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RESEARCH ARTICLE

Personality Rights Protection in the Metaverse Era: Challenges and Strategies in Law and Ethics

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ARTICLE INFO	ABSTRACT
	Metaverse technology provides users with freedom, openness, and immersive experiences, but also brings risks in health, privacy, and personality rights.The metaverse is in its early stages, lacking unified standards and regulations, leading to frequent issues such as remote intrusion, AI manipulation, and addiction. Establishing standards is crucial for preventing harmful incidents. This study aims to explore the opportunities and challenges in the metaverse, particularly concerning legal and ethical issues. The research employs a mixed-method approach, combining qualitative and quantitative studies, to comprehensively investigate personality rights issues and regulatory challenges in the metaverse through case analysis and surveys. The results show that metaverse users have significant concerns about both physiological and non-physiological personality rights, including health issues arising from prolonged use of VR devices and safety risks associated with virtual avatars. Users generally believe that existing laws and regulations are insufficient to address the new challenges brought by the metaverse, calling for the development and evolution of the legal system. Regression analysis indicates that the impact of the metaverse on physiological and non-physiological personality rights, as well as regulatory challenges, are the main factors prompting users to believe that the legal system needs to evolve. Case studies further reveal the security risks and regulatory challenges in the metaverse, emphasizing the necessity of legal protection.

INTRODUCTION

Metaverse technology offers users an exceptionally immersive experience (Capatina et al., 2024), characterized by low latency, high realism, and highly personalized interactions. However, alongside these unprecedented sensory experiences, users face numerous risks, including remote sexual assault, AI enslavement, addiction, privacy invasion, and health issues induced by devices (Gupta et al., 2024). These risks pose new challenges to personal rights, further complicated by the nascent stage of the metaverse and the lack of unified standards and regulations (Yılmaz, 2024). Currently, there is no consensus in academia or industry on a standardized definition of the metaverse (Gupta et al., 2024). It is generally understood that the metaverse is a virtual world mapped to the real physical world, constructed using immersive internet technology, IoT, interactive technology, video game technology, artificial intelligence, Web 3.0, digital collectibles (NFTs), 5G, blockchain technology, and digital twin technology. Through the integration of virtual and real elements, the metaverse creates an online virtual space, regarded as the next-generation internet where the digital and physical worlds coexist and merge (Riva et al., 2024).

The rapid development of metaverse technology has provided users with unprecedented immersive experiences but has also introduced risks related to health, privacy, and personal rights. The current lack of unified standards and regulations has led to frequent infringements. Establishing standards and regulations is crucial to preventing harmful incidents (Rashid et al., 2023; Tariq, 2024). This study will explore the opportunities and challenges within the metaverse, particularly focusing on legal and ethical issues, aiming to provide guidelines and norms for the future development of the metaverse.

2. LITERATURE REVIEW

2.1 The Legal Impact and Challenges of the Metaverse on Personal Rights

2.1.1 Impact and Challenges to the Physiological Personal Rights of Natural Persons

The metaverse, with its highly immersive experiences, offers unprecedented sensory enjoyment but also poses threats to users' physiological personal rights (Cheremnykh, 2024). Prolonged use of metaverse devices, such as VR headsets, can lead to excessive fatigue, deterioration of bodily functions, and even severe health issues. Current VR technology does not support extended use; discomfort can arise after just 30 minutes (Vlahovic et al., 2024). Furthermore, extreme immersive experiences, such as deeply modified game features, might surpass the human body's physiological and psychological limits, akin to the "Euthanasia Coaster" effect in Lithuania, posing lethal risks.

Remote sexual assault is another severe issue. Users in the metaverse may suffer sexual harassment or assault by other users or AI-generated digital beings, causing psychological and physiological trauma. Additionally, immersive experiences like live-action role-playing games with explicit content, violence, or horror elements can lead to addiction, negatively impacting users' physical and mental health, and challenging their moral and psychological boundaries.

2.1.2 Impact and Challenges to Non-Physiological Personal Rights of Natural or Digital Persons

In the metaverse, digital twin technology creates virtual personas corresponding to real natural persons (Ruiu et al., 2024). These virtual personas are digital embodiments of real individuals, carrying all the permissions and actions attributed to them. However, the legal status of virtual personas remains unclear, and the legal protection of their rights—such as name, image, reputation, honor, and privacy rights—is ambiguous. This ambiguity complicates the legal identification and responsibility when users suffer or cause personal rights infringements in the metaverse (Sharma et al., 2024).

Difficulty in Distinguishing Between Virtual and Real Identities: Virtual identities exhibit anonymity, multiple freedoms, multiplicity, and continuity, blurring the lines between virtual and real identities, raising unresolved legal issues related to privacy and reputation.

Challenges in Legal Recognition and Protection of Virtual Identities: Virtual identities created in the metaverse may involve privacy and information security issues. Legal frameworks need to clarify the legal attributes, responsibility attribution, technical rules, and social rules concerning virtual identities. Moreover, due to the anonymous nature of the metaverse, the authenticity of virtual identities needs addressing, requiring more secure identity authentication mechanisms and a robust social credit system (Chen et al., 2024; Kanval et al., 2024).

Legal Validity, Applicability, and Liability of Virtual Contracts: Users in the metaverse may enter into various virtual contracts, but the legal validity of these contracts is not yet well-defined. Ensuring their legality and enforceability is a pressing issue. Additionally, the metaverse's transnational nature raises cross-jurisdictional legal issues and questions of liability that need urgent clarification (Huy & Phuc, 2024).

2.2 Current State and Challenges of Regulating Personality Rights in the Metaverse

In the realm of metaverse jurisprudence, the exploration of the legal nature of personality rights has provoked profound reflection (Jam et aal., 2018; Dolata & Schwabe, 2023). The first issue pertains to its legal essence, which encompasses the relationship between virtual social interactions and law, as well as the connection between virtual crimes and criminal law. These issues necessitate a reevaluation of the applicability of existing legal frameworks and an in-depth discussion on the delineation of legal responsibilities and rights. The second challenge is the construction of a legal system that is adaptive, authoritative, and enforceable within the metaverse (Song et al., 2023). This involves the formulation, implementation, and adaptability of legal rules, as well as measures for punishing and rectifying violations. Lastly, the challenge of the legal validity of personality rights highlights the authority and applicability of legal rules in the virtual world, along with ensuring that these rules are timely, just, and effectively enforced. This necessitates continuous improvement and refinement of legal frameworks and rules to accommodate the evolving needs of the metaverse.

Additionally, the legal domain of the metaverse raises a series of illegality issues. Firstly, the relationship between virtual crimes and criminal law includes defining criminal liability for virtual violence and addressing the issue of cross-border collaboration in combating virtual criminal behaviors. Secondly, there is the relationship between virtual privacy and privacy law, including whether virtual activities should be protected under privacy law and how data protection policies in the virtual world should be formulated. Addressing these issues requires collaborative efforts from both the legal and technological sectors to establish a legal system that protects user rights while maintaining social order.

3. RESEARCH METHODS

3.1 Research Design

The metaverse represents a new frontier in human development, offering immersive experiences that cater to entertainment, social interaction, learning, and creativity, breaking temporal and spatial constraints, enhancing communication and collaboration efficiency, fostering social change and civilizational progress, and promoting diversified, inclusive, equal, and democratic social governance. However, the metaverse also brings unpredictable risks and challenges, including the imperfection and lack of standardization in hardware, software, platforms, and network interactions, threats to privacy and data security, psychological and physical health issues for users, social inequality and division, and challenges to existing laws and ethics. This study employs a mixed research methodology, combining qualitative and quantitative approaches to comprehensively explore the opportunities and challenges within the metaverse, particularly focusing on legal and ethical issues. This approach allows for a deep understanding of various dimensions of the metaverse and provides robust support for subsequent research and policy formulation.

3.2 Qualitative Research

3.2.1 Case Studies

Through case studies, this research analyzes specific incidents of personality rights violations within the metaverse to determine the effectiveness and shortcomings of existing preventive measures. Representative cases are selected to thoroughly examine incidents of personality rights violations occurring in the metaverse. By summarizing the commonalities and differences in these cases, the study identifies current challenges and gaps in protecting user rights.

3.3 Quantitative Research

3.3.1 Questionnaire Survey

In the quantitative research phase, a structured questionnaire survey will be conducted, utilizing a Likert five-point scale to measure users' perceptions of legal and ethical issues in the metaverse. The questionnaire is designed to cover both physiological and non-physiological personality rights within the metaverse, regulatory dilemmas, and metaverse users' views on relevant laws. Stratified random sampling will be used to select 120 metaverse users as survey respondents, ensuring diversity and representativeness of the sample. Collected data will be analyzed to assess users' general awareness and attitudes towards legal and ethical issues in the metaverse.

4. RESULTS AND ANALYSIS

4.1 Descriptive Statistics

4.1.1 Age distribution

A total of 120 metaverse users were surveyed for their basic personal background information. Table 1 outlines the age distribution of the respondents. Notably, the age groups 18-25 years (33.3%) and 26-35 years (41.7%) constitute the majority of the survey sample, making up 75% of the total sample. These two age groups likely represent the primary user demographic of the metaverse. The age groups 36-45 years (15%) and 46 years and above (10%) are relatively smaller but still provide valuable diverse perspectives.

Table 1: Age Frequency Distribution

	Items	Frequency	Valid Percent	Cumulative Percent
Valid	18-25 years	40	33.3	33.3
	26-35 years	50	41.7	75
	36-45 years	18	15	90
	46 years and above	12	10	100
	Total	120	100	

4.1.2 Gender distribution

Table 2 presents the age distribution of the survey sample. The sample comprises slightly more males (54.2%) than females (45.8%), reflecting the actual gender ratio among Metaverse users. The relatively balanced gender distribution enhances the diversity of perspectives obtained.

Table 2: Gender Frequency Distribution

	Items	Frequency	Valid Percent	Cumulative Percent
Valid	Male	65	54.2	54.2
	Female	55	45.8	100
	Total	120	100	

4.1.3 Frequency of use Metaverse

Table 3 displays the frequency distribution of sample usage of the metaverse. Daily users (14.2%) in this group utilize the metaverse on a daily basis, indicating a high dependency and habitual engagement with it. This category may include gamers, active participants in virtual social environments, or professionals who require its services. Weekly users (30%) in this segment engage with the metaverse once or multiple times a week, though not necessarily every day. They may utilize the metaverse for specific activities, such as weekend relaxation or participation in particular virtual

events. Monthly users (40.8%) in this cohort access the metaverse on a monthly basis, albeit with lower frequency, likely for specific purposes or activities, such as attending particular events, checking for updates, or occasional entertainment. Infrequent users (15%) in this category seldom use the metaverse, possibly due to lack of interest, technological barriers, or other reasons.

Table 3: Metaverse usage frequency distribution

	Items	**Frequency**	**Valid Percent**	**Cumulative Percent**
Valid	Daily	17	14.2	14.2
	Weekly	36	30	44.2
	Monthly	49	40.8	85
	Infrequent	18	15	100
	Total	120	100	

4.2 Correlation Analysis

This section of analysis will explore the impact of the metaverse on physiological and non-physiological personality rights, regulatory challenges, and whether legal systems need to evolve to meet the demands and challenges brought by the metaverse. A detailed analysis of the correlation table can help us understand the relationship between different variables, especially their impact on the dependent variable Y2 (whether legal systems need to evolve to meet the demands and challenges brought by the metaverse). The following is a highly detailed analysis of the correlation data table (see Table 5) based on the dimensions of the survey questionnaire items (see Table 4): (significance levels are 0.01 and 0.05 respectively).

Table 4: Dimension Table of Survey Questionnaire

Section A: Physiological Impact on Personal Rights	
A1	Feeling of physical discomfort after prolonged use of VR devices
A2	Prolonged use of VR can lead to long-term health issues
A3	Having experienced or witnessed digital sexual harassment in the metaverse
A4	Concerned about the possibility of addiction to the Metaverse among people
Section B: Non-Biological Personal Rights	
B1	I use a virtual avatar in the Metaverse
B2	My virtual avatar is crucial for my experience in the metaverse
B3	I feel that the identity or personal information of my virtual avatar is at risk
B4	The identity, name, and appearance of virtual avatars should be legally protected
Section C: Regulatory Challenges	
C1	I am aware of existing regulations protecting personal rights in the metaverse
C2	Current regulations are sufficient to protect 4users in the Metaverse
C3	I am satisfied with the response to the harassment or identity theft I reported
Section Y: Future Legal Evolution	
Y	Does the legal system need to evolve to meet the demands and challenges brought by the Metaverse?

4.2.1 The Impact of Metaverse on Physiological Personality Rights (A)

A1: Feeling of physical discomfort after prolonged use of VR devices

- Correlated moderately with A2 (r=0.347**): This indicates that individuals who perceive physical discomfort after prolonged use of VR devices also tend to believe that long-term use of VR may lead to long-term health issues.

- Correlated strongly with A3 (r=0.701**): This suggests that individuals perceiving physical discomfort after prolonged use of VR devices are more likely to have experienced or witnessed digital sexual assaults in the metaverse.

- Correlated moderately with A4 (r=0.408**): This indicates that individuals who perceive physical discomfort after prolonged use of VR devices also worry about the possibility of people becoming addicted to the metaverse.

A2: Prolonged use of VR leads to long-term health issues

- Correlated strongly with A4 (r=0.740**): This suggests that individuals who believe prolonged use of VR leads to health problems also worry about the possibility of people becoming addicted to the metaverse.

- Correlated moderately with C3 (r=0.444**): This indicates that individuals who believe prolonged use of VR leads to health problems are dissatisfied with responses to reported harassment or identity theft.

A3: Having experienced or witnessed digital sexual assaults in the metaverse

- Correlated moderately with A4 (r=0.331**): This suggests that individuals who have experienced or witnessed digital sexual assaults also worry about the possibility of people becoming addicted to the metaverse.

- Correlated moderately with C2 (r=0.298**): This indicates that individuals who have experienced or witnessed digital sexual assaults believe that existing regulations are insufficient to protect users in the metaverse.

A4: Worrying about the possibility of people becoming addicted to the metaverse

- Correlated moderately with B2 (r=0.459**): This indicates that individuals worried about metaverse addiction also believe that avatars are crucial for their metaverse experience.

- Correlated moderately with C3 (r=0.382**): This indicates that individuals worried about metaverse addiction are dissatisfied with responses to reported harassment or identity theft.

4.2.2 The Impact of Metaverse on Non-Physiological Personality Rights (B)

B1: Using avatars in the Metaverse

- Correlated strongly with B2 (r=0.516**): This suggests that individuals using avatars in the metaverse consider avatars crucial for their experience.

- Correlated strongly with B3 (r=0.612**): This indicates that individuals using avatars in the metaverse worry about the risk to the identity or personal information of their avatars.

- Strongly correlated with B4 (r=0.597**), indicating that individuals using avatars in the Metaverse believe their avatar's identity, name, and appearance should be legally protected.

B2: The Importance of Avatars in the Metaverse Experience

- Moderately correlated with C1 (r=0.288**), indicating that individuals who consider avatars crucial to the Metaverse experience are aware of existing regulations protecting Metaverse persona rights.

B3: Risk to Avatar Identity or Personal Information

- Strongly correlated with B4 (r=0.456**), indicating that individuals concerned about risks to avatar identity or personal information believe that avatar identity, name, and appearance should be legally protected.

- Moderately correlated with C3 (r=0.352**), suggesting that individuals concerned about risks to avatar identity or personal information are dissatisfied with responses to reported harassment or identity theft.

4.2.3 Regulatory Challenges（C）

C1:Awareness of Regulations Protecting Metaverse Persona Rights

- Strongly correlated with C2 (r=0.501**), indicating that individuals aware of existing regulations believe current regulations are sufficient to protect users in the Metaverse.

C2；Existing Regulations Adequacy in Protecting Metaverse Users

- Moderately positively correlated with C3 (r=0.378**), indicating that individuals who believe that existing regulations are sufficient to protect metaverse users are satisfied with the responses to reported harassment or identity theft.

4.2.4 Future Legal Evolution（Y）

- Moderately correlated with C3 (r=0.378**), indicating that individuals who believe current regulations are sufficient to protect Metaverse users are satisfied with responses to reported harassment or identity theft.

- Moderately correlated with B1 (r=0.377**), suggesting that individuals using avatars in the Metaverse believe legal frameworks need to evolve to meet the needs and challenges of the Metaverse.

- Moderately correlated with B2 (r=0.390**), indicating that individuals who consider avatars crucial to the Metaverse experience believe legal frameworks need to evolve.

- Moderately correlated with B3 (r=0.453**), suggesting that individuals concerned about risks to avatar identity or personal information believe legal frameworks need to evolve.

- Moderately correlated with C1 (r=0.264**), indicating that individuals aware of existing regulations believe legal frameworks need to evolve.

- Moderately correlated with C2 (r=0.380**) is moderately positive, indicating that individuals who believe that current regulations are sufficient to protect metaverse users also believe that the legal system needs to evolve.

- Moderately correlated with C3 (r=0.321**) is moderately positive, suggesting that individuals who are satisfied with the response to reporting harassment or identity theft also believe that the legal system needs to evolve.

In summary, the development of the metaverse has sparked widespread concerns regarding user physical health, virtual avatar safety, and legal protection. On the one hand, prolonged use of VR devices may lead to physical discomfort and health issues, while concerns about addiction to the metaverse and digital infringement cannot be ignored. On the other hand, users employing virtual avatars are increasingly concerned about their safety and advocate for legal protection of their avatars' identities, names, and appearances. Although some users approve of existing regulations, it is generally believed that the legal system needs to evolve to accommodate the new challenges and demands brought about by the metaverse.

Table 5：Correlations

	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3
A2	.347**										
A3	.701**	.506**									
A4	.408**	.740**	.331**								
B1	.386**	0.175	.331**	0.171							
B2	.259**	.396**	0.139	.459**	.516**						
B3	.312**	.242**	.321**	.196*	.612**	.506**					
B4	.312**	.201*	0.166	.229*	.597**	.617**	.456**				
C1	.256**	.398**	.265**	.329**	.213*	.288**	.256**	.216*			
C2	.362**	.260**	.298**	.280**	.361**	.283**	.200*	.202*	.501**		
C3	.265**	.444**	.339**	.382**	.187*	.327**	.352**	.241**	.662**	.378**	
Y	0.155	.261**	0.099	0.17	.377**	.390**	.453**	.356**	.264**	.380**	.321**

Note: ** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).

4.3 Regression analysis of factors affecting the evolution and development of the Metaverse legal system

The summary of Model 6 results shows an adjusted R-squared of 0.308. The results indicate that the impact of the metaverse on physiological personality rights (A1, A2, A3, A4), the impact of the metaverse on non-physiological personality rights (B1, B2, B3, B4), regulatory challenges (C1, C2, C3), and other 11 factors can explain 30.8% of the variation in the perception of whether the legal system needs to evolve to meet the demands and challenges brought by the metaverse. The model fits well. Additionally, the Durbin-Watson statistic (D-W value) is 2.03, close to 2, indicating the absence of autocorrelation.

Table6: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.610[a]	0.372	0.308	0.9259	2.03

Note: a. Dependent Variable: Y

As shown in coefficient table Table 7, and according to the correlation analysis in the preceding text and Table 5, economic development factors (A2, B3, and C3).

The p-values of these three variables are all less than 0.05, indicating significance, suggesting that all three variables will influence the perception of Metaverse users regarding whether the legal system needs to evolve to meet the demands and challenges brought by the Metaverse. The regression coefficients (B values) of variables A2, B3, and C3 are 0.337, 0.343, and 0.327 respectively, all greater than 0, indicating that these three variables have a positive impact on the perception of Metaverse users regarding whether the legal system needs to evolve to meet the demands and challenges brought by the Metaverse. The corresponding Variance Inflation Factor (VIF) values for these three factors are all less than 5, indicating no collinearity. Moreover, the formula of the model in this study is: Perception of Metaverse users regarding whether the legal system needs to evolve to meet the demands and challenges brought by the Metaverse = 0.817 + 0.039×A1 + 0.337×A2 - 0.272×A3 - 0.212×A4 + 0.037×B1 + 0.039×B2 + 0.343×B3 + 0.121×B4 - 0.107×C1 + 0.327×C2 + 0.143×C3 (see Table 7).

Table 7：Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.817	.462		1.769	.080		
	A1	.039	.131	.036	.296	.768	.394	2.540
	A2	.337	.144	.314	2.335	.021	.321	3.118
	A3	-.272	.132	-.266	-2.063	.041	.349	2.868
	A4	-.212	.132	-.204	-1.605	.111	.360	2.779
	B1	.037	.126	.035	.291	.772	.413	2.419
	B2	.039	.129	.036	.305	.761	.424	2.357
	B3	.343	.115	.317	2.978	.004	.513	1.948
	B4	.121	.117	.113	1.034	.303	.490	2.039
	C1	-.107	.117	-.100	-.908	.366	.476	2.100
	C2	.327	.101	.313	3.253	.002	.626	1.596
	C3	.143	.120	.132	1.191	.236	.474	2.111

Note: a. Dependent Variable: Y

4.4 Case Analysis

Case 1: In May 2022, a female user in Meta's game "Horizon World" encountered sexual harassment from male virtual characters and onlookers while playing as a female virtual character. As a response, Meta introduced the "Personal Boundary" feature in February 2023 to prevent unfamiliar virtual entities from approaching, protecting users from harassment. Analysis indicates that incidents of sexual harassment towards virtual characters reveal potential issues regarding physiological personality rights in the metaverse. Although behaviors in virtual worlds may seem not to directly impact the real world, the psychological harm inflicted on users is real.

Such incidents of sexual harassment expose safety vulnerabilities in virtual spaces, compelling platforms to introduce new features to safeguard users' personal boundaries. This also highlights regulatory challenges, namely, how to uphold users' physiological rights in the virtual world.

Case 2: In March 2022, a Japanese netizen named "秋の空" encountered "VR sexual assault" in the virtual reality game "VRChat," causing psychological harm to the user.

Similar incidents are not isolated in the virtual world. According to a 2016 report by the MIT Technology Review, a female player named Belamire experienced being tracked and touched on private parts of her virtual body by another player in "QuiVR" (a virtual reality game of archery/defense), causing extreme discomfort.

Additionally, according to a survey conducted by the Polish market research firm The Extended Mind in 2018 involving 609 virtual reality users, the results showed that 49% of females and 36% of males have experienced virtual reality sexual harassment, including physical contact, stalking, verbal harassment, and displaying obscene images. Analysis indicates that this case highlights the impact of the metaverse on non-physiological personality rights, namely the issue of virtual sexual assault.

Being sexually assaulted in virtual reality games not only causes psychological trauma to the victims but also infringes upon the identity and dignity of their virtual avatars. The existence of such behavior reflects a lack of legal and ethical standards in the virtual world, necessitating regulation and legislation tailored to its unique nature.

Combining the above two cases reveals that the development of the metaverse poses new challenges to both physiological and non-physiological personality rights, necessitating regulatory agencies and legal systems to keep pace and adapt to the new environment. Users' demands for the evolution of the legal system are primarily influenced by these events. They hope that the law can better protect their rights in the virtual world and prevent similar incidents from happening again.

5 CONCLUSION

The metaverse is an emerging field that, although offering rich immersive experiences and social interactions, also comes with numerous risks and challenges. To safeguard users' personality rights, it is imperative to establish an intelligent standard system in accordance with the law to regulate the development of the metaverse.

Firstly, it is necessary to strengthen the classification standards to protect users' personality rights. Currently, the lack of unified hardware standards in the metaverse leads to the existence of unqualified hardware devices in the market, posing risks and losses to users and society. Therefore, accelerating the legislation of hardware standards, improving the standard system and regulatory mechanisms are essential to safeguard users' personality rights. Moreover, establishing metaverse application scenario standards to protect users' personality rights is crucial. These standards cover key areas such as content generation and interaction, aiming to ensure the lawful, safe, reliable, healthy, orderly, and efficient operation of metaverse platforms, while safeguarding users' personality rights and interests. Key measures include: 1. Establishing standards for key elements of application scenarios, defining and categorizing scenario types, and formulating design principles and method standards to ensure user needs and scenario effects. 2. Setting up standards for intelligent monitoring of content legality to ensure that the content complies with laws, regulations, and ethical standards and does not violate users' personality rights. 3. Establishing standards for intelligent monitoring of interaction safety to regulate user interaction behaviors and prevent risks such as cyberbullying, thus maintaining a friendly and civilized community interaction. 4. Formulating standards for classification and grading of application permissions to respect users' dignity and freedom of choice, and prevent inappropriate content from harming users. 5. Establishing standards for stable operation of scenarios, utilizing advanced technology for real-time supervision, timely detection, and resolution of issues to maintain the stable operation of metaverse application scenarios.

Secondly, it is essential to solidify the basic hardware standards to safeguard users' personality rights. Metaverse hardware devices, as the key link between the virtual and real worlds, directly impact users' personality rights through their quality and safety. Therefore, it is necessary to establish unified technical requirements and performance indicators to ensure that hardware devices provide high-quality user experiences and reduce the potential harm and risks to users.

Thirdly, it is crucial to strictly enforce basic software standards to protect users' personality rights. The quality and safety of metaverse foundational software are paramount to users' personality rights. We need to establish widely applicable software standards to enhance the quality, reliability, and security of software, thereby safeguarding users' personality rights and interests.

Finally, establishing standards for application scenarios to protect users' personality rights. The metaverse involves various application scenarios, and establishing standards for these scenarios is crucial to ensure the legal, safe, reliable, and healthy operation of the metaverse platform. We need to establish key element standards for application scenarios and develop intelligent monitoring standards for content legality to safeguard users' personality rights.

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APPENDIX :

Questionnaire: A structured questionnaire using a five-point Likert scale, with the following levels: 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree. It measures the prevalence and views of various legal issues related to personality rights.

Section 1: Demographics

Age:

1-18-25

2-26-35

3-36-45

4-46 years and above

Gender:

1-Male

2-Female

Frequency of Metaverse use:

1-Daily

2-Weekly

3-Monthly

4-Rarely

1-Strongly disagree

2-Disagree

3-Neutral

4-Agree

5-Strongly agree

Section A: Physiological Impact on Personal Rights

A1   Feeling of physical discomfort after prolonged use of VR devices

A2   Prolonged use of VR can lead to long-term health issues

A3   Having experienced or witnessed digital sexual harassment in the metaverse

A4   Concerned about the possibility of addiction to the Metaverse among people

Section B: Non-Biological Personal Rights

B1   I use a virtual avatar in the Metaverse

B2   My virtual avatar is crucial for my experience in the metaverse

B3   I feel that the identity or personal information of my virtual avatar is at risk

B4   The identity, name, and appearance of virtual avatars should be legally protected

Section C: Regulatory Challenges

C1   I am aware of existing regulations protecting personal rights in the metaverse

C2   Current regulations are sufficient to protect users in the Metaverse

C3   I am satisfied with the response to the harassment or identity theft I reported

Section Y: Future Legal Evolution

Y   Does the legal system need to evolve to meet the demands and challenges brought by the Metaverse?