

ITU Focus Group Technical Report

(10/2023)

ITU Focus Group on metaverse

Guidelines for consideration of ethical issues in standards that build confidence and security in the metaverse

*Working Group 6: Security, Data & Personally
identifiable information (PII) Protection*



Technical Report ITU FGMV-06

Guidelines for consideration of ethical issues in standards that build confidence and security in the metaverse

Summary

As the world becomes increasingly digital, the metaverse is emerging as a new frontier of social and economic interaction; allowing people to create, connect and collaborate in ways that were previously thought impossible. In its nascent phase of user adoption, this is a timely opportunity to formulate guidelines for meaningful engagement, as well as to help mitigate challenges that continue to afflict the digital platforms that make up its infrastructure and ecosystems.

The need for trust and confidence, cornerstones in any environment necessitating user interaction and participation, is amplified in virtual environments [b-Gefen]. This need takes on increased significance as the participatory nature of the metaverse and vast amounts and increasingly personalized nature of data collected together usher in a new frontier for user safety and security.

The objective of this Technical Report is to develop a set of guidelines that address ethical aspects in the establishment of standards for engagement within the metaverse.

Given the importance of confidence to user engagement, the report puts forward a user-centric approach by emphasizing principles grounded in the Universal Declaration of Human Rights (UDHR) and the United Nations Sustainable Development Goals (SDGs).

User expectations, especially as they relate to personal safety, are a central component of confidence in navigating the metaverse and other digital platforms. Yet historically, the reality (as it compares to these expectations) has fallen short, resulting in a discrepancy between anticipated and actual safeguards.

The report will explore user expectations and propose a new framework to define user confidence and how it is expressed in immersive environments. It will also introduce guiding principles to bolster user confidence in navigating metaverse platforms, with a goal of fostering a sense of safety, control, user autonomy, fairness, transparency and access to adequate information during interactions within immersive spaces.

Where confidence in metaverse environments shares similarities with confidence in existing digital platforms will also be discussed, as will unique considerations introduced by the immersive and comprehensive nature of the metaverse and ways in which these can be addressed.

The Report will subsequently explore distinct elements necessary for fostering meaningful engagement within the metaverse context.

By centring the user experience in building security and confidence in the metaverse, this Technical Report aims to support efforts to ensure the metaverse evolves in a way that serves its users and their needs while also adhering to the principles of sustainable development.

Keywords

Immersive, metaverse, participatory web culture, user confidence in the metaverse, user implied contract of confidence.

Note

This Technical Report is an informative ITU-T publication. Mandatory provisions, such as those found in ITU-T Recommendations, are outside the scope of this publication. This publication should only be referenced bibliographically in ITU-T Recommendations.

Change Log

This document contains Version 1.0 of the ITU Technical Report on "*Guidelines for consideration of ethical issues in standards that build confidence and security in the metaverse*" approved at the third meeting of the ITU Focus Group on metaverse (FG-MV), held on 3-5 October 2023 in Geneva, Switzerland.

Acknowledgements

This Technical Report was researched and written by Radia Funna (Build n Blaze, LLC.) and Gayoung Park (The State University of New York, Korea) as a contribution to the ITU Focus Group on metaverse (FG-MV).

Additional information and materials relating to this report can be found at: <https://www.itu.int/go/fgmv>. If you would like to provide any additional information, please contact Cristina Bueti at tsbfgmv@itu.int.

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Guidelines for consideration of ethical issues in standards that build confidence and security in the metaverse

1 Scope

The purpose of this Technical Report is to develop guidelines for consideration of ethical issues in standards that build confidence and security in the metaverse. Its scope includes:

- i) Identifying existing pillars for building confidence and security in the metaverse.
- ii) Exploring the role of confidence in immersive environments and where new considerations are introduced.
- iii) Proposing user-centric guidelines to consider ethical issues in standards that build confidence and security in the metaverse.
- iv) Establishing the value of the Universal Declaration of Human Rights (UDHR) and the Sustainable Development Goals (SDGs) in efforts to enable these guidelines.

2 References

None.

3 Definitions

3.1 Terms defined elsewhere

This Technical Report uses the following term defined elsewhere:

3.1.1 [sectors'] digital transformation [b-ITU-T Y.4906]: A process during which, by advanced applications of ICTs in sectors' business activities such as R&D, production, services, etc., the sectors' business activities are optimized, reconstructed and integrated, and sectors' development modes are disruptively reformed and innovated. The digital transformation is vitally useful for sectors to optimize resource configuration, improve operational efficiency and innovation capability, and hence realize sectors' sustainable development.

3.2 Terms defined in this Technical Report

This Technical Report defines the following terms:

3.2.1 user confidence framework: A framework created for the purpose of proposing a definition for confidence in the metaverse to promote a shared understanding; introducing the concept of an 'implied contract of confidence' to guide governance; and suggesting a set of 'confidence dimensions' to inform principles for user confidence.

3.2.2 user confidence in the metaverse: A user's state of certainty and belief in the reliability of a metaverse platform or environment.

3.2.3 user implied contract of confidence: An agreement between a user and a platform provider implicit in the user's willingness to co-create with and entrust resulting assets to the platform. This is especially noteworthy when assets, including user 'avatars', can represent individuals' personhood.

4 Abbreviations and acronyms

This Technical Report uses the following abbreviations and acronyms:

SDGs Sustainable Development Goals

5 Conventions

None.

6 Background

6.1 Critical pillars for building confidence and security in the metaverse

As the metaverse evolves to foster novel forms of interaction and engagement, predicated on unique values identified within metaverse environments [b-Dreamson-2], it is increasingly evident that these new experiences necessitate the development of innovative regulations and standards.

By 2026, 25% of people will spend at least one hour a day in the metaverse [b-Rimol] and by 2030 the value of the metaverse could reach USD 5 trillion [b-McKinsey]. An overriding observation emerges: Individuals are invested in much more than the superficial interface experience [b-Zheng] that the immersive environments provide.

This level of engagement by the individual almost demands that the metaverse provider be more profoundly engaged in establishing and sustaining confidence and trust. As such, it is essential for organizations to align their technical, operational, and ethical strategies to ensure they are effectively addressing the overt and subtle needs as well as the expectations of the users. This involves providing robust security and privacy protections; ensuring fair and transparent data practices as well as the authenticity, integrity, and ownership of digital assets; incorporating best practices, standardization, and ethics; and maintaining a commitment to user-centric design and policies that prioritize user well-being and autonomy in the metaverse.

Individuals engaging within metaverse environments are entitled to an experience that ensures their safety and security. New regulations and standards should thus be rooted in a human-centric approach [b-Clarke], prioritizing a sense of safety, adequate information, control, user autonomy, fairness, transparency and reliability during interactions within the metaverse.

6.2 A framework for responsible innovation

Accenture [b-Zheng] has proposed a framework for responsible innovation in the metaverse, defining it across eight distinct dimensions, each aligned to trust and human pillars. Table 1 summarizes the "trust dimensions" to include privacy, security, resilience and intellectual property rights. This first pillar of responsible innovation is a reasonable representation of the key factors that shape and influence a user's belief in the reliability, integrity and security of a system or service.

Table 1 – Trust dimensions

Dimensions	Descriptions
Privacy	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.

Table 1 – Trust dimensions

Dimensions	Descriptions
Resilience	<ul style="list-style-type: none">• 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 cyberattacks.• 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	<ul style="list-style-type: none">• 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.

Source: [b-Zheng]

Table 2 summarizes the "human dimensions" that make up the second pillar of this framework as follows: safety; inclusion, diversity and accessibility; sustainability; and well-being. This second pillar focuses on the elements required for a safe, comfortable and sustainable environment that provides measurable value to the user.

Table 2 – Human dimensions

Dimensions	Descriptions
Safety	<ul style="list-style-type: none">• Safety is the top priority in virtual environments.• Platforms must proactively implement policies, technologies and practices to discourage harmful content and behaviours.• 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 and Accessibility	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Companies should explore ways to use the metaverse to become 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	<ul style="list-style-type: none">• 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.

Source: [b-Zheng]

Accenture's framework for responsible innovation, as a guide to organizations building metaverse experiences, emphasizes an approach where trust and human-centricity are at the core. An approach that aligns with this Technical Report's position that:

- 1) Human and trust dimensions are intrinsically interconnected and mutually reinforcing in shaping the user experience within the metaverse.
- 2) Human-centricity is key to ensuring the development and continued evolution of safe, inclusive, sustainable and resilient metaverse environments.

However, this Report proposes that the immersive and comprehensive nature of metaverse environments introduces certain unique considerations that are not adequately addressed in this framework.

6.3 Confidence in the metaverse

6.3.1 Context

The world is currently experiencing its most significant wave of digital transformation as the boundary between virtual and physical environments becomes more blurred than ever before. There is a possibility that this could lead to the advent of emerging technology flawlessly binding physical and digital twins into a permanent virtual-physical merged cyberspace capable of accommodating an unlimited number of users on earth and beyond our planet [b-Lee].

The very nature of engagement in virtual worlds has the potential to redefine 'reality' (namely the quality or state of being real) by redefining what it means to be 'real' (i.e., having objective independent existence) and by so doing, transforming our relationship with 'reality' in ways that are both substantial and irreversible.

This report hypothesizes that the metaverse's potential to transform the human experience of reality at this scale, demands a new framework to address the tenets of engagement. It therefore proposes a third dimension to expand on the concept put forward by Accenture's framework for responsible innovation (represented by the two sets of dimensions discussed in clause 6.2) for the purposes of:

- 1) Explicitly addressing the broad implications of metaverse engagement in this context, noting the intractability of challenges revealed by digital platforms on which they are being built.
- 2) Providing multistakeholder guidance to help platform providers, policymakers and users contextualize user expectations and navigate moral and ethical considerations.

6.3.2 A user confidence framework

The metaverse itself is a part of a participatory web culture brought on by social platforms of what is often referred to as Web 2.0 [b-Blank], where traditional roles of platform provider, policymaker or user can shift or blend in unexpected ways.

Given that the metaverse is rooted in these social platforms, confidence in metaverse environments shares similarities with confidence in existing digital platforms. Yet, in its potential to redefine reality, the immersive and comprehensive nature of the metaverse has introduced a new aspect to the current participatory web culture, one that elevates the importance of empowering and guiding end users in interactions within these environments and calls for the development of basic principles for platform providers and policy-makers to tackle its ever-shifting regulatory landscape.

This Report therefore proposes a 'user confidence framework' to consider the unprecedented level of user engagement and investment required to build the metaverse in the context of increased fluidity of roles, functions, and industries [b-Funna-1] and the implications for platform providers and policy-makers.

Specifically, this framework:

- 1) Proposes a definition for confidence in the metaverse to promote a shared understanding;

- 2) Introduces the concept of an 'implied contract of confidence' to guide governance;
- 3) Suggests a set of 'confidence dimensions' to inform principles for user confidence.

6.3.3 Defining confidence

With the metaverse still in its early stage of development, scholarly investigation into user confidence within the realm is sparse, underscoring the significance of this Technical Report in delineating and contextualizing the concept. Still, that there is so little historical work to go by raises a fundamental question: What is the imperative to address *confidence* in the context of the metaverse?

Confidence is the quality or state of being certain. In digital environments, user confidence is commonly associated with predictability and consistency and can be used to gauge user comfort level in terms of aptitude and frequency of use of digital technologies.

As earlier discussed, the metaverse, even in its nascent phase, is promising to change the rules of digital engagement by supercharging the participatory nature of today's web culture. This calls for a novel approach to the definition of confidence in the metaverse, one that acknowledges the higher level of user participation required in its development and evolution.

Also essential in this novel approach is the recognition of the depth of access that platform providers will require from user real-world identities, relationships, locations and social networks to enable continuity and authenticity in their virtual interactions.

As virtual and real-world boundaries become increasingly blurred, the boundaries that protect privacy, data, intellectual property rights and personhood could follow.

This Report seeks to aid user-centricity by putting forward a definition of user confidence where what the user knows and their resulting expectations as they relate to their safety, consent, ownership and responsible use of their data becomes paramount.

To explore why a user would be comfortable with both this level of engagement and the access to personal data it entails, the report proposes a definition of user confidence in the metaverse as "A user's state of certainty and belief in the reliability of a metaverse platform or environment" [b-Funna-2].

Stressing the importance of the user's state of certainty and belief in the environment, this definition of user confidence seeks to provide a path to:

- 1) Considering user intent when developing principles that govern metaverse engagement;
- 2) Empowering individual users by addressing their expectations in immersive contexts.

6.3.4 An implied contract of confidence

The nature of user engagement in the metaverse all but mandates co-creation. Participation often hinges on the design of a three-dimensional avatar, requiring the user's upfront investment of time and the endowment of personal identifiers. The avatar, a digital version of the user, is then empowered to act on the individual user's behalf.

This Report theorizes that, implicit in a user's choice to agree to create a digital version of themselves on a platform, and to entrust this version to the platform provider, imbued with the power to act on the individual's behalf; can be interpreted as a contractual agreement based on the user's confidence in the platform. As defined in the prior clause, this would entail the user's state of certainty and belief in the reliability of virtual spaces.

The Report therefore proposes the definition of this user implied contract of confidence as given in clause 3.2.3 of this Report: "An agreement between the user and the platform provider implicit in the user's willingness to co-create with and entrust resulting assets to the platform. This is especially noteworthy when assets, including user 'avatars', can represent the individuals' personhood".

Basic tenets as they relate to expectations surrounding user engagement in the metaverse can be extrapolated from an implied contract of confidence to include:

- What is expected *for* the user: It is anticipated that policy-makers would be the primary source of expectations for the user. However, it is important to consider the roles of all relevant stakeholders (including developers, advocates and users themselves) to collectively determine what should be provided for the welfare of users.
- What is expected *by* the user: Expectations in this category naturally gravitate towards the user's perspectives. Perspectives, however, are multifold, driven by relationships with systems, platforms and other users; they are also collective activities to achieve and experience a shared reality.
- What is expected *of* the user: This can initially stem from developers or system providers, but in a co-created reality, it is important that mechanisms exist to allow the dynamic shaping and reshaping of expectations by the user community itself. This should therefore exist as a set of evolving norms and behaviours that adapt to the ever changing and ever-evolving nature of the environment.

The following clause proposes 'confidence dimensions' to further contextualize this implied contract of confidence.

6.3.5 Confidence dimensions

Given that engagement in the metaverse almost mandates the role of users as co-creators (starting with their three-dimensional avatars), there is an unprecedented potential for user co-created value [b-Dreamson-2].

Consequently, confidence defined from the perspective of user expectations provides a possible indicator of individual choice and investment in metaverse platforms and environments, pertaining to their perception of, interaction with, and trust in these environments [b-Funna-2].

This Technical Report therefore proposes 'confidence dimensions' based on certainty, belief and reliability, the fundamentals of an implied contract of confidence as introduced in clause 6.3.4.

The objective of the 'confidence dimensions' is to explicitly contemplate considerations that may arise from the unique and evolving role of users as co-creators in immersive environments and to establish user confidence as a leading indicator of the degree to which users are invested in these environments and the degree to which their expectations of these environments should be incorporated into principles that govern user engagement.

In the metaverse, the term 'user' denotes a more passive role, while the term 'participant' denotes a role that involves active engagement, co-creation, and co-authoring [b-Dreamson-2]. Thus, this Report advocates the use of the term 'participant' versus 'user' in metaverse contexts.

Leveraging the proposed definition of user confidence in clause 6.3.3, the Report proposes a set of 'confidence dimensions' that can serve both as an independent resource and for use in conjunction with Accenture's "trust dimensions" and "human dimensions" (as discussed in clause 6.2) to centre user experience in principles that build security and confidence in the metaverse.

Table 3 summarizes these 'confidence dimensions' to include reliability, co-ownership, co-responsibility and transparency; illustrating the necessity of an implied contract of confidence in a participatory web culture where users as co-creators are immensely powerful and stunningly vulnerable.

Table 3 – Confidence dimensions

Dimensions	Descriptions
Reliability	<ul style="list-style-type: none">• The metaverse may have the potential to redefine reality, but the realization of this potential is dependent on the real or perceived reliability of its platforms.• Platforms should enable the reliability of immersive environments by prioritizing 'persistence' and consistency to meet user expectations of a co-created reality.
Co-ownership	<ul style="list-style-type: none">• Co-creation should lead to co-ownership: Platforms should address user co-ownership of co-created assets and value, including providing autonomy, control and self-protection of avatars and other assets.• The potential extension of personhood in the form of avatars should also be considered.
Co-responsibility	<ul style="list-style-type: none">• Platforms and users are together co-creators and co-owners, each with responsibilities which should be clearly and adequately communicated.• The resulting co-dependence should also be addressed.
Transparency	<ul style="list-style-type: none">• In this nascent phase of the metaverse, it is important to be mindful of the role that users play in creating a shared reality, often by entrusting their 'person' in the form of avatars to immersive environments.• Platforms should reflect the implications of this responsibility with transparent practices, inclusive design and ethical and responsible use.

6.4 Key pillars to build trust and confidence in the metaverse

For the metaverse to genuinely foster or build trust and confidence, a human-centred approach must be at the forefront. This clause delves into the dimensions previously discussed and illustrated: trust, human and confidence.

To reframe this context for the dynamic, participatory nature of the metaverse, the traditional roles of trust and confidence can be reinterpreted. In the context of the metaverse, each can be viewed both as emergent properties and resulting states.

Trust can be interpreted as the ongoing process of grounding reality and assuring the system's integrity. This is achieved through consistent interactions, engagement and value creation by users, cultivating an expectation of the degree to which the platform and its operators act in the best interest of users, protect their personal information, and provide a reliable and safe experience [b-Funna-2].

Similarly, confidence can be interpreted as the persistence of this reality and the ongoing efforts to ensure its reliability. This is achieved by creating a safe and secure metaverse environment starting with the first interaction; reinforcing a participant's ability to use different devices or platforms and effectively communicate with others; and ensuring their sense of safety and rights; the protection of their intellectual property and personally identifiable information; as well as their knowledge of rules and etiquette [b-Funna-2].

The conclusion here is that, for both trust and confidence within the metaverse, engagement is not merely received passively; it is actively constructed and continuously evolving. Users, through their engagement with avatars, other users and the system itself, make up an active and dynamic part of the ecosystem.

In essence, the metaverse challenges the conventional linear progression from trust to confidence. Instead, it introduces a more cyclical, intertwined relationship where both trust and confidence are concurrently developed, evaluated and enhanced through the act of co-creation and overall user participation and engagement in the ecosystem.

7 Ethical issues in standards that build confidence and security in the metaverse

7.1 Context

Concepts introduced in this report, promote an understanding of user confidence in the metaverse as a user's state of certainty and belief. This state of certainty becomes a major consideration in the user's choice to engage in an implied contract of confidence that is implicit when creating assets and experiences in the metaverse.

The shared reality that emerges from these collective contributions fosters a sense of co-ownership and mutual responsibility, creating a collaborative framework that empowers users to redefine their understanding of reality.

However, redefining reality raises moral questions, including whether this reality holds the same weight as our current understanding of reality, which itself can be characterized as concrete but fleeting [b-Davies].

It is essential that this co-created reality not only produces value but also upholds human rights and adheres to ethical standards.

From the perspective of human rights, this new reality raises ontological questions (questions on the nature of being). Principally, what entities or actions have moral significance? What is the moral status of avatars? Does harm to an avatar constitute harm to a person [b-Grinbaum]?

Ethical considerations raise epistemological questions (questions on the nature, origin and limits of human knowledge) including: how do we determine what is ethically and responsibility right? Meta-ethics (explorations of the nature, scope and meaning of moral judgment) and, specifically, a meta-techno-ethical perspective [b-Dreamson-1] may be useful in understanding interactions and relationships in metaverse environments.

7.2 Applying confidence dimensions

The question of personhood, as it relates to the activities of users and the moral status of their avatars, is key to defining the application of privacy and safety standards in the metaverse. This can be applied to questions such as whether an avatar should be treated as a virtual person or a virtual asset.

The approach put forward by the implied contract of confidence suggests that a vital component of the moral status of avatars is an appreciation of user expectations in their creation. Specifically, what did users know about the choice to develop assets that represent their person? What were their expectations in relation to that choice?

As they engage in and co-create a shared reality alongside platforms, just how closely users expect this reality inside the platform to mirror their reality outside the platform and the implications surrounding those expectations must be carefully considered.

Leveraging the 'confidence dimensions' discussed earlier, this clause delves into two illustrations of the potential application of global guiding principles to enable moral and ethical considerations in user standards:

- 1) The Universal Declaration of Human Rights (UDHR) as an example of how guiding principles for human rights can enable privacy and safety in metaverse environments;
- 2) The Sustainable Development Goals (SDGs) as an example of how this shared blueprint for peace and prosperity can guide ethical considerations in developing standards.

7.2.1 Guiding principles for human rights

The World Economic Forum has illustrated [b-WEF] how the UDHR could be applied in the metaverse, specifically focusing on privacy and safety; these applications are presented in Table 4.

Table 4 – Human Rights in the metaverse

Universal Declaration of Human Rights Article	How it applies to privacy and safety in the metaverse
Article 3: Everyone has the right to life, liberty and security of person	Security of personhood should be defined and applied for virtual spaces
Article 5: No one shall be subjected to torture or to cruel, inhumane or degrading treatment	Metaverse safety measures should be geared towards protecting people from inhumane and degrading treatment
Article 8: Everyone has the right to an effective remedy by the competent national tribunals	Should terms of service for privacy and safety be violated, upholding this human right requires recourse and redress by either the metaverse operator and/or national governing bodies
Article 12: No one shall be subjected to arbitrary interference with his [or her] privacy, family, home or correspondence, nor to attacks upon his [or her] honour and reputation	Individuals have a right to experience privacy in metaverse spaces – this equates to having digital ethics, data ethics and AI ethics applied across the data supply chain so that individuals can provide knowledgeable consent, can control access to "data about me", have a right to be forgotten and can be free from unwanted surveillance
Article 13: Everyone has the right to freedom of movement	People should be able to move freely through the metaverse
Article 17: Everyone has the right to own property alone as well as in association with others. No one shall be arbitrarily deprived of his property	People should have security of ownership of their digital assets
Article 19: Everyone has the right to freedom of opinion and expression	People should be able to freely express their opinions
Article 20: Everyone has the right to freedom of peaceful assembly and association	People should be able to gather peacefully and associate peacefully with groups of their choosing
Article 26: Everyone has the right to education	People should have access to education and access to education about the metaverse
Article 27: Everyone has the right freely to participate in the cultural life of the community	People should feel safe to express their culture alongside their chosen community

Source: [b-WEF]

7.2.2 Guiding principles for ethical considerations




Earlier clauses of this Report have discussed an evolving participatory culture that has resulted in the unprecedented potential for user co-created value. As an illustration of the potential to apply human rights considerations in metaverse contexts, Table 4 presented a proposed approach to applying UDHR to privacy and safety concerns in the metaverse.

Table 5 examines the SDGs as a potential guide for ethical considerations in metaverse environments by leveraging a "People | Planet | Platform" approach, proposed by Build n Blaze [b-Build n Blaze] as defined below:

- 1) People: Primary focus on 'people' needs for food, shelter, well-being, equality and fairness.
- 2) Planet: Primary focus on sustainability, conservation and restoration relating to the planet.
- 3) Platform (in the sense of a declaration of the principles on which a group stands): these enabling SDGs can guide institutional support for equity, inclusivity, justice, resilience, opportunity and partnership.

The objective of Table 5 is to illustrate a proposed approach to advancing the understanding and usability of the SDGs as a framework for ethical considerations in metaverse contexts, where the term ethics is understood to mean the principles of conduct governing an individual or a group.

Table 5 – Ethical Considerations in the metaverse

Sustainable Development Goals	Application to ethical considerations in the metaverse
<p>People</p> 	<p>Personhood and its interrelated parts: offline, online and as avatars, should be defined for metaverse contexts.</p> <p>Platform conduct should address individual well-being and equality in whatever form the person appears.</p>
<p>Planet</p> 	<p>Impacts to the planet both online (including e-waste) and offline (including intensive use of energy) should be considered in the development of metaverse infrastructure and processes.</p> <p>Platform conduct should address the role of users and platform providers in sustainability practices.</p>
<p>Platform</p> 	<p>People have the right to inclusive and equitable access to education, work and other opportunities provided by metaverse platforms.</p> <p>Their rights (including the right to delete their data), ownership of assets; and freedom of movement, expression and association should also be addressed; as should their right to freedom from persecution in the expression of these rights.</p> <p>The critical role played by governments and policymakers must also be addressed.</p>

8 Conclusion

This Technical Report set out to develop guidelines for consideration of ethical issues in standards that build confidence and security in the metaverse. Efforts to research confidence revealed a scarcity in information that required further investigation to develop a new framework for metaverse contexts.

The Report leveraged existing standards and research, as well as proposed theories; to put forward user-centric guidelines and establish the value of the UDHR and the SDGs in efforts to enable these guidelines.

It should be noted that, with the metaverse still in its nascent phase of development, its ultimate direction is far from known. These guidelines are meant to be broad and flexible for the dynamic nature of that context.

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