Contribution to European Commission's Call „Competition in Virtual Worlds and Generative AI"

The German Digital Opportunities Foundation welcomes the European Commission's call on "Competition in Virtual Worlds and Generative AI" and submits hereby their contribution based on the expertise and experience gathered in the project "Child Protection and Children's Rights in the Digital World"[1]. As children are the natural and early adopters of new technological developments, we strongly recommend to consider children and their rights from the beginning in the process of defining a regulatory framework for a digital single market with regard to virtual worlds, the metaverse and generative artificial intelligence.

The Digital Opportunities Foundation is a non-profit, operational foundation based in Berlin, Germany. Since 2002, they are researching the social impact of digitization and are advocating equal access to the internet and media literacy education for all people. With numerous projects at national and European level, the foundation pursues the goal of digital inclusion, participation and equal opportunities, thus counteracting a digital divide in society.[2]

1 Preliminary Remarks

Understanding of the terms Virtual World and Metaverse

In their call for contributions[3] the European Commission describes virtual worlds as a simulated and immersive digital environment. At it's ultimate level of development virtual worlds will be persistent, real time operated and accessible from everywhere. In such a digital environment humans/consumers would be represented as avatars. Also, the EC states that many diverse concepts of virtual worlds exist.

The term "Virtual Reality" was coined by Jaron Lanier in 1989. As a pioneer and developer of digital technologies, he was involved in the early invention of avatars and interactive applications. He later began to criticise the functioning of social networks and in his book "Dawn of the New Everything: Encounters with Reality and Virtual Reality"[4], published in 2018, he addressed the contradictory nature of the term and the social changes to be expected as a result of VR. Another widely adopted concept of VR now using the term metaverse was presented by Matthew Ball in 2020. Like the EC he assumes the metaverse will be persistent, operated in real-time and without limitation of participants or access. Beyond these more tangible features Ball also describes characteristics of the metaverse in the form of perceptions and feelings by its inhabitants. In his assumption the metaverse would be an "*experience that spans both the digital and physical worlds, private and public networks/experiences, and open and closed platforms*", where values are produced by human individuals as well as by enterprises, where data and digital items are incomparably interoperable and which is filled with content, experiences and options.[5] The metaverse was also in the focus of a conference held by the German Ethics Council in November 2023. While Council member Petra Bahr understands the

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metaverse as a response to the old human dream of "leaving reality with its hardships and constraints behind, at least for a while", it is "a completely new world next to our physical world, where humanity faces the great challenge to colonising and shaping it according to enlightened humanistic values" for Christoph Meinel, founder of the German University of Digital Science.[6]

Regulatory Framework

European Union's Competition Law serves to create a level playing field for businesses and companies where they compete fairly and competition is not distorted in the internal market. The law aims to support economical players to develop and grow on the one hand and to protect consumers on the other. As laid down in article 5 of the Directive 2005/29/EC[7] a commercial practice is specified as unfair if *"it materially distorts or is likely to materially distort the economic behaviour with regard to the product of the average consumer whom it reaches or to whom it is addressed, or of the average member of the group when a commercial practice is directed to a particular group of consumers"*. In this regard a group could be defined by age or credulity. Children are a special group of consumers specified by their young age and their evolving capacities.

In 1989, the United Nations adopted the Convention on the Rights of the Child[8]. This human rights treaty defines every human being below the age of 18 as a child and guarantees every child specific rights to protection, provision and participation. In 2021, the UN Committee on the Rights of the Child adopted General Comment No.25[9] on children's rights in relation to the digital environment thus ensuring the commitments as laid down 30 years earlier are up-to-date and future-proof. As digital natives, children are growing up in a world where they do not longer distinguish between analogue environments as real and digital environments as virtual, in the future these environments will increasingly merge into a metaverse.

For companies operating in the European Union the Digital Services Act[10] and the Digital Markets Act[11] define their obligations to protect children as users of their services. Article 28 DSA holds service providers liable for the privacy, safety and security of minors on online platforms by provision of appropriate and proportionate measures, while the DMA reduces the consumer dependence of gatekeepers and opens up opportunities to choose providers and services, e.g. by making interoperability of communication services mandatory.

In Germany, the Youth Protection Act[12] has established a child rights-based approach since 2021. Art. 10a defines the protective objective of Personal Integrity of a child. This new legal concept needs to

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[6] Deutscher Ethikrat (2024): Infobrief No.32. Januar 2024, p. 3.
https://www.ethikrat.org/fileadmin/Publikationen/Infobrief/infobrief-02-23-web.pdf 29.01.2024

[7] Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market and amending Council Directive 84/450/EEC, Directives 97/7/EC, 98/27/EC and 2002/65/EC of the European Parliament and of the Council and Regulation (EC) No 2006/2004 of the European Parliament and of the Council ('Unfair Commercial Practices Directive'). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32005L0029 19.02.2024

[8] UN (1989): Convention on the Rights of the Child. https://childrens-rights.digital/hintergrund/UNKRK.cfm. 20.02.2024

[9] UN (2021): General Comment No.25 in children's rights in relation to the digital environment. https://childrens-rights.digital/hintergrund/index.cfm/aus.11/key.1738/StartAt.1/page.1 20.02.2024

[10] EU (2022a): Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a Single Market For Digital Services and amending Directive 2000/31/EC (Digital Services Act). https://eur-lex.europa.eu/eli/reg/2022/2065/oj 20.02.2024

[11] EU (2022b): Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828 (Digital Markets Act). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022R1925&qid=1708449360575 20.02.2024

[12] BRD (2021): Zweites Gesetz zur Änderung des Jugendschutzgesetzes, BGBl. I, 2021, S. 742 ff. https://www.gesetze-im-internet.de/juschg/BJNR273000002.html 20.02.2024

be concretised[13] in order to provide an understanding, which entails the protection of the physical and psychological integrity of a child as well as the protection of children's personal data as their individual representation in a digital environment.[14]

2 A child rights-based approach to Virtual Worlds and Generative Artificial Intelligence

In March 2021, the EC launched the EU Strategy on the rights of the child[15], announced as "*a major policy initiative put forward to better protect all children, to help them fulfil their rights and to place them right at the centre of EU policy making*". Thus, the EC complies with Art. 3 of the UN-Convention on the Rights of the Child that demands "*the best interest of the child shall be a primary consideration in all actions concerning children.*" Consequently, shaping the regulatory framework for Artificial Intelligence and Virtual Worlds laying ahead must adhere to a child rights-based approach. The UN Committee on the Rights of the Child has phrased this in General Comment No. 25, para. 4 as follows: *"The rights of every child must be respected, protected, and fulfilled in the digital environment. Innovations in digital technologies affect children's lives and their rights in ways that are wide-ranging and interdependent, even where children do not themselves access the Internet. Meaningful access to digital technologies can support children to realize the full range of their civil, political, cultural, economic, and social rights. However, if digital inclusion is not achieved, existing inequalities are likely to increase, and new ones may arise."*

Opportunities and Risks: 4 Cs classification

Virtual worlds and generative artificial intelligence offer a wide range of opportunities and benefits but, hazards and risks cannot be ruled out. To reap the benefits, the hazards and risks must be anticipated and managed by a concept based on the principle of safety by design.

Within the CO:RE – Children Online: Research and Evidence project[16] Sonja Livingstone and Mariya Stoilova developed a new 4Cs classification[17]. The Cs stand for Content, Contact, Conduct and Contract in digital environments, all four being constitutive also for the metaverse and Virtual Worlds. The model gives guidance to practitioners and policymakers in regard of potential online risks and for taking them into account when developing new services or applications or regulating with the intention to create a safe online environment for young users. In the following, we will present our argument in favour of a market-based regulatory framework for virtual worlds that takes children's rights into account along the 4 C classification.

Content

In the digital environment users engage with various types of content, i.e. information provided in the form of text, audio, video or still images be it as a post, a song, a photo, a movie, a news article or an advertisement. The content itself can have a positive or negative impact on the user and may influence their opinion and decisions. In virtual worlds with content generated by Artificial Intelligence a much

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[13] The understanding of the objective was discussed at the expert council for children's rights in the digital world at the German Children's Fund. All members of the council are listed at https://www.dkhw.de/schwerpunkte/kinderrechte/koordinierungsstelle-kinderrechte/kinderrechte-in-der-digitalen-welt/expertinnenkreis-fuer-kinderrechte-in-der-digitalen-welt/ 7.3.2024

[14] Krause, Torsten/Kretschmann, Yola/Yacob, Aaron: Zum Begriff der persönlichen Integrität im Jugendschutz. In: Recht der Jugend und des Bildungswesens (RdJB). Jahrgang 70 (2022). Heft 4. p. 629-635

[15] https://commission.europa.eu/strategy-and-policy/policies/justice-and-fundamental-rights/rights-child/eu-strategy-rights-child-and-european-child-guarantee_en 29.02.2024

[16] CO:RE (2022): About CO:RE. https://core-evidence.eu/about-core 29.02.2024

[17] Livingstone, Sonja/Stoilova, Mariya (2021): The 4Cs: Classifying Online Risk to Children. CO:RE Short Report Series on Key Topics. Hamburg: Leibniz-Institut für Medienforschung. Hans-Bredow-Institut (HBI). https://doi.org/10.21241/ssoar.71817 26.02.2024

more impressive and therefore more powerful impact on users can be assumed. Adults and children will need to obtain and develop the ability to recognise and handle the impact of this type of content on their consciousness and their decisions. Children and their evolving capacities therefore need to be taken into account especially in order to strengthen their resilience and prevent risks of the virtual world for their growing up and living together in the community.

Virtual worlds combined with artificial intelligence will offer a huge range of opportunities serving children's rights to education as stated in General Comment No.25, para. 99 – 105, access to information para. 50 – 57 as well as leisure and play para. 106 – 111. One can assume that the acquisition of knowledge in almost every educational area will become more impressive and lively and therefore better comprehensible, e.g. diving through the ocean and recognizing the impact of yesterday's human behaviour on the environment could have a positive impact on human's behaviour tomorrow. Also, one may recognize why and how politicians took decisions in crucial situations in the past by asking them in a conversation generated by artificial intelligence today. Obtaining information on health issues or adolescence related themes from a peer like avatar might be more appealing than reading a text based manual. In this way, virtual reality can contribute to the realisation of children's right to sexual orientation and self-determination in the context of the concept of personal integrity.

Enjoying concerts or visiting exhibitions online could be more realistic than today. Such opportunities will be also more inclusive in a sense of availability and participation by e.g. saving costs and time for travelling. Simultaneously this kind of opportunities might also increase risks for children and other users. Jörg Ukrow, Managing Member of the Board of the European Institute on Media Law worries that artificial intelligence will intensify mechanisms of algorithms and concentrate information, debates and discussions in separated communities and partial public areas more than already. He foresees a relevant risk to a constriction on essential democratic opinion making, increasing the amount and faster dissemination of deep-fake content. This would have a negative impact not only on children's but on all users' right to participation or freedom of expression and may have a crucial impact on children's personal development becoming a responsibly acting member of the community. Against this backdrop he calls for a regulation that guarantees democratic pluralism and diversity of perception of communities that allows for opportunities to change personal minds and opinions. Important in this context seems to be the labelling of AI generated content.[18] Also, David Reid, Professor of AI and Spatial Computing at Liverpool Hope University alerts that the impact of (deep-fake-, mis- and dis-) information will be rapidly increasing and far more influence users in a completely immersive digital environment as the metaverse will be.[19]

The developments expected by Jörg Ukrow and David Reid touch on the right to an open future, which is closely linked to issues of discrimination but also the proper development of children and the fulfilment of their talents and opportunities. The formation of capacities of young people is a prerequisite for their meaningful use of the metaverse. Therefore the virtual world must be designed age-appropriately and with regard to children's evolving capacities so not to impair, but at best even to promote their development as described in General Comment No.25, para. 19-21.

Furthermore, psychologists imagine that current negative effects of social media on the psyches of children and adolescents could get worse in the metaverse. Referencing to the negative effects of sexual, racist and violent content in VRChat has on young users as revealed by the Center for

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[18] FSF (2024): KI und ihre Risiken für Demokratie und Jugendmedienschutz. Dr. Jörg Ukrow über die Regulierung von Künstlicher Intelligenz. https://mediendiskurs.online/beitrag/ki-und-ihre-risiken-fuer-demokratie-und-jugendmedienschutz-beitrag-772/ 25.01.2024

[19] Reid, David (2021): Who is Going to Police the 'Metaverse'?. https://www.hope.ac.uk/news/allnews/who-is-going-to-police-the-metaverse.html 28.02.2024

Countering Digital Hate[20] one can assume an even higher negative impact in immersive virtual realities like the metaverse.[21]

Contact

Bridging distances and staying in touch with members of the family or friends will be easier and much more intense in the metaverse. The company Magos is developing gloves with haptic feedback that will make it possible to feel in virtual realities.[22] Other enterprises are working on simulation of taste by using electrodes.[23] Using such tools to hold the hands of one's grandparents while being thousands of miles away or having a meal together would have a strong impressive effect on the user. On the other hand, being contacted by a stranger or a person one would not want to be so close could be really disturbing and even violating in extreme cases. Sharing child sexual abuse material and livestreaming sexual exploitation and violence against children are heinous crimes in the digital environment already and will become *real* in virtual worlds, too, if not addressed from the beginning.

Today children and other users are investing time and money in creating their online identity, shaping their virtual representation and forming relationships in digital environments. About 40 percent of children consider their digital representation more important than their real one.[24] Having real-like 3D avatars will level this up. One can assume many users will create a better one of themselves online – whatever this means individually. Others will configure phantasy avatars and some may use these tools and turn it into harassment, e.g. to mock others. In so called grooming an adult could design a child-like avatar to build a relation with children and gain their trust.

Besides humans interacting with their avatars in virtual worlds there might also be humans engaging with avatars driven by artificial intelligence, not representing an individual person. Communication with such avatars is based on the artificially created communicative ability of the avatar. The more you interact, the more the database for training the generative artificial intelligence grows, the more the avatar's abilities improve and the more attractive the conversation becomes for the human user. These processes demand for regulation on the processing of data in such types of communication and also in regard of intellectual property.

Currently parasocial relationships[25] are understood as a one-way relation between, e.g. a receiving person and a celebrity, an influencer or an actor. However, such parasocial relationships are also conceivable with chat-bots or avatars not controlled by a human individual.[26] Whereas a service chat-bot provides specific information and most users would not anticipate to interact in a way of private or emotional relation one can assume virtual worlds where human driven avatars and artificial intelligence driven avatars are creating relationships with human individuals not knowing they communicate with a machine instead of another human being. Such relationships will exist on a lack of recognition and interdependence and could decrease skills and capacities to interact and create

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[20] Information about the Center of Countering Digital Hate at https://counterhate.com/ 7.3.2024

[21] Huddleston, Tom (2022): 'This is creating more loneliness': The metaverse could be a serious problem for kids, experts say. Health and wellness. https://www.cnbc.com/2022/01/31/psychologists-metaverse-could-be-a-problem-for-kids-mental-health.html 28.02.2024

[22] Magos (2024): Touching the Intangible with Magos Gloves. https://www.themagos.com/ 28.02.2024

[23] Fraunhofer (2022): Technologien und Use Cases für das (Industrial) Metaverse. p.2. https://www.iuk.fraunhofer.de/content/dam/iuk/de/Download/Technologien%20und%20Use%20Cases%20f%C3%BCr%20das%20(Industrial)%20Metaverse.pdf 28.02.2024

[24] Wienreich, Carolin (2024): Metaverse – Mehr Freiheit und Sicherheit für alle?. Deutsches Museum. https://www.youtube.com/watch?v=ydB8wFhLWJ4 20.02.2024

[25] Horton, Donald/Wohl, Richard (1956): Mass communication and para-social interaction: Observations on intimacy at a distance. Psychiatry 19,3. p. 215-229

[26] Ploier, Florian (2024): Gefühle für einen Chatbot: Wenn aus etwas Künstlichem reale Liebe wird. https://www.sumomag.at/gefuehle-fuer-einen-chatbot-wenn-aus-etwas-kuenstlichem-reale-liebe-wird/ 29.02.2024

relationships with another human being, e.g. solving problems together.[27] Thus living in communities peacefully with each other might be endangered and restrict the right to (social) life (see art. 6 CRC) – one of the general principles of the Convention on the Rights of the Child.

Conduct

Current social media services are facing a lot of critism for creating rabbit holes, supporting hate and promoting behaviour, which is not as social as it was intended with the creation of social media platforms. This could cause a turn back to positive relationships in virtual worlds, means Carolin Wienreich. Since today hate is often more present in social media than in physical contacts, she argues that physical distance in our today services makes it easier to humiliate or offend other users online and violate someone's rights on the internet. In the metaverse where everyone will be present by their avatar, situations will become more like in the existing physical world and thus making it harder to attack someone or their avatar. When physical and virtual worlds blend, the metaverse will be more like a physical get-together then being part of a feed in social media and therefore less ruthless and violent, she imagines.[28]

Nevertheless, the users' conduct is not just shaped by them interacting with each other but also by how an application is developed and run by the service provider. Daily usage of digital media is permanently increasing, online platforms are a central part of nearly everybody's daily life. Auto-play, endless feeds, algorithm-based recommendations, breaking news, brighter colours, push information, etc. are created to catch the interest and bond users with the service. These effects are intensified by parallel usage of several devices at the same time. Phenomena like FOMO (fear of missing out) describe the users' desire to participate constantly in digital environments, to stay connected, informed, and entertained. In 2010 users spent more than 16 hours per day in the virtual environment of a predecessor to the metaverse called Second Life and "using their real lives only to get some sleep"[29]. "Often, Second Life was described by its users as being more attractive than their actual *first* lives", writes Andreas Kaplan.[30]

Irrespective of the metaverse potentially being a better world than real life the United Nations Committee on the Rights of the Child states in General Comment No.25 in para. 15 in regard to the right to life, survival and development that *"the use of digital devices should not be harmful, nor should it be a substitute for in-person interactions among children or between children and parents or caregivers. States parties should pay specific attention to the effects of technology in the earliest years of life, when brain plasticity is maximal and the social environment, in particular relationships with parents and caregivers, is crucial to shaping children's cognitive, emotional and social development. In the early years, precautions may be required, depending on the design, purpose and uses of technologies. Training and advice on the appropriate use of digital devices should be given to parents, caregivers, educators and other relevant actors, taking into account the research on the effects of digital technologies on children's development, especially during the critical neurological growth spurts of early childhood and adolescence."*

Growing-up is for many reasons one of the most sensitive phases of life. As children are evolving their capacities, creating their own identity and finding out, what they expect from life, but also what they have to give they explore the world. Growing-up in a particular environment might be an enabler for children's development but could also be an obstacle. Equal, free and fair virtual worlds will offer a

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[27] Hippel, Klemens (1992): Parasoziale Interaktion. https://www.montage-av.de/pdf/1992_1_1_MontageAV/montage_AV_1_1_1992_135-150_Hippel_Parasoziale_Interaktion.pdf 29.02.2024
[28] Wienreich, Carolin (2024): Metaverse – Mehr Freiheit und Sicherheit für alle?. Deutsches Museum. https://www.youtube.com/watch?v=ydB8wFhLWJ4 20.02.2024
[29] Kaplan, Andreas (2021): Facebook's Metaverse: A nightmare turning into reality? https://thechoice.escp.eu/tl-dr/facebooks-metaverse-a-nightmare-turning-into-reality/ 29.01.2024
[30] op.cit.

variety of possibilities and facilities for growing-up – provided they are designed in such a way that they serve the people and their rights.

Contract

Children and the money they spend on the Internet downloading e.g. a music title or buying a loot-box represent a highly relevant economic factor. The revenue by in-game purchases increased from 53 million Euro in 2008 to 4.459 billion Euro in 2022 – only in Germany.[31] Fears that making games available free of charge would decrease the revenue of the games industry did not become true, because these games are very popular and profit is made out of selling virtual goods, e.g. skins, loot-boxes, etc. in-game. Famous brands are present on popular platforms like Roblox there selling their virtual products. In most countries, children of a younger age are not allowed to enter in a contract, still they contribute to a reasonable amount to the online industries' revenue by spending much more of their pocket money online then they would have spent at an ice cream parlour or a kiosk. This must raise concerns in regard of economic exploitation of children and a possibly addictive design of games.

In the metaverse much more opportunities to buy and sell virtual products are to be expected and these will provide the grounds of economic growth of the market. The immersive environment will provide a seductive and tempting shopping atmosphere. Exploiting the young age or inexperience of children in the metaverse would be a massive violation of the protectional objective of personal integrity and would be contrary to article 5 of the Directive 2005/29/EC.

So far there is no regulation in place that properly defines the ownership of virtually bought products.[32] Portability of one own's creations like avatars and purchased goods like a skin or feature from one platform to another must be guaranteed, not only for consumer protection reasons, but also to ensure the right of the child to not being "illegally deprived of some or all of the elements of his or her identity", as demands Art. 8, para. 2 of the UN-CRC. Therefore, in the metaverse regulation must be in place that defines who is the owner of a digital identity and what will happen if someone's avatar is copied or stolen. In addition, psychological effects in regard of children's digital representation and their personal integrity as mentioned above have to be taken into account.[33]

Also, children are users of platforms and services which are not designed for them and where, according to terms and conditions, they are not allowed to be. Undoubtedly this will also be the case in the metaverse. Platforms will either deliberately or unintentional collect and process a huge amount of much more sensitive data of children than today. Services will have technology in place to track what users look at and how long, also how they move their avatar's body in virtual reality.[34] Also, it will be possible to measure brain activity. Everything that will be done or thought to be done may be monitored.[35] In virtual worlds it will be more difficult for users and especially for children to recognise and understand they are sharing probably sensitive and intimate data with a service, e.g. when they talk to a cutely designed robot in their bedroom at home. The existing safe space of the private home should not be undermined by technologies suitable for data collection and surveillance. However, as children have the right to participation, restricting their access to new technologies should not be the

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[31] Statista (2024): Umsatz mit In-Game-Käufen in Computer- und Videospielen (u.a. Mikrotransaktionen) in Deutschland von 2008 bis 2022. https://de.statista.com/statistik/daten/studie/200040/umfrage/umsatz-mit-virtuellen-zusatzinhalten-fuer-videospiele-in-deutschland-seit-2008/ 01.03.2024

[32] Reid, David (2021): Who is Going to Police the 'Metaverse'?. https://www.hope.ac.uk/news/allnews/who-is-going-to-police-the-metaverse.html 28.02.2024

[33] Wienreich, Carolin (2024): Metaverse – Mehr Freiheit und Sicherheit für alle?. Deutsches Museum. https://www.youtube.com/watch?v=ydB8wFhLWJ4 20.02.2024

[34] MacDonald, Keza (2022): I've seen the metaverse – and I don't want it. The Guardian. https://www.theguardian.com/games/2022/jan/25/ive-seen-the-metaverse-and-i-dont-want-it 29.01.2024

[35] Reid, David (2021): Who is Going to Police the 'Metaverse'?. https://www.hope.ac.uk/news/allnews/who-is-going-to-police-the-metaverse.html 28.02.2024

guiding principle. Instead, it must be ensured that devices and technologies aimed at children are subject to the highest standards of data security.

As laid down in General Comment No.25, para. 35-39, state parties are obliged to ensure companies and enterprises meet their responsibilities to fulfil children's rights in the digital environment. In order to prevent the commercial use of children's data or even the economic exploitation of children, it must be ensured, in accordance with the concept of personal integrity, that their data are protected and not used to train artificial intelligence. The processing of children's data is regulated specifically by the GDPR and the DSA. Both regulatory frameworks must also take effect in virtual worlds and the metaverse, probably extending their scope and amending their provisions will be necessary.

3   Conclusion

Virtual worlds might be the land of milk and honey in the future but this comes along with massive responsibility, for academia, for civil society, for industry and for legislative regulators. Since the latter shall be the first and foremost addressee of this statement, we would like to appeal to their responsibility to ensure a safe and secure environment for users of all ages while creating a fair and competitive marketplace of the future.

The concept of personal integrity as laid down in the German Youth Protection Act § 10a is suitable to guarantee the well-being of users in the metaverse regardless of their age. But children are the most vulnerable group in this regard and, at the same time, those who will be the early adopters and first inhabitants of virtual worlds. Children will also have the task of developing future concepts and technology and they must be able to cope with risks that we cannot foresee today. This should be reason enough to design virtual worlds in a child-friendly way and create guard rails for their safety that also provide added value for adults. UN-CRC Article 12 is an obligation and should be a guiding principle for the development of the metaverse: *"States Parties shall assure to the child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child"*.

The new virtual world should be non-discriminatory and accessible for all users, not only to comply with Art. 2 of the UN-Convention of the Rights of the Child and the UN Convention on the Rights of Persons with Disabilities but also because only thus the market potential of 450 mio. people within the European Union can be deployed. Last, but not least a database for generative AI that results from the diversity and individuality of the European population will be a success factor for economic growth. According to the "Capability Approach" as developed by the economist Amartya Sen [36] states' achievements in regard of economic development should be measured against the concrete capabilities of their citizens to lead a life of their choice. The approach was furthered by Martha Nussbaum stating that capabilities *"are not just abilities residing inside a person but also the freedoms or opportunities created by a combination of personal abilities and the political, social, and economic environment"*.[37] The metaverse offers a unique opportunity to create a political, social and economic environment that fosters the development of the abilities of its inhabitants, and it is up to the European Commission to create an appropriate framework for this.

Article 3 of the UN-Convention of the Rights of the Child obliges state parties *"the best interests of the child shall be a primary consideration in all actions concerning children, whether undertaken by public or private social welfare institutions, courts of law, administrative authorities or legislative bodies"*. Given that neither the digital environment as we know it today was originally designed for children nor the metaverse will be without appropriate guidance, we call upon the European Commission to bear in mind their obligations to children's rights when they define the rules of the game for virtual worlds.

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[36] Sen, Amartya (1993): Capability and Well-Being. In: Nussbaum, M. / Sen. A. (eds.): The Quality of Life, p. 30-53. https://doi.org/10.1093/0198287976.003.0003 11.03.2024

[37] Nussbaum, Martha (2011): Creating Capabilities – The Human Development Approach, p. 20.

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