

Building a Responsible Metaverse

Leading with trust
and human-centricity



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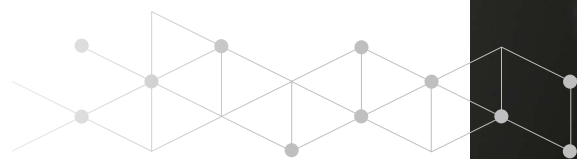
Introduction

Remember Second Life? When it launched in 2003, it was arguably the first major metaverse environment. Second Life attracted thousands of early adopters who could play and create in a virtual community with one guiding principle: “Be nice.”

This approach worked—until it didn’t.

Unpleasant or harmful player behavior, inappropriate images or other uncomfortable situations proliferated quickly. Linden Lab, the creators of Second Life, started banning harmful behavior and adding features that allowed people more control over what they saw and how other avatars could interact with them. These features increased users’ trust, which proved critical for retention and engagement. Two decades later, Second Life endures, but one can’t help but wonder: what could Second Life have become had it been built with our trust and safety in mind from the start?

This is an important lesson to remember now, particularly with the rise of new metaverse platforms built on different governance models and content-creation economies enabled by blockchain that utilize immersive human-machine interfaces. Virtual experiences may be more advanced today, but nothing has changed when it comes to human sentiment.



As companies look to build their own metaverse experiences, they must put trust at the core of their strategy. The world needs a responsible metaverse that is built with past lessons and existing challenges in mind, so we can better anticipate—and account for—what lies ahead. Otherwise, the metaverse will not live up to its potential to transform how work is performed, how products and services are delivered, how goods are distributed and how businesses operate.



Between August and September 2022, Accenture conducted a two-part global study spanning 19 countries and 17,500 respondents to understand consumer perceptions of the metaverse (both extended reality and web3). The results revealed that consumers care about more than just the front-end experience and that organizations must dig deeper to earn their trust. Three key findings emerged from the study:

1. Respondents indicated that safety, security and privacy were the most important elements.

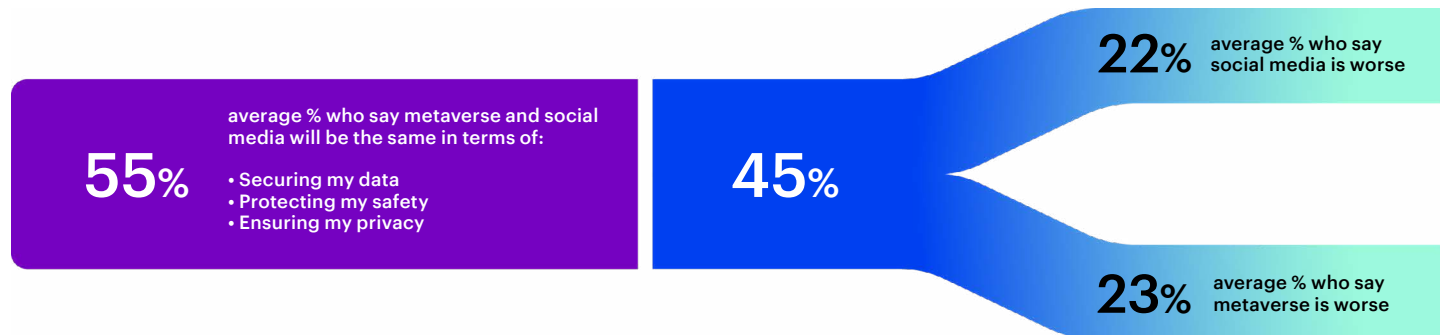
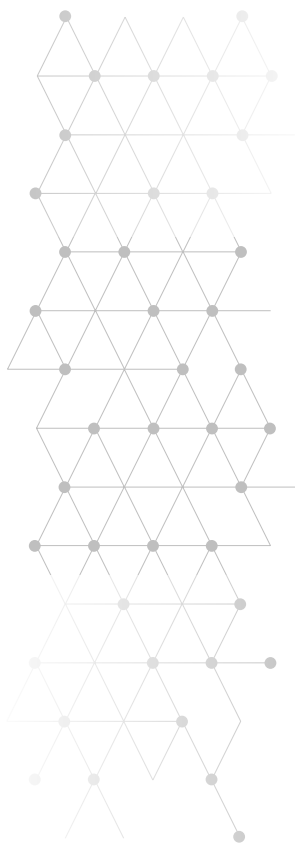
This was consistent across age group, gender and geography.

2. The metaverse is at a fork in the road when it comes to trust.

Just over half of respondents believe the metaverse will be the same as social media in terms of securing consumers' data, protecting their safety and ensuring their privacy. The other half is about equally split on whether the metaverse or social media will be worse.¹

3. The underlying ethos of crypto (e.g., decentralization, transparency) is not the driver of consumer interest in cryptocurrencies and NFTs.

Consumers ranked potential financial value 4x more important than the ethos of crypto. This aligns with our finding that scams and other security threats are a top



concern for respondents—nearly 60% of consumers cited “strong security and data protection capabilities” as a top factor when selecting NFT marketplaces.²

To earn and maintain users' trust, companies must make sense of a complex array of questions and trade-offs related to technology, policy, ethics and business strategy. Companies will also have to apply past lessons to entirely new paradigms around data, ownership and governance.

The following sections present a framework to guide responsible innovation in the metaverse, particularly as the

convergence of technologies in the metaverse tech stack brings new challenges. The framework is characterized by eight dimensions that we believe are fundamental to building both trusted and human-centric experiences in the metaverse. It is relevant to every organization—big or small, private or public—and applies to builders, enablers and users alike.

Finally, we identify six major emerging challenges and explain why these matter, as well as what organizations should consider as they enter the metaverse.

Foundations of a Responsible Metaverse



Although the internet has been one of the most disruptive innovations in our lifetimes, many critical elements beyond basic function and utility were afterthoughts to its developers. Companies, researchers and governments have worked to retrofit privacy, security and other consumer protection elements, but they have always played catch-up. If the past is a preview, there are real challenges and risks that must be addressed to ward off dystopian outcomes in this next evolution of the internet. How? By embedding responsibility into the very design of the metaverse.

We define responsible innovation in the metaverse across eight dimensions:

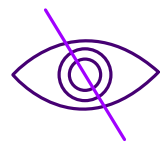
The trust dimensions—privacy, security, resilience and intellectual property rights—shape how technology, product policies and practices are designed and deployed. Getting these trust dimensions right is essential to creating a metaverse that people want to engage in and return to.

The human dimensions—safety, sustainability, inclusion/diversity/accessibility, and well-being—ground the design and build of the user experience. We must create human-centric experiences in which people feel free to express their authentic and unique selves in a safe and respectful manner.

Earlier this year, analysts cited hefty market valuations for the metaverse—\$800 billion according to Bloomberg and in the trillions according to Citi. The Metaverse Continuum will completely transform how we work, learn, play and live, and early adopters will essentially define a responsible metaverse. As companies delve into the metaverse—whether to design experiences, build platforms or leverage devices—they should be guided by a set of core principles and a deep understanding of the risks and opportunities across these eight dimensions.



Trust Dimensions



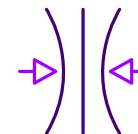
Privacy

- The primary purpose of collecting, processing, and sharing user data should be to deliver value to the user.
- Design decisions should feature privacy defaults that are intuitive given the context of the use case or experience.
- Companies should implement innovative strategies to educate users about their privacy options in the metaverse.



Security

- Security by design should focus on hardening infrastructure and software against novel threats, particularly cybercrime, fraud, and disinformation.
- Companies should use an adaptive zero-trust security model.
- Data protection should be in place to protect the confidentiality and integrity of experiences, data and applications.



Resilience

- The metaverse should be engineered to operate in evolving and dynamic conditions and must be scalable and able to withstand and recover rapidly from disruptions and adversarial cyber attacks.
- Platforms and devices should be capable of supporting high-fidelity and low-latency experiences that are immersive and persistent for large numbers of global users to interact simultaneously, in real time.



Intellectual Property Rights

- Platforms should enforce intellectual property rights through robust detection capabilities and comprehensive user education.
- Companies should invest in preventative measures and real-time identification mechanisms, such as trademark and copyright monitoring services and brand protection tools.

Consumers are highly concerned about privacy in the metaverse. Only 4% claimed they were not worried about this. Interestingly, we found that Millennials and Gen Zers—digitally savvy consumers—were more concerned about robust privacy features in the metaverse.³

67% of consumers agreed that they'd be more likely to engage—create, buy or trade collectibles—in NFT marketplaces that actively combat counterfeits.⁴

Figure 1. Eight dimensions of Responsible Metaverse

Human Dimensions

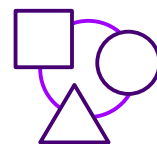
Inclusion, diversity and well-being comprise a growing concern. Consumers under 40 (Millennials and Gen-Z) were more likely to give greater importance to these dimensions than Baby Boomers and Gen-X.

Decentralized Autonomous Organizations (DAOs) have questionable value. When asked about inclusion and diversity, a core tenet of DAOs, consumers are split—48% believe that DAOs can enhance inclusion and diversity by allowing community self-governance, 43% have not yet formed an opinion, and 9% disagreed altogether.⁵



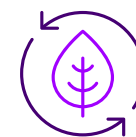
Safety

- Safety is the top priority in virtual environments.
- Platforms must proactively implement policies, technologies and practices to discourage harmful content and behaviors.
- Companies should invest in predictive and real-time detection capabilities as well as in-world features to empower users to manage their own safety.



Inclusion, Diversity & Accessibility

- Companies should design systems and experiences to be inclusive and accessible.
- As a new vehicle for fostering empathy and connection, the metaverse should ideally be grounded on universal design principles to maximize usability and accessibility.
- Context matters. Users should feel empowered to reinvent themselves if they wish, but certain situations call for authenticity and real identities.



Sustainability

- Companies should explore ways to use the metaverse to become net more sustainable by using it as an alternative to energy and carbon-intensive activities.
- When deciding how to build and select hardware, software and platforms for the metaverse, companies should evaluate environmental impact, such as energy usage, emissions, and e-waste.
- Users, creators, and operators should be educated about what they can do to reduce the environmental footprint of the metaverse.



Well-being

- The metaverse should be leveraged to enhance and augment real-life experiences.
- Devices, systems and digital environments should be rooted in preserving and improving users' mental and physical health.
- Ultimately, well-being in the metaverse is directly correlated with human-centric design choices across all the dimensions outlined in this framework.

Figure 1. Eight dimensions of Responsible Metaverse

Studies show that trust is the decisive variable in forming commitment, which explains why users are more willing to engage with online platforms they consider trustworthy.⁶ This was also supported by our consumer study. For instance, when prompted about factors that influenced their selection of NFT platforms, 59% of consumers ranked strong security and data protection capabilities at the top, more important than “ease of use” and “popularity of marketplace.” Across geographies and generations, more than 70% of respondents agreed that robust privacy, safety and security mechanisms would impact their willingness to engage in metaverse experiences.⁷

Lack of Transparency, Lack of Trust

Billions of people around the world cannot recall a time in their lives when social media platforms did not exist. But only a few remember a time when these platforms were not controversial.

In their early days, social media platforms allowed like-minded people to connect and share information in novel ways that created communities and social bonds. However, as companies raced to monetize their services, they created algorithms and other tools that facilitated the spread of information based on engagement. Consequently, harmful or inaccurate content spreads quickly and is difficult to police.

Data and testing have shown the power of “illusory truth”: the more often a piece of misinformation is repeated, the more likely it is that a person will believe it. And an internal study at a social network showed that the amount of positive and negative information in user’s feed can shift their emotions. Online engagement, it turns out, influences our behavior, both online and off.



Social networks started as a force for good, but a lack of transparency about how platforms are moderated and managed has radically shifted sentiment. This is why the metaverse must start with a clear understanding of the potential for harm rather than a hope that the worst will not happen.⁸

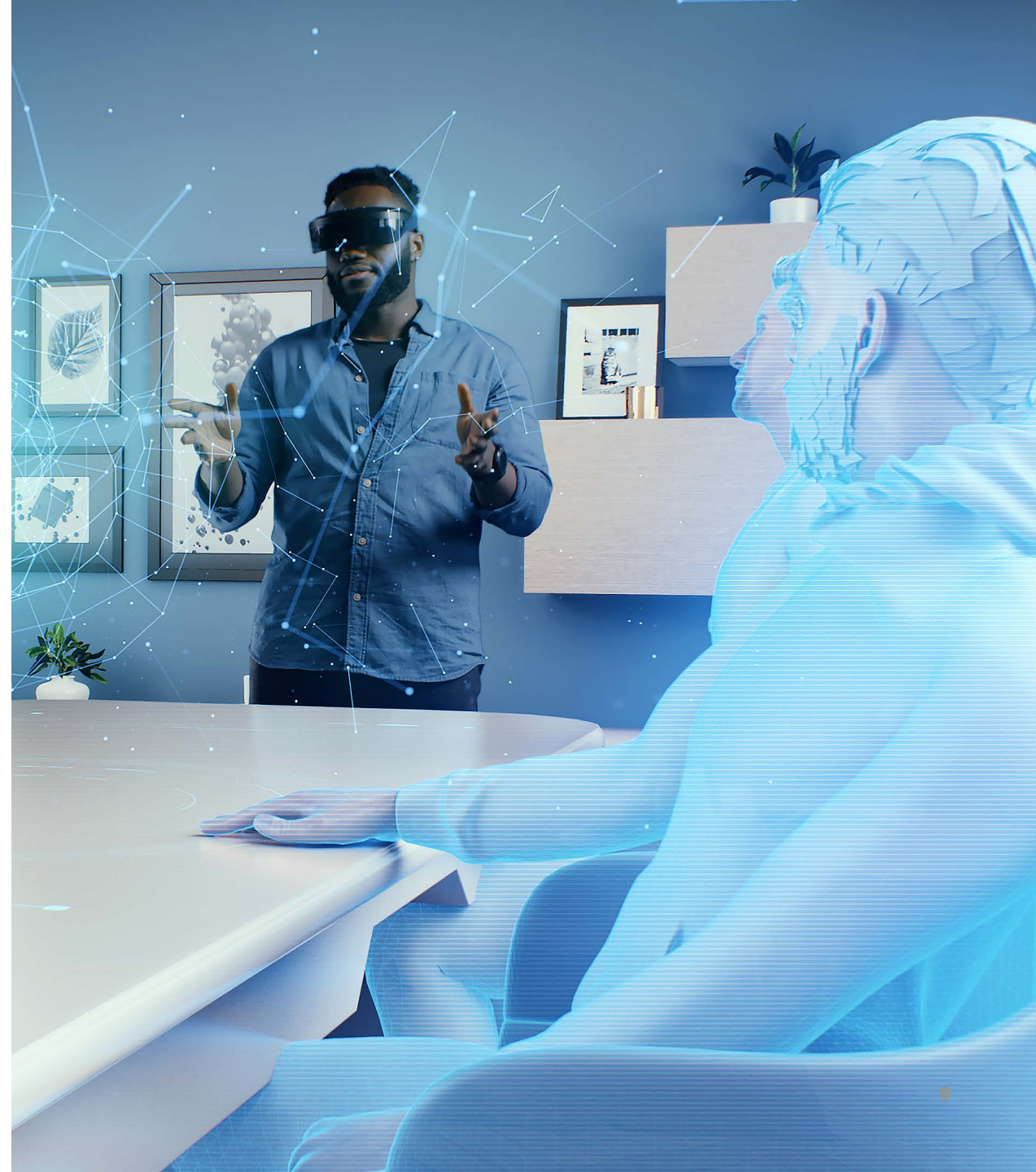
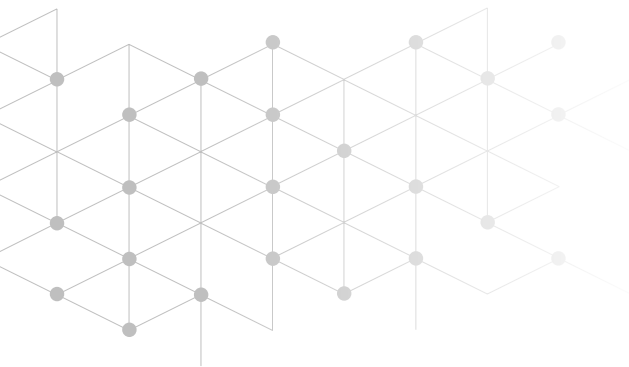
Innovating Responsibly: Key Considerations for the Metaverse

When the internet first took hold, it was basically viewed as a way to communicate, share information. The internet's pace of evolution—and the challenges that came with it—were hard to predict. Hindsight tells us, though, that companies should adopt frameworks that fit their people, customers and businesses, with responsibility as the North Star. Decisions on everything from privacy to interoperability are easier to make when the risks are clearly defined and understood, as they were not in the early days of the internet.

What follows are six areas of focus that organizations should start exploring and understanding, right now, to ensure a safe and secure metaverse that is as engaging and valuable for businesses as it is for users:

1. Privacy by design and by default
2. Risks and rewards of tokenization
3. Interoperability
4. Digital safety
5. Sustainability
6. Identity and inclusion

Of course, there will always be unknowns in a space where innovation is flourishing. But identifying critical areas of focus and building in guardrails will provide a greater chance of alignment between the intended and actual experiences in the metaverse. The closer this alignment, the greater the trust—and the more successful the metaverse will be.



Privacy by Design and by Default

New types of data and new online ecosystems breed novel privacy risks. The metaverse will likely make it easier to construct convincing deepfakes, detect emotional or psychological responses, and make it more difficult to truly erase information. The metaverse will generate an unprecedented amount of data, including real time information about movement and physical attributes, spatial and social data about users' surroundings, and leverage advanced machine learning that can deliver additional layers of insight. Physiological information such as facial expression and attentional focus could reveal greater detail about people's mental, physical and emotional states, while spatial data about users' surroundings could paint a picture of peoples' homes, places of work and social environments.

Companies can leverage this data to deliver delightful, personalized experiences, innovate new products and strengthen loyalty with users. At the same time, however, companies must temper innovation with a strong play for user trust given privacy risks.

People want to know their data is safe, especially when new kinds of data are being collected and processed. Companies should implement

enhanced data protection measures for high-risk data and novel uses of data, and proactively inform people about how their data is being safeguarded. These transparency measures will go a long way in keeping users engaged and active, especially for certain demographics. In fact, our study found that Millennials and Gen-Z were even more likely than consumers in older generations to engage in the metaverse if there were enhanced data protection measures.⁹

Companies can win trust by designing metaverse experiences with user privacy expectations built in from the start. Although it can be challenging to anticipate privacy expectations in online environments, one of the great privacy opportunities of the metaverse lies in its ability to replicate aspects of the real world. This allows companies to leverage existing social and societal privacy norms from physical spaces (offices, homes, storefronts, entertainment venues, etc.) to make intuitive privacy design decisions in similar virtual spaces. Privacy defaults that reflect the expectations people already have about privacy in the real world automatically improve trust and engagement in virtual and augmented reality environments.

Many questions remain for achieving both trust and privacy compliance in the metaverse.

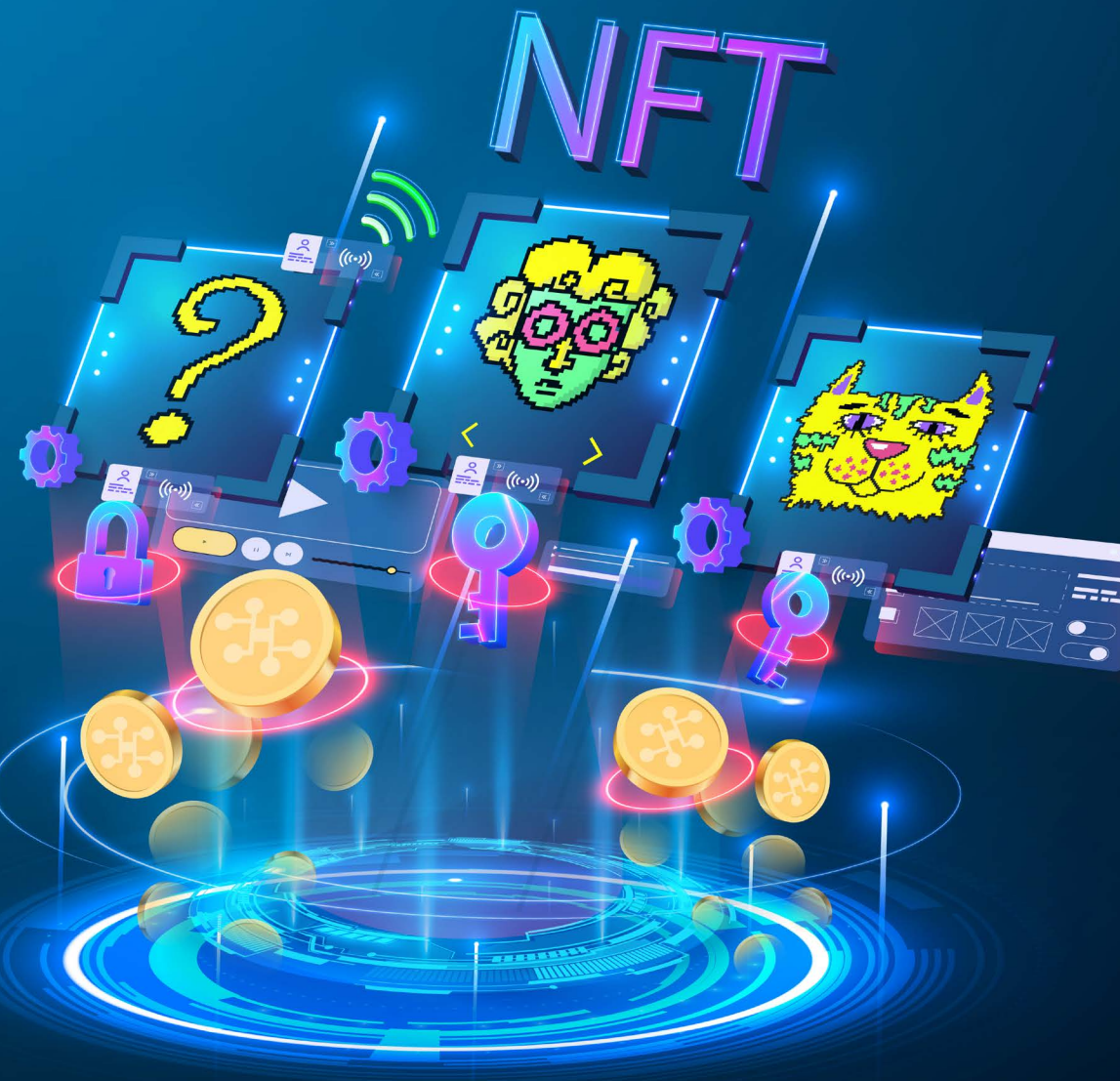
For instance, how does compliance with the right to delete user data guaranteed by privacy statutes work in a decentralized ecosystem where entities from all over the world are recording their transactions via an immutable blockchain? How can organizations moderate content in a space where users are engaging in live interactions as avatars, including non-verbal communication? How can notice and consent mechanisms be best deployed in a realistic 3D environment? How to ensure that broader data protection, ownership and rights are consistently addressed across the entire technology stack? Companies will need to innovate to not only create compelling metaverse experiences, but also to ensure privacy and data protection are built into those experiences from the start.

Companies can win trust by designing metaverse experiences with user privacy expectations built in from the start.

Key Takeaway

Companies that implement intuitive privacy defaults and innovative transparency approaches are more likely to succeed at engaging and retaining people in the metaverse. Organizations can further differentiate themselves by anticipating users' privacy expectations in virtual worlds based on analogous real-world scenarios. Strong data protection practices create a baseline for trust when novel kinds of data are being collected and processed.

Companies have an opportunity to increase that trust by providing proactive transparency and education about the data protection measures they have put in place, especially for younger, more digitally savvy users.



The Risks and Rewards of Tokenization

Although crypto and NFTs capture headlines, what truly matters is blockchain. In an era of discontinuity and distrust, multiparty systems enabled by blockchain are rising in popularity.

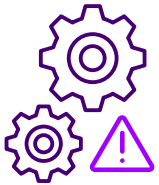
Companies now have unprecedented opportunities to explore the tokenization of money, objects and identities. When we asked consumers how they perceived brands that were engaging in these activities, 50% claimed they admired brands accepting cryptocurrencies. Moreover, consumers were 6x more likely to have a positive reaction to a brand engaging in NFTs than a negative reaction.¹⁰

Although this seems like an ideal situation for companies, respondents cited financial value as the primary motivator for engaging in cryptocurrencies and NFTs. This begs the question: Are consumers really interested in engaging with a brand through digital assets, or is it simply about speculation? And if so, is it worth the risks?

To find out, companies must conduct a cost-benefit analysis to assess if there is value in a specific blockchain use case or opportunity. They must understand the potential risks (operational, financial, legal and reputational) and plan corresponding mitigation strategies by scoping engagement models, mapping interdependencies and carefully selecting partners.

Figure 2

Examples of risks associated with engaging with decentralized platforms (non-exhaustive list)



Operational risk

- Limitations in ensuring data confidentiality and data segregation
- Data corruption or total loss of data resulting from failed processes / systems or from compromised digital wallets
- Security vulnerabilities or loss of functionality resulting from unanticipated changes to a blockchain network (forks)
- Unclear governance of the network, including activities such as business continuity planning and continuous improvement
- Unpredictable software releases from opaque open-source governance processes



Financial risk

- High “gas” fees to transact on certain blockchains
- Extreme market volatility with respect to the value of a specific digital asset
- Unverified identities of customers
- Concerns over fraud, theft and market manipulation
- Difficulty integrating with third-party payment processors or traditional fiat on/off-ramps
- Probabilistic settlement finality leading to unclear transaction completion



Legal risk

- Legal and regulatory frameworks applicable to digital assets and those who provide services related to them are currently uncertain
- Challenges in complying with data protection regulations such as GDPR and CCPA
- IP infringement, ownership and licensing issues may arise with digital assets, especially digital media
- Concerns over being held liable for unknowingly participating in money laundering, sanctions violations or other fraudulent behaviors
- Lack of recourse and possible indemnification
- Conduct that is considered deceptive or unfair and leads to legal penalties
- Potential for larger risk exposure given secondary markets for some digital assets



Reputational risk

- Airdrops of inappropriate or illegal content
- Questionable neighbors in virtual worlds
- Unverified identities of customers
- Poor user experience
- Concerns over environmental, sustainability and the widening digital divide
- Concerns over misuse of personal data, fraud and theft

Key Takeaway

Companies must decipher what is real and what is hype before engaging with digital assets. Before jumping into the “web3” movement, companies should explore the full range of options, including enterprise-grade platforms and solutions.

Whether you are just beginning or expanding your tokenization journey, start by identifying your strategic objectives, defining what your target audience truly values, and selecting trusted technology solutions and service providers that address concerns around privacy, security and safety.

Our study found that 68% of consumers say they would like to use the same avatar across multiple platforms.¹¹

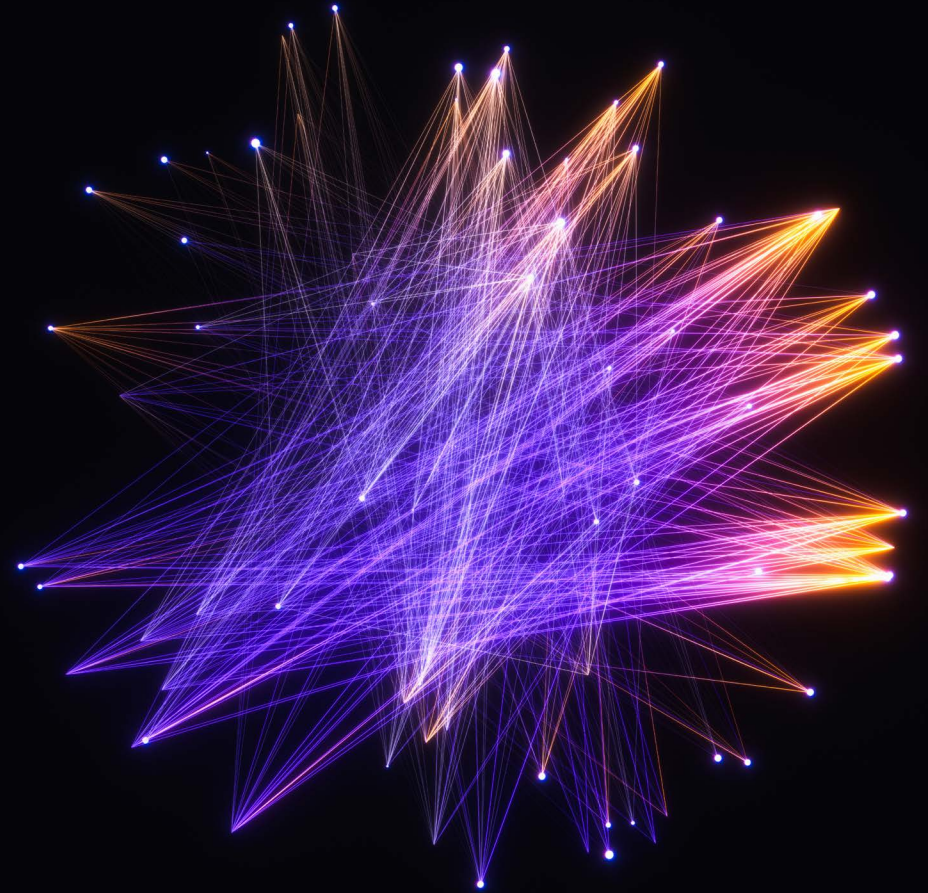
Interoperability










The many communities, platforms, marketplaces and worlds of the metaverse are likely to operate with different degrees of openness. But users want to interact seamlessly with applications and service providers across virtual worlds and digital asset platforms—and there are opportunities to drive interoperability and openness into the foundation of the metaverse.

We are currently creating an enterprise-grade and vendor-agnostic universal wallet that houses users' tokenized assets such as money, objects and identities. The solution serves as a window of interaction between various actors and metaverse platforms to enable verifiability, trade, ownership and—most importantly—trust between parties. In addition, several consortia and standards bodies, including the Hyperledger Foundation, the World Economic Forum and the Khronos Group, have efforts underway to improve interoperability across

distributed systems and applications. The most likely outcome of these efforts and others is that some parts of the metaverse will be built on open and interoperable standards, while others will be walled off and operate under proprietary standards.

In the longer term, companies must overcome several challenges to achieve interoperability. First, it is difficult to align economic incentives, and it is particularly hard to balance the equities of new entrants and incumbents, as well as those of platforms, publishers and content creators. Second, technology must be engineered to enable interoperability, which is a lengthy and time-consuming process that requires mobilization of vast resources, as well as collective agreement and action from metaverse platforms. Third, different approaches to metaverse platform governance (e.g., decentralized community-based or centralized governance) introduce additional complexities around security and privacy.



| | Governance | Digital Assets | Interoperability | Device/OS | User Base |
|---|---|---|---|---|--|
|  | Decentralized (Ronin – Ethereum-linked sidechain) | Players require at least 3 Axies (in-game characters) to play. Axies are NFTs that can be bought and sold on NFT marketplaces. Players earn Small Love Potions (SLP), a type of in-game token, when completing a level. They can use SLPs for breeding Axies and leveling up their creatures. Additionally, AXS is the game's governance token. | Not interoperable with other platforms. | Windows, Mac, iOS, Android | <ul style="list-style-type: none"> ~400,000 daily active users as of November 2022, down from ~2 million in November 2021 ~40% of players came from Philippines as of 2022. Venezuela came in second. |
|  | Decentralized (Ethereum) | MANA is the cryptocurrency that enables purchases of goods and services in-world, including LAND and ESTATE tokens. MANA can be earned and bought on any crypto exchange (i.e., Kraken, Coinbase). | Not interoperable with other platforms. | Web-based access only for now (Windows, Mac) | <ul style="list-style-type: none"> ~56,000 monthly active users ~7000 monthly unique wallets |
|  | Centralized | V-bucks can be bought using fiat currency. Used for purchasing avatar wearables, pickaxes, emotes, Battle Passes and more. | Not interoperable with other platforms. | Android, Windows, Mac, PlayStation, Xbox, Nintendo Switch. Given the lawsuit between Apple and Epic, Fortnite is not available on Mac or iOS. | <ul style="list-style-type: none"> ~400+ million registered users as of 2021 ~83+ million monthly active players as of 2021 ~60% of users are between the ages of 18 and 24 ~90% of users are male |
|  | Centralized | In-world purchases can be made through the Oculus Rift Store, which currently only supports select fiat currencies. | Not interoperable with other platforms | Requires Oculus headset. Mobile, PC, and web-based versions forthcoming | <ul style="list-style-type: none"> ~200,000 users as of Oct. 2022 (a drop from 300,000 users in Feb) ~10,000 unique worlds exist Targeted at users 18+ |
|  | Centralized | Mine coins can be bought using fiat currency. Used to purchase skins and mods (i.e. modifications; modding allows users to create new blocks, tools, etc.) | Not interoperable with other platforms | Windows, Mac, iOS, Android | <ul style="list-style-type: none"> ~141 million monthly users in 2022, of which 112 million are active The average player is a 24-year-old male Most servers stem from North America and Europe |
|  | Centralized | Robux can be earned or purchased using fiat currency. Used to buy games and in-world goods | Not interoperable with other platforms | Windows, Mac, iOS, Android | <ul style="list-style-type: none"> ~55+ million daily active users ~200+ million monthly users ~80% of users are under the age of 16 Balanced gender split: 51% male, 44% female Users in Europe, North America, and Asia have the most active users (in that order). |
|  | Decentralized (Ethereum) | SAND cryptocurrency used to support transactions and engage in play-to-earn. | Not interoperable with other platforms | Windows, Mac, iOS, Android | <ul style="list-style-type: none"> ~39,000 daily active users ~200,000 monthly active users ~4.1 million wallets ~90+ experience |
|  | Centralized | Linden dollar (L\$) is used to buy and sell virtual goods, property, and services. LindeX is the platform exchange for trading L\$s to USD\$ and vice versa. | Not interoperable with other platforms | Windows, Mac. Not available for mobile. | <ul style="list-style-type: none"> ~70 million registered accounts Daily average of ~200,000 users In-game economic worth - \$500 million since inception |
|  | Decentralized (EOS chain; delegated proof of stake) | UPX is the in-world currency that enables users to mint properties, purchase items, and trade on the marketplace. | Not interoperable with other platforms – they are working with Gala Games to enable NFT interoperability. | Web-based access only for now (Windows, Mac) | <ul style="list-style-type: none"> ~140K unique active wallets as of November 2022 ~52 million 90-day average daily UPX transaction volume |

Key Takeaway

Device, platform and application companies should prioritize creating the best user experience possible by coming together to enable coherent metaverse experiences across both closed and open virtual worlds.

In the meantime, companies seeking to leverage the metaverse should evaluate and plan for different scenarios, understanding what is interoperable today and how the landscape might change in the near-to medium- term future.

Companies should invest in innovations such as a universal digital wallet infrastructure to allow people to tokenize identities, money and objects, and use them across digital worlds, enabling much greater interoperability. Achieving this level of interoperability will take significant time, coordination and financial resources.

Figure 3: Selection of consumer metaverse platforms



Digital Safety

A combination of policies, practices, tools and technology are needed to meet the basic safety needs of users in virtual spaces, both for consumer and enterprise metaverse applications. While the metaverse has the potential to reimagine and enrich how people engage with each other, it can also exacerbate online harms such as cyberbullying and harassment. Safety is a foundational human need. Maslow's Hierarchy of Needs predicates that people's need to feel safe overrides most other human needs.

Enforcing digital safety is even more critical in the metaverse because the immersive and embodied nature of virtual experiences blurs the lines between digital and physical harms. Anecdotal user reports confirm that people can viscerally feel the offensive behaviors that occur on immersive platforms. Additionally, platforms that are governed in a decentralized manner will not only struggle with implementing tools to detect objectionable content but also face challenges deciding what is allowed and prohibited while ensuring compliance with regulatory requirements.



Moderating virtual environments is more complex largely because interactions in the metaverse occur in real time and involve gestures and speech, not just static data such as pictures, text and videos. This means that digital safety and content moderation in the metaverse may depend more on artificial intelligence (AI) to detect harmful content and behavior. In leveraging these tools, it is important to acknowledge that AI still struggles with contextual differences. Algorithms are also only as good as the data they are trained on, and implicit biases embedded in the data may skew results. For example, historically more men than women engage in online gaming, so an AI system may not immediately recognize offensive behaviors toward female gamers.

The metaverse will require hybrid approaches to digital safety that leverage technology (e.g., AI, analytics), human, and user and community-driven approaches (e.g., features that let users control their own safety). Our study confirmed as much. When asked about digital safety, consumers indicated that their perceptions of trust were positively influenced by a variety of digital safety features, some human-driven and others technology-driven.¹²



Most Influential Safety Features

| | 18-40 years old | Over 40 years old |
|----------|--|--|
| 1 | Mechanisms to combat misinformation | Features that allow users to control their own safety |
| 2 | Features that allow users to control their own safety | Built-in mechanisms to penalize users for bad behaviours |
| 3 | Cross-industry standards for trust & safety | Mechanisms to combat misinformation |
| 4 | Human moderators that proactively monitor user interactions and experiences | Enforcing use of real names and vetting users' identities |
| 5 | Built-in mechanisms to penalize users for bad behaviours | Clearly written and communicated community guidelines |

Key Takeaway

Companies, governments and civil societies must partner to overcome significant challenges to digital safety, and to ensure that virtual environments do not compromise the health and well-being of users.

These public-private partnerships should identify and prioritize online harms in the metaverse (such as misinformation, bullying and extremism); build tools and technology to combat harmful content; and invest in talent to support platform integrity and community managers.

Figure 4: Safety features affecting perceptions of trust

Sustainability

Climate concerns and systemic inequalities have elevated environmental sustainability to one of the greatest priorities of our generation. As witnessed in past decades, technology presents both opportunities and challenges for sustainability. It is possible, then, to strike a balance between the energy and data demands of the metaverse and sustainability.

For example, digital twins—virtual replicas of physical processes and business activities—promote efficiency. Digital twin solutions connect assets in a portfolio, business unit or organization to create a system-level view that can unlock 20-30% in trapped value through enterprise and asset improvements. Digital twins let manufacturers visualize new product models with immense detail to reduce wasteful churn, and even help energy companies optimize their use of water through real-time data and connected machinery.

The metaverse could replace some carbon-intensive activities, such as business travel, and enhance everyday chores such as shopping. A “try before you buy” virtual environment and immersive storytelling can help bridge the intention-action gap in consumers while saving them transportation costs and time.

The potential is vast, and creating immersive experiences requires significant computing power, data storage and new devices. Effects include increased global carbon emissions, electricity use and e-waste, and less biodiversity. Similarly, some popular blockchain applications are maintained by decentralized networks, some of which utilize proof-of-work consensus mechanisms that require significant electricity and computing needs.¹³ The problem is that sustainability disclosures around these technologies are not yet globally available. Without the underlying data, it is difficult to quantify the problem and determine which actions will yield the largest impact.

Key Takeaway

Be intentional about when and how your organization uses the metaverse, and understand how it advances as well as hampers your sustainability commitments. Identify the sustainability levers your organization controls and determine key performance indicators that measure progress and drive accountability for metaverse sustainability across the enterprise.

Simultaneously, explore how the metaverse can drive innovative solutions to champion sustainability.



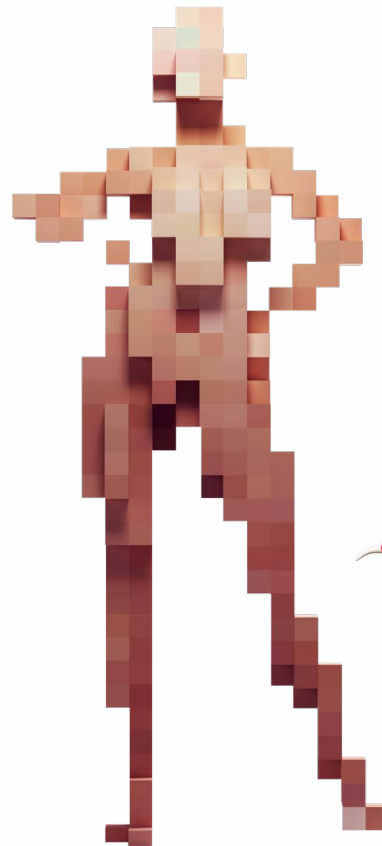
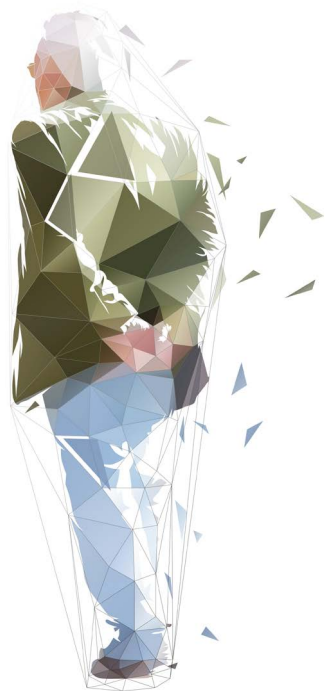
Organizations should ask two questions: How can I use the metaverse sustainably? How can I become net more sustainable by leveraging the metaverse?

Although identity has limitless expressions, the places created in the metaverse must be bound by codes and boundaries designed to care for all. As in the past, social media and online gaming can address or perpetuate antisocial behaviors. Additionally, organizations must account for the unequal distribution of and access to infrastructure, wealth and technology, which could potentially widen the digital divide.

Inclusion and Identity

Virtual environments are powerful tools for engendering authentic representation. This came through in our consumer survey, where 73% of those under age 40 agreed they wanted the freedom to change their avatars depending on the circumstance, and to have their avatars look like whatever and whoever they want.¹⁴

But if those choices can offend or mislead others, what responsibility should be attached to such freedom? The freedom to be an authentic self is often associated with a sense of well-being: to be recognized for who we really are. On the other hand, in the wrong circumstances, our identities can make us targets—for discrimination, othering, stereotyping, even assault. As in the real world, we need to feel secure, respected and accepted in these newly created spaces.



Although identity has limitless expressions, the places created in the metaverse must be bound by codes and boundaries designed to care for all.



Key Takeaway

Organizations must work together to actively shape the norms regarding digital self-expression by embedding inclusivity throughout the design process.

Best practices and design principles can guide how designers, creators, developers and users contribute to inclusive and accessible metaverse experiences. Product teams must consider the full diversity of the users they aim to serve to address their specific needs—from different hair options and ethnic features to body types, neurodiversity requirements and more.

What Comes Next

It is reasonable to expect companies, to approach the metaverse with equal parts excitement and trepidation by asking themselves: *How do we get started?* What is important, however, is not to get distracted by the novelty of the metaverse, and instead use this opportunity to position the entire enterprise for growth, without sacrificing core values.

Whether using the metaverse to transform enterprise operations, reimagine the employee experience or engage with consumers in new ways, companies should take the following actions to realize enduring value:



Values to realize enduring success

1

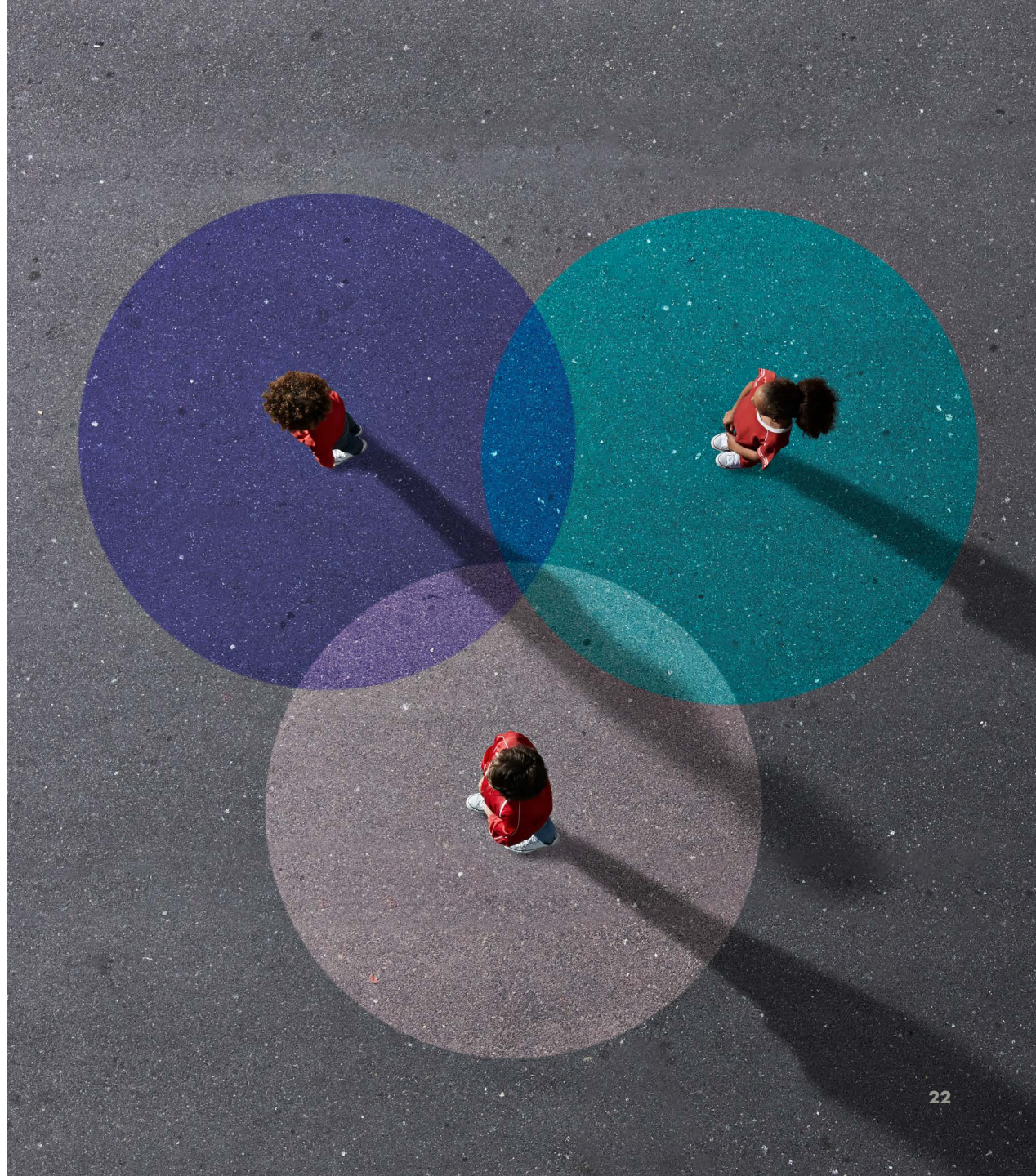
Designate a leader to ensure your organization designs and deploys the metaverse responsibly.

In the near term, this person will need to focus on privacy, security and safety because they are paramount in the near-term—table stakes for earning user trust. It is also important to prioritize embedding inclusion, diversity, sustainability and well-being into your metaverse use case strategy and design to maintain that hard-earned trust over time.

2

Establish principles and guidance for responsible innovation and use of the metaverse for your organization.

Leverage a comprehensive framework that addresses the eight dimensions of responsibility (refer to Figure 1). These elements are interconnected, so one aspect should not be prioritized at the expense of another. Think of them as panels of a soccer ball: if one of the eight dimensions is devalued or ignored, the entire framework—that provides a safe user experience and value to organizations—quickly deflates.



3

Decode the challenges the metaverse creates for your organization and apply a decision framework to help you navigate the metaverse responsibly and strategically.

Trust and safety—and associated issues related to content moderation and brand safety—will become even more complex, and also more important in the metaverse. Every organization that is using the metaverse should establish a trust and safety strategy. This means implementing an approach to prevent and mitigate toxicity, promote civility and deploying tools, technology and talent that are agile and scalable to ensure that the metaverse is safe for your customers and employees. To identify the right solution to these challenges, companies should consider applying the following approach:

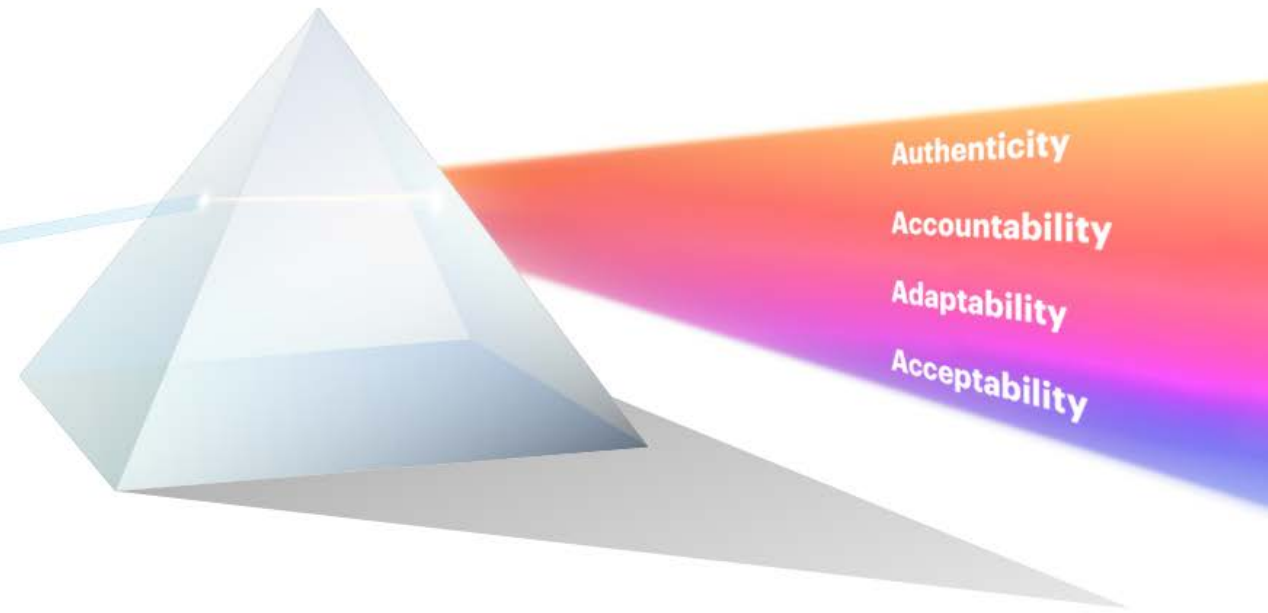
Authenticity: Ensure that you use the metaverse in a manner that is consistent with your core mission and values and in a manner that safeguards brand integrity. *Example: Consider how your organization’s commitments to sustainability and inclusion should influence use cases for digital assets.*

Accountability: Establish strong governance and accountability to build and maintain user trust. *Example: Leverage processes, metrics and mechanisms to ensure your organization has adequate accountability measures in place and can respond quickly and decisively if necessary.*

Adaptability: Anticipate disruptive scenarios and make sure innovations in the metaverse can withstand change. *Example: Make metaverse technology decisions today that preserve your ability to pivot and adapt tomorrow as the technology and competitive landscape evolves (e.g., degree of interoperability).*

Acceptability: Understand who your stakeholders are, and their needs and expectations from the metaverse experience, to build trusted experiences that meet their expectations. *Example: Your design choices should adhere to the highest standards for safety, privacy and well-being, particularly use cases that involve younger users.*

The metaverse is more than a new technology. It is a new platform for engagement, collaboration and commerce. Organizations across the metaverse ecosystem have a role to play to build a responsible metaverse, one with trusted technologies and human-centered experiences.



Conclusion

The metaverse should welcome everyone, but that does not mean it will be *for everyone*. Previous iterations of virtual worlds were more or less an escape from reality. If we build it right, the metaverse will not be seen as a way to withdraw from life, but an additional layer that enriches it.

The metaverse is already a place for consumers to try on clothes virtually before buying them and where colleagues can convene meetings and collaborate on projects. And it can and will be so much more.

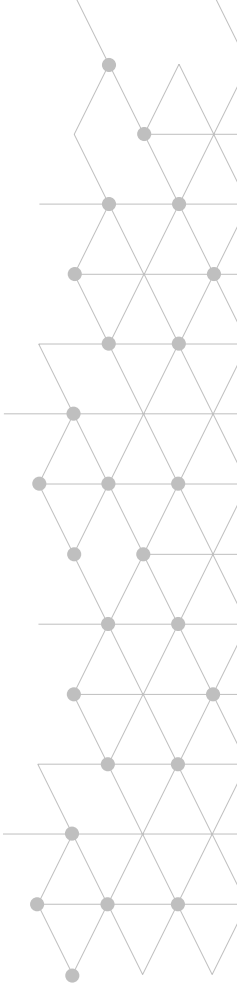
The metaverse can be a place where surgeons hone their craft, or infectious disease specialists diagnose and treat patients in remote places. A university student studying history could engage in conversations with everyone from Marie Curie to Julius Caesar. A middle-school student could meet with his or her math tutor across the country as if they are in the same room and, after cracking quadratic equations, explore the surface of the moon. On a tour of the Louvre in Paris, visitors could not only look at the Mona Lisa, but ask Leonardo, as he is painting, in which direction she is truly looking.

Travelers might be able to wander a digital twin of Pompeii and get a sense of the culture before Vesuvius covered the city in ash. As individuals, we can even live the experience of those around us, to more deeply understand people from different backgrounds, communities and circumstances, and expand our real-world sense of empathy.

If all these possibilities and others like them are to come to fruition, companies need to partner and invest, now, not only in preventing the bad, but in building incentives to create a trusted, safe, healthy and welcoming metaverse.

Of course, even with a responsible metaverse framework, building safe spaces will be an iterative, agile development process, requiring a broad range of voices and philosophies. Yet everyone can agree that we stand, collectively, at a virtual doorway unlike any other in recent history. We have a rare opportunity to ensure that a new, life-changing and enriching technology does not outpace society's best intentions, and instead helps us realize them.

If we build it right, the metaverse will not be seen as a way to withdraw from life, but an additional layer that enriches it.



Footnotes

- 1** Accenture Responsible Metaverse Extended Reality Study 2022, N= 8503
- 2** Accenture Responsible Metaverse Web3 Study 2022, N= 9005
- 3** Accenture Responsible Metaverse Extended Reality Study 2022, N= 8503
- 4** Accenture Responsible Metaverse Web3 Study 2022, N= 9005
- 5** Accenture Responsible Metaverse Web3 Study 2022, N= 9005
- 6** Research has found this to be consistent over many years, since the idea was first explored in depth by Robert M. Morgan and Shelby D. Hunt in their 1994 paper, "<https://journals.sagepub.com/doi/abs/10.1177/002224299405800302>" The Commitment-Trust Theory of Relationship Marketing.
- 7** Accenture Responsible Metaverse Extended Reality Study 2022, N= 8503
- 8** Social platforms' global trust and transparency issues are explored in greater detail in a 2022 video by Mozilla, "<https://www.youtube.com/watch?v=bNRwTz6l-H04>" Unknown Influence: Social media, democracy and transparency.
- 9** Accenture Responsible Metaverse Extended Reality Study 2022, N= 8503
- 10** Accenture Responsible Metaverse Web3 Study 2022, N= 9005
- 11** Accenture Responsible Metaverse Extended Reality Study 2022, N= 8503

- 12** Accenture Responsible Metaverse Extended Reality Study 2022, N= 8503
- 13** Note: Unlike blockchains with decentralized networks, enterprise-grade blockchain platforms do not require consensus mechanisms and, as such, are energy efficient. Additionally, since the Ethereum Merge, there are fewer users engaging with blockchains that use proof-of-work consensus mechanisms. The Merge refers to the original Ethereum Mainnet merging with a separate proof-of-stake blockchain called the Beacon Chain, now existing as one chain. The Merge reduced Ethereum's energy consumption by -99.95%.
- 14** Accenture Responsible Metaverse Extended Reality Study 2022, N= 8503

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About the Research

In August and September 2022, Accenture conducted a two-part survey to understand consumer perceptions of the metaverse. The study was global, spanning 19 countries, with 500 respondents per country.

The extended reality survey of 8,503 consumers focused on perceptions of immersive experiences in the metaverse. The web3 survey of 9,005 consumers focused on their perceptions of cryptocurrencies, NFTs, and DAOs.

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|----------------------------|--|
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| Europe | Spain France Germany Italy Sweden |
| APAC | China Japan Singapore Thailand Philippines India South Korea |
| LATAM | Brazil Mexico |

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