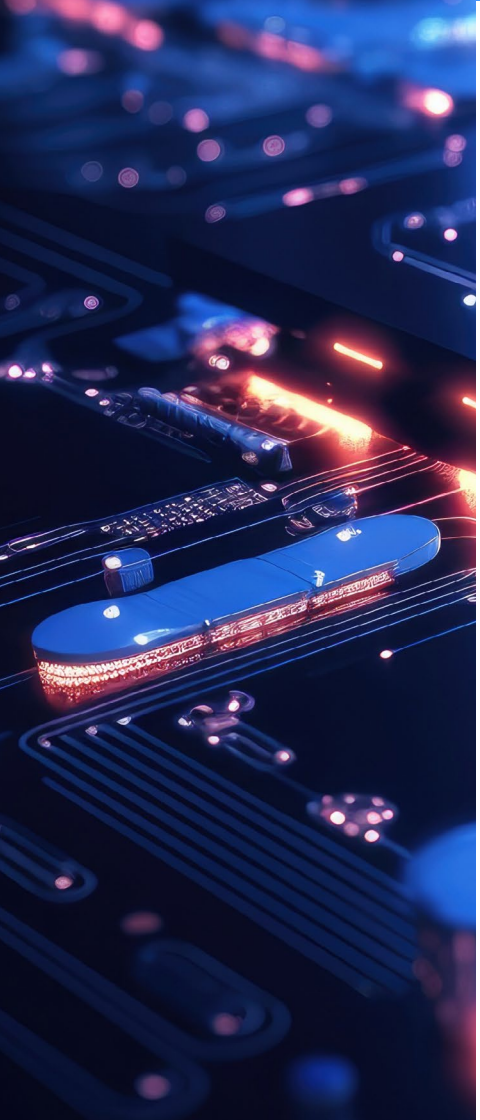
One of the areas where there is also a signal for change is within search engines building recommendations on AI such as Google's Search Generative Experience (SGE) that is transforming internet search, bringing in a new era of context and intuition in information discovery. Traditional search engines might have up to 25% less traffic already by 2026 due to AI Chatbots and other virtual agents[32] and it may alter the way consumers gather information and shop altogether.

This technological improvement is fundamentally altering SEO techniques, pushing marketing professionals to take a fresh strategy to content generation. The impact on users is also considerable, as AI greatly simplifies access to search results. Consumers might no longer be directed to an online shop but will get the possibility to buy the product through generated search results based on digital agents. Take this to the metaverse and it's going to be interesting to see what role the traditional online shops will play.

As AI's capacity to analyse extensive data sets and recognize distinct patterns will continue to give businesses the ability to predict consumer needs more accurately, it will introduce a new level of hyper-personalisation and prediction marketing. Traditional demographic segmentation is being replaced by hyper-personalisation, which creates consumer engagement based on real-time behaviours and decision context.

This transformation is not just about identifying consumers and managing their customer journey. Algorithms are not just tailoring experiences but are predicting future needs, with AI-driven Personal Digital Assistants offering personalised advice across life's facets. AI-powered chatbots and virtual assistants might also be omnipresent in the retail space, helping customers with inquiries, providing product information, and assisting with the buying process. These AI assistants are also becoming more sophisticated. 71% of customers also believe that AI will make customer experiences more empathetic, according to a survey from 2023 conducted by Zendesk research.[33]

“ This transformation is not just about identifying consumers and managing their customer journey. Algorithms are not just tailoring experiences but are predicting future needs, with AI-driven Personal Digital Assistants offering personalised advice across life's facets.



A healthcare study published in 2022 also indicates that AI assistant-generated responses to patients' questions are better than physicians' responses regarding quality and empathy.[34] The study explored the ability of an AI chatbot assistant (ChatGPT) to provide high-quality and empathetic responses to patients' healthcare messages. According to their reports, chatbot responses were rated significantly higher quality than physician responses, but even more surprisingly the evaluators rated chatbot responses as significantly more empathetic than physician responses.

Emotion, a profound human aspect, is not left untouched by AI's advancements. Emotional AI uses computer vision, NLP, and sensors to discern mood and emotional states through e.g. eye- and iris tracking, which can measure emotions during immersive experiences. Although 61% of consumers, up from 52% in 2020, accept the transparent and beneficial use of their personal data,[35] the potential of AI to decode and even manipulate human intentions, emotions, and decisions remain a powerful and challenging frontier, as highlighted by UNESCO's Gabriela Ramos in July 2023.[36]

Obviously, this development of getting closer to the consumer leads to additional issues as ethical questions become ever more important in determining how close brands will allow themselves to get to the consumers.

According to a Scandinavian survey[37] conducted in July 2023, many Scandinavian consumers have already become regular users of Gen AI tools. Age significantly impacts awareness and use of Gen AI 16–17-year-olds are about ten times more likely to use Gen AI than 65–75-year-olds. However, there are worries regarding the legitimacy, bias, misunderstanding, and misuse of AI. Over 50% of Gen AI users believe that responses from Gen AI products are inaccurate.

The social implications of AI[38] can have a massive influence, especially if AI continues to grow without consideration to the huge challenges and risks that arise with the development. Some of these challenges are being addressed in the section "Risks & Challenges".

There is also a beginning understanding of the need to address the impact on the consumer metaverse with the possible development of AGI (Artificial General Intelligence)[39] that will lead to unforeseen changes in the whole ecosystem. This matter will not be discussed further in this report as the signals, timeline and uncertainties related to this development are still too ambiguous.

INTERNET OF THINGS (IOT)

DEFINITION

The Internet of Things is the coordination of anything "smart" and refers to physical items that are equipped with sensors or other forms of technology that can communicate with other devices and systems using the internet or other forms of electronic communication.

STAKEHOLDER

In relation to the consumer metaverse smart objects like Amazon Alexa and Echo, Google Home, Apple Watch and Samsung SmartThings home automation platform is worth mentioning since it's a direct path to the consumer that is projected to play a larger role in the customer journey. New AI-native devices are also worth paying attention to such as the Rabbit R1[40], Humane AI Pin[41] and Rewind Pendant[42].

HOW IT MAY INFLUENCE CONSUMER BEHAVIOUR

With the customer journey becoming increasingly digital, it is essential for businesses to be findable in the new ecosystem of the future – else they will not exist on a global scale, since the customers will not be introduced to your products in their personalized recommendations from the smart products and services connected in IoT. This sector is largely driven by consumer demand for greater personal information in real-time, seamlessness and continuing user journeys. The ability for smartphones and wearables to track health and fitness (such as heart rates and steps), smart homes with smart appliances offer a couple of examples of such extensions and interconnected fluid lifestyles.

It isn't news that the Internet of Things (IoT) is revolutionizing our lives – IoT transformation is everywhere. IoT is now portable, wearable, and implantable, creating a ubiquitous and connected universe, and transforming physical objects that surround us into an ecosystem that is and will continue to rapidly be changing the way we live.

As the technology advances, robots are also becoming more and more integrated into our daily lives as well as in the physical retail stores, performing tasks that were once considered the exclusive domain of humans. From vacuum cleaners and checkout stations to personal assistants and healthcare workers, robots are increasingly becoming a common sight in homes and physical stores worldwide – supporting and in collaboration with the humans.

IoT technology has already changed when and where work is done, in almost every industry. Businesses are transitioning to the Internet of Everything (IoE), an unprecedented network connection that encompasses machines, individuals, processes, and data. The impact of IoT on society and on the daily lives of consumers will indeed be huge.

WEB4

DEFINITION

There is still no coherent definition of web4[43], but according to the European Commission, Web4 *"is the expected fourth generation of the World Wide Web. Using advanced artificial and ambient intelligence, the internet of things, trusted blockchain transactions, virtual worlds and XR capabilities, digital and real objects and environments are fully integrated and communicate with each other, enabling truly intuitive, immersive experiences, seamlessly blending the physical and digital worlds."*[44] Some of the main features of web4 are the increased focus on interoperability, trust and transparency.

STAKEHOLDERS

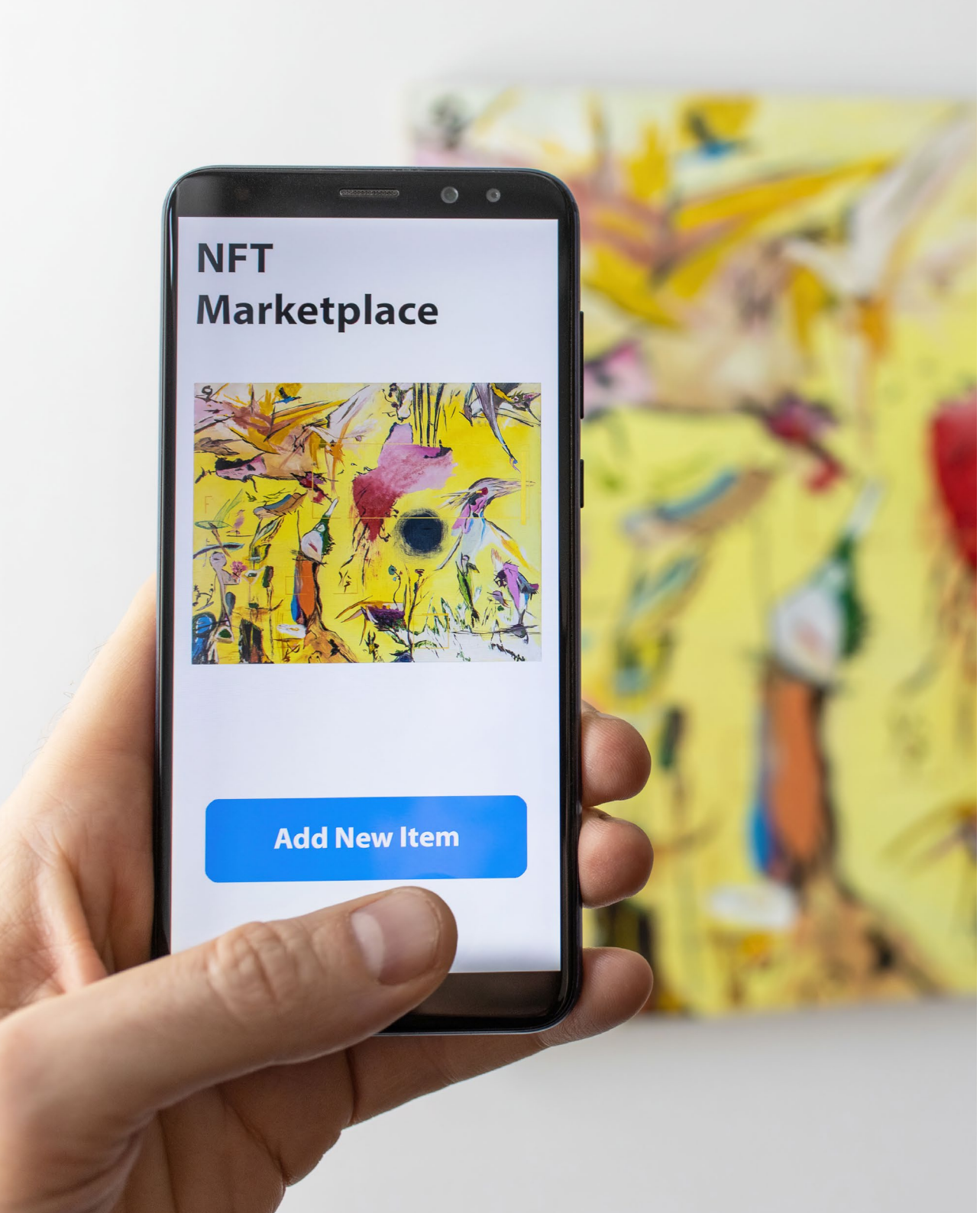
It's still unclear what kind of companies that will be representing the web4 paradigm.

HOW IT MAY INFLUENCE CONSUMER BEHAVIOUR

There has been considerable discourse regarding the potential for web3 to transform the internet's power into a decentralized and distributed ecosystem. The web3 paradigm encountered some major challenges in 2023, predominantly due to the failure of a number of substantial cryptocurrency ventures that were exposed as fraudulent schemes, which engendered widespread skepticism towards blockchain technologies.

Out of the ashes of web3 we are seeing a new web4 paradigm, where physical and digital worlds will seamlessly blend enabling more intuitive and immersive experiences based upon a large degree of interoperability and interconnection. This can have a huge influence directly on the consumer metaverse since this will enable different products and services to interact much more seamlessly where the consumers can move themselves, their assets and creations across platforms and experiences.

For the consumer this shift implies moving from a narrow band of platforms that retailers and brands currently rely upon to reach customers. That power is meant to transfer into the hands of consumers organized within interest communities whose members will interact across multiple platforms.



TOKENISATION

DEFINITION

Tokenization in this context refers is the process of converting rights to an asset into a digital token e.g. on a blockchain. This token represents ownership or a stake in the asset (which can be anything from real estate to artwork, to virtually any product), and these tokens can be traded and stored securely and efficiently on the blockchain network. Most relevant in a consumer context are NFTs (Non-Fungible Tokens) and Smart Contracts.

STAKEHOLDERS

Some of the main stakeholders of the tokenization economy have been blockchain currencies such as Ethereum, marketplaces such as OpenSea and digital wallets like MetaMask.

HOW IT MAY INFLUENCE CONSUMER BEHAVIOUR

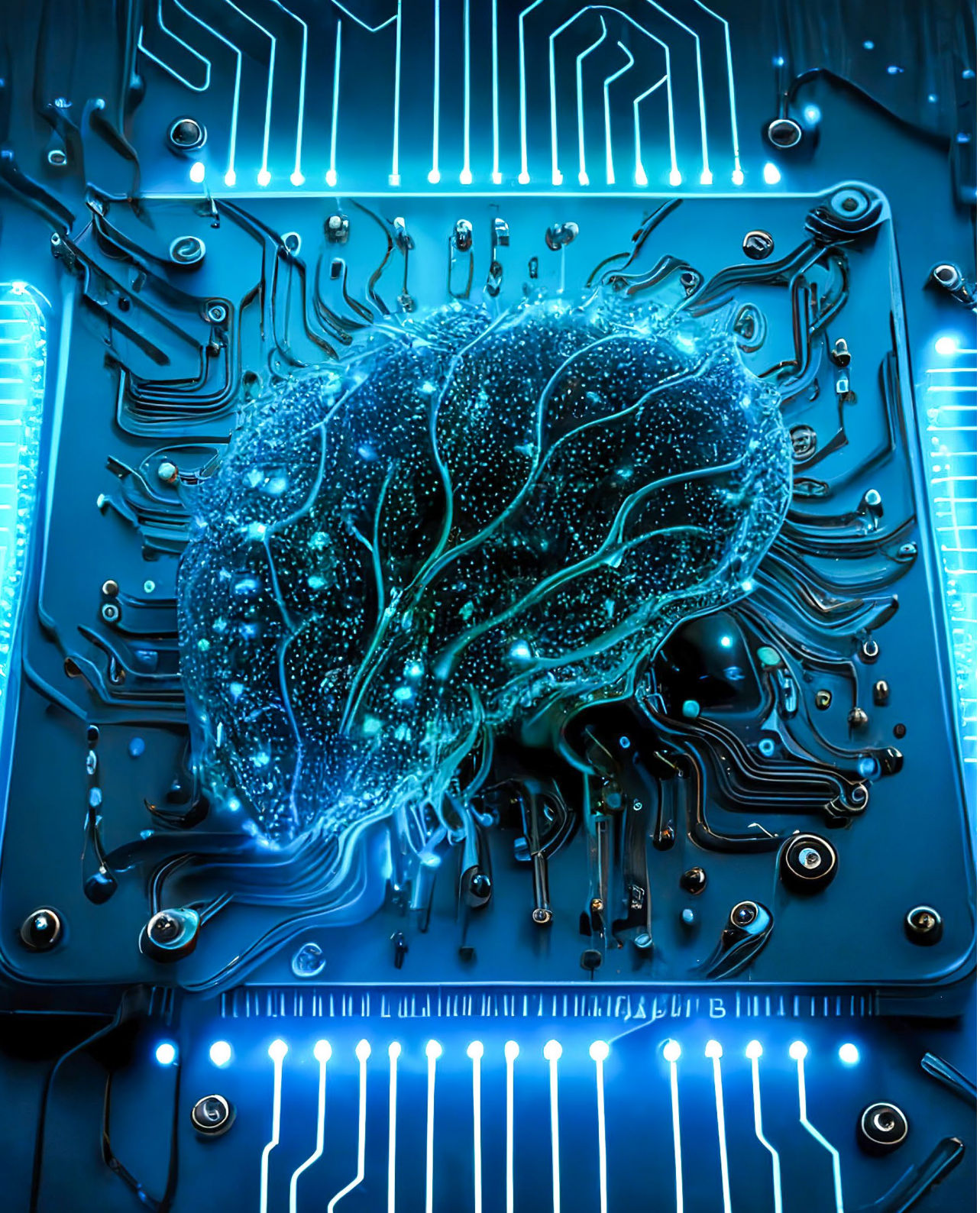
The adoption of tokenization, like other technologies in the consumer metaverse, has experienced fluctuations, resulting in financial losses especially for those who invested in NFTs and other blockchain initiatives in 2023. There is still a belief from - at least - some stakeholders that the advances in token technology will lead to an even safer shopping experience for merchants and customers, as well as to unlock new opportunities in eCommerce, by unifying channels and making the payments process seamless.

One of the reasons for the failing success of tokenisation is that it has been very difficult for a normal consumer to enter the sphere as well as to actually understand the implications of blockchain that is still in a very early stage. Without security measures or established norms in place, the situation has led to an overestimation of ROI on the short-term.

Trust is one of the biggest issues we face as society, as well as in the consumer metaverse. With the merge of the physical and digital worlds it's going to be hard to distinguish what is 'real' and what is not. Enabling new transparent and traceable methods of online verification, where it is increasingly difficult to distinguish between what is true and legitimate and what is false and counterfeit on a consumer level is bound to be developed.

Trust is evolving, transitioning from traditional models to 'trustpoints' – automated trust mechanisms within ecosystems, powered by technologies like blockchain and global digital identities. Threats to digital trust continue to rise, as seen with the surge of fake web shops, intensifying the need for transparency. Figures from the Danish non-profit organisation 'E-mærket', show that in 2016 approximately 1.000 fake web shops were reported to the police. By 2021, this figure had risen to almost 200.000 reported web shops.[45] That number is only expected to rise dramatically with the development of AI tools.

In the future, businesses must champion these trust points, ensuring a future where data-driven personalization and consumer trust coexist seamlessly.



BRAIN-COMPUTER INTERFACE (BCI)

DEFINITION

A brain-computer interface (BCI), also known as a brain-machine interface (BMI) or smartbrain, is a direct communication link between the brain's electrical activity and an external device.

STAKEHOLDERS

Many large tech companies are already looking into this technology such as Meta and Apple, as well as more dedicated companies such as Elon Musk-owned Neuralink Corp.

HOW IT MAY INFLUENCE CONSUMER BEHAVIOUR

BCI has the potential to create much more private and discrete interface where you can 'think' your questions, for instance *"Can I get this shoe cheaper somewhere else?"* and, while looking at the shoe, a picture from the glasses together with your request can make it possible for you to get input through e.g. audio in your headphones. This is one of the features being worked on using EMG (electromyography) technology where companies like Meta have been working in their Reality Lab on a neural net that tracks signals from the brain that pass through the wrist. Or, as Mark Zuckerberg expressed in an interview: *"You'll be able to type and control something by thinking about how you want to move your hand."* According to Zuckerberg, Meta's EMG wristband could arrive already *"in the next few years"*.[46]

Apple has also filed a patent for a new 'EEG Integrated' AirPod that acts as a brain-computer interface. According to the patent, the item will allow users to operate their other devices just through their thoughts. For example, if you're bored with the current song playing on your iPhone, simply think about playing a different song, and it will happen.[47] Combined with XR glasses, consumers might also be able to make immediate purchases using BCI. Think-to-purchase may not exist anytime soon, but it's most likely just a matter of time.

Essentially this might lead to a new kind of augmented consumer where technologies have improved the human capabilities hence affecting and in many ways curating our decision-making processes and behaviour in the future.[48] This human-machine collaboration might lead to a completely new definition of what it means to be a human – and what a future consumer actually is.

The combination of neuromarketing and BCI provides a deeper insight into consumer behaviour, offering companies a valuable understanding of the subconscious elements influencing purchasing decisions. However, while the opportunities presented by neuromarketing and BCIs are enticing for marketers, ethical considerations cannot be overlooked. Respecting consumer privacy and securing informed consent for the collection of brain data are imperative. Transparency in the utilization of neuromarketing techniques plays a pivotal role in building trust with consumers and ensuring responsible marketing practices.[49]

GEOGRAPHICAL ASPECTS

As the Consumer Metaverse unfolds as a new frontier in the digital landscape, the different regions in the world each contribute to a global tapestry of initiatives, strategies, and visions for harnessing its potential. Their distinct technological environments, socioeconomic structures, and strategic objectives influence their respective approaches. This analysis explores some of the diverse strategies that these regions employ when it comes to the Metaverse, emphasizing both their collaborative efforts and nuances in shaping a digital future that harmonizes innovation with regional societal values. The overview is by no means all-encompassing but aims to provide an understanding of various regional approaches.

EU

SAFEGUARDING THE METAVERSE

The European Union's strategic blueprint for the Metaverse is intricately aligned with its foundational principles of digital rights, privacy, and inclusivity. Anchored in the vision of creating "Virtual Worlds fit for people," the EU's approach emphasizes a harmonious balance between technological advancement and the safeguarding of fundamental human rights. The Commission's proactive stance on Web4 and virtual worlds is designed to foster an ecosystem that is open, secure, trustworthy, fair, and inclusive, catering to the needs of EU citizens, businesses, and public administrations alike.

Central to the EU's strategy is the empowerment of individuals, the nurturing of a European Web4 ecosystem, the enhancement of virtual public services, and the promotion of open standards for a democratized governance of the Metaverse. This forward-thinking agenda positions the EU as a standard-bearer for ensuring that the digital transformation brought about by the Metaverse is equitable, sustainable, and reflective of European values.

LATAM

THE TECH-SAVVY NEWCOMERS

In contrast to the EU's regulatory-centric approach, Latin America faces distinct challenges characterized by infrastructural limitations and technological disparities. Despite these hurdles, the region exhibits a robust appetite for the Metaverse, driven by a youthful, tech-savvy demographic and a growing digital economy. Initiatives such as Colombia's pioneering judicial hearing in the Metaverse and strategic partnerships with global tech giants underscore Latam's resolve to embrace digital innovation.

The potential economic impact of the Metaverse in Latin America, with projections indicating a significant contribution to the region's GDP by 2031, highlights the transformative power of virtual worlds in reshaping business landscapes and employment paradigms. For Latam, the Metaverse offers a conduit for bridging the digital divide, fostering economic growth, and catalyzing social inclusion in the digital age.

MENA

AMBITIOUS, BOLD INVESTMENTS

The MENA region, with its rich tapestry of cultures and rapid technological adoption, is charting a bold course in the Metaverse landscape. Spearheaded by initiatives like Saudi Arabia's Vision 2030 and the UAE's ambitious Metaverse strategy, MENA is poised to harness the Metaverse for economic diversification, innovation, and societal progress. The region's strategic investments in virtual worlds are indicative of its commitment to securing a leading position in the digital future.

The Metaverse's potential to revolutionize sectors from healthcare to tourism in the MENA region is bolstered by significant government backing and a collaborative ecosystem involving businesses, developers, and creators. This collective endeavor aims to unlock new economic avenues and elevate the quality of life for its citizens through immersive digital experiences, based upon their regional values.

CHINA

FRONTRUNNERS ON ENTERTAINMENT & E-COMMERCE

China's venture into the Metaverse is characterized by a concentrated effort to integrate these virtual spaces into its cultural and entertainment industries. The Three-Year Action Plan for the Innovative Development of the Metaverse Industry underscores China's ambition to pioneer the application of Metaverse technologies in enhancing cultural heritage, entertainment, and tourism. Through initiatives that encourage museums to offer immersive digital experiences and the entertainment industry to innovate with digital anchors, China is setting the stage for a vibrant Metaverse ecosystem that enriches cultural engagement and fosters creative industries.

The national-level policy, bolstered by provincial action plans, signifies a strategic alignment of governmental support with passionate investors and creators, propelling the development of the Metaverse within China's cultural – and political - domain. This approach aims to leverage virtual worlds as a medium for cultural preservation, artistic expression, and innovative entertainment.

RISKS AND CHALLENGES

The development of the consumer metaverse raises a number of concerns on many different levels, both on an individual level, for the businesses and as society as a whole, and are essential elements for the perceived quality of the user experience for both users and creators of the consumer metaverse. The ability as a company to navigate these challenges will significantly affect the success on the long-term which involves understanding metaverse governance and managing due diligence.

For instance, the metaverse introduces tangible consequences, as individuals present themselves and interact with each other as avatars. Issues such as addiction, social isolation, cyberbullying, identity theft, and psychological harm loom large. Additionally, malfunctions in devices like VR headsets or haptic suits and navigating hazardous virtual environments could lead to physical injuries.[50]

ETHICS IN THE CONSUMER METAVERSE

The emergence of the metaverse alongside advancements in emerging technologies brings forth various ethical concerns, ranging from intensifying existing inequalities to potential misuse and manipulation. Ethics is a complex concept since we all have different understandings of what is morally right or wrong. A few of the defining elements of ethics are moral principles, respect, accountability, reflection, fairness and lawfulness. And it is not just about following a set of rules; it's about developing a moral compass that guides our behaviour. It involves a commitment to doing what is right, even in the face of cost or disadvantage, and striving for the betterment of society as a whole – and in the case of the consumer metaverse, for the betterment of the consumers.

ACCESSIBILITY, EQUITY, DIVERSITY AND REPRESENTATION

The metaverse may become an amplifier of the dynamics of our history and the world we live in today leading to undesirable futures for both companies and individuals.

Virtual worlds could widen societal disparities. While emerging technologies like the metaverse and AI can offer educational opportunities, unequal access to them could perpetuate existing divides.

Safeguarding fundamental human rights such as inclusion, representation and accessibility is vital in the digital realm. Virtual worlds will need to equally represent users of varying ages, cultures, abilities, genders, languages, and religions, while implementing specific safety measures for vulnerable groups, such as children, and catering to individuals with physical and intellectual disabilities to minimize potential disadvantages in interactions.[51] Ensuring equitable access to virtual worlds is vital to prevent further exclusion and injustice.[52]

Similarly, ethical concerns arise in other emerging technologies, particularly artificial intelligence due to misuse or abuse of AI systems, flawed design and learning through biased data. Adherence to responsible practices is critical for establishing trustworthy systems, especially in generative AI. Maintaining human validation and oversight throughout the lifecycle of AI use can limit the risk of false content. Moreover, establishing governance structures and mitigation measures is crucial to uphold transparency, accountability, and overall safety in AI deployment.[53]

In essence, ethical considerations extend beyond the technical intricacies of AI and the metaverse, encompassing broader societal aspects that demand a holistic approach to responsible and inclusive technological advancements.[54]

LEGAL, DIGITAL RIGHTS & INTELLECTUAL PROPERTY (IP)

Operating in the consumer Metaverse necessitates compliance with a diverse range of international laws and regulations. This includes securing patents for technological innovations, trademarking virtual goods, and copyrighting unique digital content.

CYBERSECURITY & SAFETY

One significant point of concern is the power metaverse platforms could hold over consumers' lives. Large platforms will have the capability to monitor users' activities, conversations and experiences, potentially the world around them for their own purposes if left unregulated.

SUSTAINABILITY

There is considerable debate regarding the environmental impact of digitalization and the transition to the Metaverse. On one hand, digital initiatives such as digital showrooms and 3D design have been actively pursued by companies, such as Tommy Hilfiger, in an effort to reduce sample production and having to shipment physical products that might as well be tried out in a virtual space.

On the other hand, the realization of the consumer metaverse and the need for more complex data systems will require energy-intensive computing and fast broadband connectivity for real-time rendering, managing interactions among millions of synchronized users, as well as maintaining the functionality of servers and data centers.

Particularly, today's AI systems require substantial energy for operation and model training, contributing to greenhouse gas emissions. With the pace of technological advancements outstripping clean energy innovation, there is a looming risk of increased carbon emissions and energy imbalances, without efficient management.

AI systems demand substantial energy for operation and model training, contributing to greenhouse gas emissions. As AI usage expands, it's crucial to prevent increased energy consumption and emissions. The rapid evolution of emerging technologies calls for clean energy investments, especially in innovation and research on renewable energy sources. Additionally, the proliferation of virtual words may worsen electronic waste, due to the increased demands of electronic devices and their consequent production, disposal and recycling.

> With the pace of technological advancements outstripping clean energy innovation, there is a looming risk of increased carbon emissions and energy imbalances.

CONSUMER OPPORTUNITIES ACROSS SECTORS

The Consumer Metaverse offers many potential opportunities for businesses operating in various consumer-oriented industries, and companies have the chance to innovate and redefine consumer experiences. The Consumer Metaverse enables brands to engage with customers in new ways, such as through gamified shopping experiences, exclusive virtual events, and interactive brand activations. These experiences can foster a deeper brand connection and loyalty.

Virtual stores in the Consumer Metaverse allow brands to reach a global audience without the need for physical storefronts in every location. This can significantly reduce overhead costs while expanding market presence.

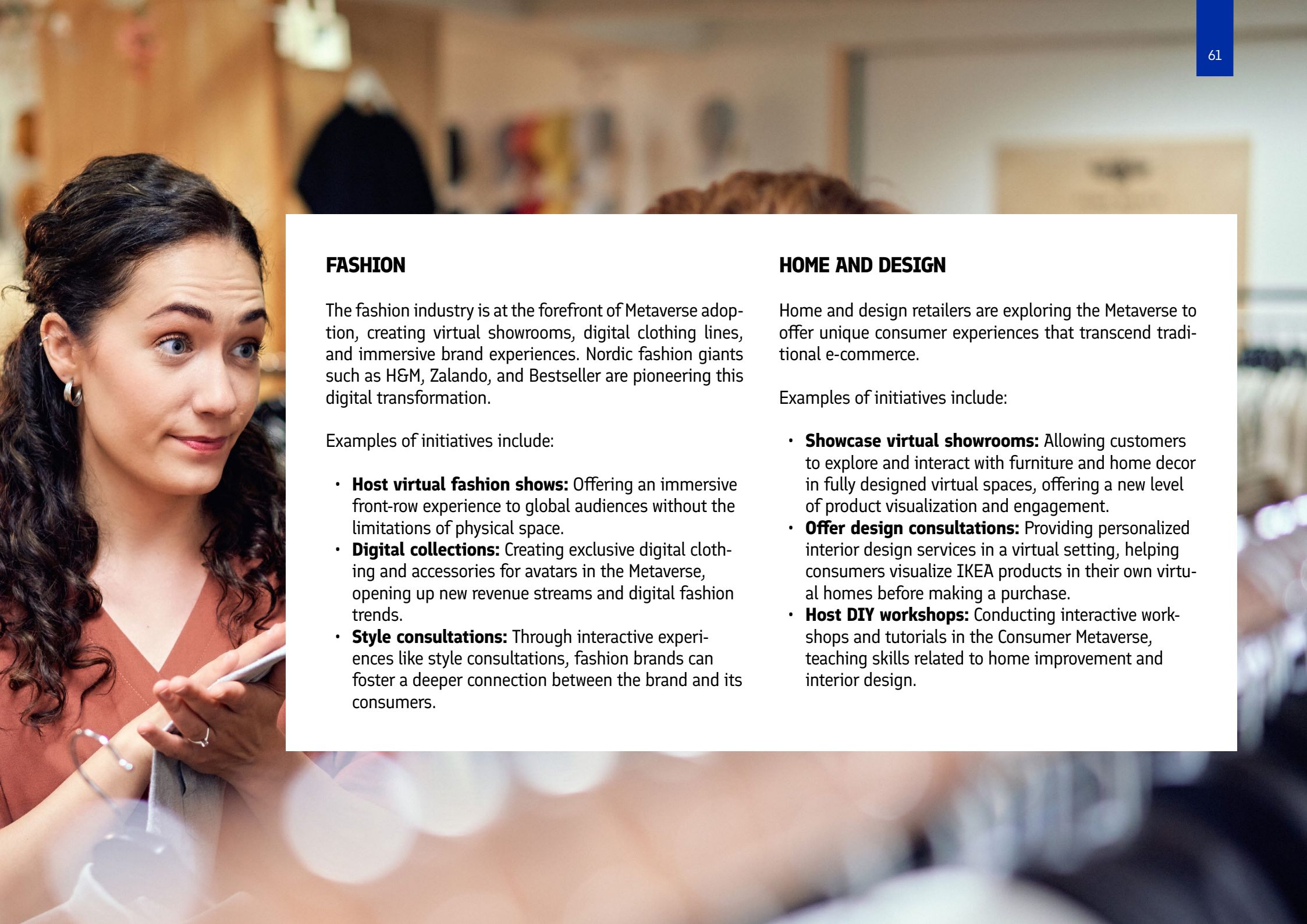
In this foresight project we have looked at sectors, like retail & digital services, fashion, home & designwellness & leisure and travel, with the aim to present some examples of the opportunities businesses in different sectors are already developing offering.

RETAIL AND DIGITAL SERVICES

In the ever-evolving consumer metaverse, retail and digital services are undergoing a transformative shift. This new virtual frontier offers an immersive shopping experience, offering tailored services that has the potential to redefine customer engagement.

Examples of opportunities businesses are exploring:

- **Virtual Try-ons:** Retailers can establish virtual storefronts and showrooms within the Consumer Metaverse, allowing consumers to explore products in a highly interactive and immersive environment. This could range from virtual try-ons for clothing and accessories to 3D product demonstrations, providing a richer shopping experience compared to traditional online retail.
- **Personalized shopping experiences:** AI and data analytics can be leveraged within the Consumer Metaverse to offer highly personalized shopping experiences. Retailers can customize their virtual storefronts and product recommendations based on individual consumer preferences, behaviours, and past interactions.
- **Virtual workspaces and meetings:** Digital service providers can offer virtual workspaces and meeting rooms in the Metaverse, catering to the growing demand for remote and flexible meeting solutions. These spaces can be designed to enhance collaboration, creativity, and productivity to support the customer journey.
- **Entertainment and media consumption:** Digital services related to entertainment can create unique content experiences in the Consumer Metaverse. This could include virtual concerts, movie screenings, and interactive media that offer new forms of content consumption and fan engagement.



FASHION

The fashion industry is at the forefront of Metaverse adoption, creating virtual showrooms, digital clothing lines, and immersive brand experiences. Nordic fashion giants such as H&M, Zalando, and Bestseller are pioneering this digital transformation.

Examples of initiatives include:

- **Host virtual fashion shows:** Offering an immersive front-row experience to global audiences without the limitations of physical space.
- **Digital collections:** Creating exclusive digital clothing and accessories for avatars in the Metaverse, opening up new revenue streams and digital fashion trends.
- **Style consultations:** Through interactive experiences like style consultations, fashion brands can foster a deeper connection between the brand and its consumers.

HOME AND DESIGN

Home and design retailers are exploring the Metaverse to offer unique consumer experiences that transcend traditional e-commerce.

Examples of initiatives include:

- **Showcase virtual showrooms:** Allowing customers to explore and interact with furniture and home decor in fully designed virtual spaces, offering a new level of product visualization and engagement.
- **Offer design consultations:** Providing personalized interior design services in a virtual setting, helping consumers visualize IKEA products in their own virtual homes before making a purchase.
- **Host DIY workshops:** Conducting interactive workshops and tutorials in the Consumer Metaverse, teaching skills related to home improvement and interior design.

WELLNESS AND LEISURE

The wellness and leisure sector has a unique opportunity to reach consumers in the Metaverse through virtual wellness centers, leisure activities, and interactive experiences that promote health and relaxation.

Examples of initiatives include:

- **Virtual wellness spaces:** Establishing virtual environments dedicated to meditation, yoga, and fitness classes, making wellness activities more accessible and engaging.
- **Virtual leisure activities:** Developing a range of leisure experiences, from virtual travel tours to concerts and events, providing consumers with new ways to relax and enjoy their free time.
- **Community and social interactions:** Facilitating virtual support groups, wellness challenges, and social gatherings to foster a sense of community and support amongst users.

TRAVEL

The travel industry, in particular, stands to benefit significantly from the Consumer Metaverse's capabilities. Virtual travel experiences can transport users to distant locales, historical sites, and natural wonders, all without leaving their homes. This not only provides an alternative for those unable to travel physically but also opens up new avenues for exploration and learning.

Examples of initiatives include:

- **Immersive destination experiences:** Virtual reality tours can offer immersive experiences of destinations, allowing travelers to explore landscapes, cultural sites, and attractions in a highly interactive manner. This can serve as both an innovative way to plan future trips or as a unique travel experience in itself.
- **Enhanced planning and booking:** Through interactive platforms in the Consumer Metaverse, travelers can plan and book their journeys in a more engaging and informative way. Virtual tours of hotels, cities, and attractions can help users make informed decisions about their travel plans.
- **Cultural exchange and learning:** The Consumer Metaverse provides a new platform for cultural exchange and learning, enabling users to experience the richness of global cultures through interactive experiences, language learning environments, and cultural events.

THE POSSIBLE FUTURES OF THE CONSUMER METAVERSE

Peeking into the possible futures, the direction in which the consumer metaverse will move remains uncertain. The potential emergence of a few dominant metaverses or a multitude of metaverses are each steering it in distinct directions, and at the moment the few dominant players seem to control. So how can Finnish businesses navigate this in the best way? How to prepare for different pathways?

While the future is yet to be seen, certain themes regarding the metaverse have reached some kind of expert consensus. Specifically, envisioning the metaverse in 2040 a prevailing perspective suggests that the forefront of technological achievements will be marked by the dominance of augmented and mixed reality applications. Fuelled by AI, these technologies are expected to redefine user experience by enriching real-world interactions. Everyday life can become more far-reaching and engaging.[55]

Over the next decade, digital layers are likely to become so seamlessly integrated into our lives that reality is reconfigured and what it means to be human redefined. The cognitive separation between the physical and virtual realms is becoming far less pronounced.

The consumers will be able to create their own hyper-sensory versions of reality as experience becomes subjective, whether opting to see real-time information delivered in AR, or large-scale virtual worlds.

Ultimately, the metaverse transcends beyond merely being a game or a digital world - it's an ecosystem that provides businesses with the opportunity to seek new experiences for their customers. By leveraging immersive technologies like augmented reality and virtual reality, businesses can build metaverse worlds that offer avatars, gaming, economies, social interactions, and retail opportunities. However, to harness the full potential of the metaverse, businesses must cultivate essential capabilities, requiring a mindset that extends beyond just current technologies and considers how the metaverse can be used as part of a broader digital transformation.

Furthermore, technological strides in the metaverse could pave the way for next-generation networked-knowledge system surpassing the current capabilities such as brain-computer interfaces and quantum computing. These technologies and the next wave of industry 5.0 have the potential to magnify the metaverse. However, in this project, we will not be addressing the long-term perspectives on these areas since we will concentrate more on the 5-10 years perspective.

The immersive nature of the metaverse raises concerns about human agency and rights as most of these new technologies demand a vast amount of data sharing that can be taken advantage of as well as a range of other ethical and safety concerns. In the blurry boundaries of physical and virtual worlds when will you be able to tell what is true and what to trust? What guidelines should Finnish Businesses implement? When a consumer agrees on using the passthrough feature in a pair of XR glasses, who will be able to track the data from their surroundings? How do Finnish Businesses navigate in the different software/hardware providers? Who owns the infrastructure of your metaverse services and activities? And how about sustainability? And most important in a local, Finnish context: What values is it built upon.

> “Despite the challenges and scepticism that may surround the Metaverse, Finnish companies should view it as an area full of possibilities.

WHY BUSINESSES SHOULD BE READY FOR THIS OPPORTUNITY

While the Metaverse may currently face some consumer headwind in Europe, including technological challenges, regulatory uncertainties, and concerns about user well-being, it undeniably represents a unique opportunity for businesses. This emerging digital universe, with all its complexities and potential for innovation, offers a fertile ground for companies to apply their renowned values of trust, innovation, and social welfare in new and impactful ways.

Finnish firms are exceptionally positioned to navigate the Metaverse's evolving landscape, leveraging their strengths in technology, design, education, and sustainability. Together with technology competencies, and combined with a national culture that values resilience, welfare, and democratic principles, provide Finnish companies with a competitive edge in creating meaningful and ethical virtual experiences. By embedding these values into their Metaverse initiatives, Finnish businesses can not only differentiate themselves on the global stage but also contribute to shaping the Metaverse into an inclusive, safe, and enriching environment for all users.

In essence, despite the challenges and scepticism that may surround the Metaverse, companies should view it as an area full of possibilities. It represents a chance to extend Finland's legacy of innovation and ethical leadership into the digital realm, offering experiences that resonate with global audiences while adhering to the highest standards of digital citizenship. As the consumer metaverse continues to unfold, Finnish businesses have the opportunity to lead by example, demonstrating how technology may be used to improve human connections, facilitate learning, and promote well-being in immersive virtual worlds.

This unique position underscores the potential of the Metaverse not as a challenge to overcome, but as a horizon of opportunities for Finnish companies to explore and define the future of digital interaction.

Our futures are shaped by the decisions we make in the present. By becoming more conscious of our understanding of the future consumer, we can make choices that are better informed and less clouded by biases and misguided assumptions.

The hope is that this project will be the beginning of a future-ready decision-making, that can foster the best possible futures for Finnish companies to engage in the consumer metaverse.

HOW BUSINESSES CAN PREPARE FOR THE CONSUMER METAVERSE:

1. PRIORITIZE DIGITAL LITERACY

Invest in understanding emerging technologies within the consumer metaverse.

2. EXPLORE INNOVATIVE BUSINESS MODELS

Explore new revenue streams and opportunities enabled by virtual services and experiences on the short, medium and long run.

3. FOCUS ON NEW CUSTOMER ENGAGEMENT METHODS

Experiment with immersive, engaging experiences that blend the physical and digital worlds seamlessly. Additionally, identify new methods of customer engagement to foster deeper connections and loyalty within virtual communities.

4. RECOGNIZE AND BE AWARE OF VALUES AND A HUMAN-CENTRIC APPROACH IN CONSUMER METAVERSE INITIATIVES

Design metaverse experiences that prioritize well-being, privacy, and ethical considerations, ensuring inclusivity and accessibility.

5. CONDUCT INTERACTIVE WORKSHOPS AND TUTORIALS

Teach skills and understanding into metaverse initiatives.

6. LEVERAGE SUSTAINABLE PRACTICES

Incorporate a sustainability aspect in all new projects to minimize environmental impact, leading by example in eco-friendly virtual experiences.

7. ENGAGE IN COLLABORATIVE CROSS-SECTOR PARTNERSHIPS

Seek partnerships with technology providers, content creators, governmental bodies, academia and other businesses to enhance metaverse offerings.

8. ADOPT A PREPARED MINDSET THROUGH VIRTUAL TRAINING AND UPSKILLING

Prepare for the future by exploring virtual workspaces, training programs, and other applications to enhance a prepared mindset.

9. MONITOR AND ADAPT TO REGULATORY CHANGES

Stay informed about evolving regulations concerning digital rights, privacy, and cybersecurity within the metaverse. Proactively adapt strategies to ensure compliance, protect user data, and navigate the regulatory landscape effectively.

10. LEVERAGE FINLAND'S CAPABILITIES IN TECHNOLOGY & GOVERNANCE

Utilize Finland's strengths in competences, governance, capacity, and technology to establish leadership in the metaverse. Finnish businesses can pioneer innovative solutions and set standards for ethical, user-centric virtual environments, leveraging national capabilities for a strategic advantage.

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43 Web1 refers to the earliest stage of the World Wide Web's evolution. Characterised by static pages, it served primarily as an information repository where users could read and consume content without many interactive features or user-generated content. Websites were simple, with limited multimedia content and functionality. Web2 marked the transition to a more interactive and social web experience. This era introduced features that allowed users to create, share, collaborate, and comment, giving rise to social networks, blogs, and platforms like YouTube and Wikipedia. It was characterised by the growth of user-generated content, usability, and interoperability for end users. Web3 is often associated with the concept of decentralisation and the use of blockchain technologies to create an open internet, aiming to give users more control over their data.

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