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**German Bundestag
Committee on Digital Affairs**

Statement

in regards to the public hearing in
the Committee for Digital Affairs
of the German Bundestag
on 14 December 2022 concerning

"Web 3.0 and Metaverse"

submitted by

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Dear Committee,

the parliamentary groups have sent a [joint list of questions](#) to the experts in advance. I would like to preface my answers (under B.) with the following general remarks (under A.).

A. General remarks

In view of the conceptual vagueness of the hearing's subject matter, I first define my understanding of the terms "Web 3.0/Web 3/Web3" on which I base my statement (under I.) and will then focus on the blockchain-based and ownership-infused variant. I will then evaluate this specific variant in terms of legal policy and fundamental rights (under II.) as well as data protection law (under III.). In summary, the core message of this statement is:

A blockchain-based and ownership-infused internet (Web3) encounters fundamental concerns with regards to legal policy, fundamental rights and data protection law. Its technological and legal realisation, including its commercial manifestations (Metaverse), should be opposed with determination.

I. The concepts behind "Web 3.0/Web 3/Web3"

Various contradictory concepts exist for the terms "Web 3.0/Web 3/Web3".

1. The semantic web

One meaning of "Web 3.0" is the "semantic web", a field of research that deals with how information in the World Wide Web can be contextualised and linked in a machine-readable way. It was introduced into the debate at the turn of the last millennium by Tim Berners-Lee, James Hendler and Ora Lassila, among others.² The use of the label "Web 3.0" for this concept is attributed to an article by John Markoff in the New York Times³ in 2006. In this context, Web 3.0 is understood as an advancement of Web 1.0 (the static web of the classic Hypertext Markup Language) and Web 2.0 (the web of platforms and social media). Web 3.0 (in this sense) is the academic attempt to find an answer to the problem of insufficient (primarily keyword-based) indexing of online content. Later, Tim

² Berners-Lee, Hendler, Lassila, The Semantic Web: A New Form of Web Content That is Meaningful to Computers Will Unleash a Revolution of New Possibilities, Scientific American 2001, available online at https://www.researchgate.net/publication/225070375_The_Semantic_Web_A_New_Form_of_Web_Content_That_is_Meaningful_to_Computers_Will_Unleash_a_Revolution_of_New_Possibilities.

³ Markoff, Entrepreneurs See a Web Guided by Common Sense, New York Times, 12.11.2006, available online at: <https://www.nytimes.com/2006/11/12/business/12web.html>.

Berners-Lee, among others, expanded his understanding of Web 3.0 to include aspects of collaboration and data management.⁴

2. The blockchain internet

To be distinguished from this is the idea of a "Web 3.0/Web 3/Web3" which developed in the community of encryption-based assets ("crypto assets") and decentralised, immutable databases ("blockchain"). The term "Web3", commonly used for this concept, is attributed to Gavin Wood, one of the developers of the Ethereum blockchain.⁵ Similarly to the semantic web (Web 3.0) the Web 3 sees itself as a continuation of Web 1.0 and 2.0. Unlike the research around the semantic web, however, it does not see itself as a response to technical limitations in "understanding" online content, but rather as a reaction to the concentration of economic, cultural and political power in the hands of few digital corporations. As a solution, Web3 proposes an internet based on blockchain databases in which actions and objects (pictures, comments, blog posts, likes, etc.) are recorded and distinctly assigned to individual users. Additionally, and building on this, there are plans to mirror actual goods of everyday life (e.g. food⁶ or housing⁷) to digital claims in the Web3.

The proposition of Web3 is that such a technical foundation would give back control over their digital lives to individual users and counteract both commercial and governmental concentration of power. The rejection of any accountability to hierarchies as part of radical-libertarian assumptions forms an essential ideological foundation of blockchain technology,⁸ on which Web3 is built. Web3 is therefore often explicitly associated with the goal of making trust in central instances (as a synonym for oppressive and censoring governmental power) unnecessary in general. This concept of Web3 is not only closely personally linked to advocates of crypto-assets. Both are closely commercially linked as well. For example, crypto-asset trading platforms promote the development of Web3 concepts with considerable funds.⁹

⁴ Singh, Web creator Tim Berners-Lee's startup Inrupt raises \$30 million, Techcrunch, 09.12.2021, available online at <https://techcrunch.com/2021/12/09/tim-berners-lee-inrupt-fundraise/>.

⁵ Edelmann, The Father of Web3 Wants You to Trust Less, Wired, 29.11.2021, available online at <https://www.wired.com/story/web3-gavin-wood-interview/>.

⁶ Koffler, How Will We Eat In The Metaverse? Bustle 28.02.2022, <https://www.bustle.com/life/can-you-eat-in-metaverse-food-industry-web3>.

⁷ Karayaneva, Click, Click, Close: How Web3 Is Re-Engineering Real Estate, Forbes 16.04.2022, <https://www.forbes.com/sites/nataliakarayaneva/2022/04/16/click-click-close-how-web3-is-re-engineering-real-estate/?sh=90dbfbd60611>.

⁸ Columbia, The Politics of Bitcoin - Software as Right-Wing Extremism, 2016, University of Minnesota Press; Gerard, Attack Of The 50 Foot Blockchain, available online at <https://davidgerard.co.uk/blockchain/book/>.

⁹ Binance Blog, available online at <https://www.binance.com/en/blog/ecosystem/web3-leaders-join-binance-to-spearhead-web3-industry-recovery-initiative-5285759314040744618>.

Blockchain-based Web3 is to be distinguished from the concept of the semantic Web 3.0 discussed earlier under (2.) due to the fact alone that Tim Berners-Lee himself publicly advocates to ignore the Blockchain-based Web3 because it is the wrong way to guarantee individual data sovereignty.¹⁰

3. Web3, Metaverse and virtual worlds

The term "Metaverse" has become closely associated with the term Web3 – although it is not necessarily congruent. Simplified, "Web3" can be understood as the technical and ideological basis of the blockchain internet, while the term "Metaverse" describes the commercial online worlds build upon it.

Conceptually, users in the Metaverse are supposed to exist as digital twins and interact with digital equivalents of the analogue world, whereby assets (usually in the form of crypto-assets), interactions (comments, likes, follows) and used objects (clothing, real estate, consumed media) are represented by entries in the blockchain and assigned to individuals. The worlds designed in this way are mostly conveyed via video game-like media designed in 3D graphics or by means of virtual or augmented reality (VR/AR glasses). Practically all large digital corporations are investing to varying degrees in such online worlds or are at least developing commercially exploitable aspects of them. Practical examples are the unprofitable Horizon Worlds¹¹ by the renamed former Facebook company Meta, Decentraland¹², which is considered a billion-dollar grave, or – as an aspect – the speculation with non-fungible tokens (digital images and objects represented by blockchain entries)¹³, which has collapsed recently. However, in a number of cases it is unclear whether or to what extent these commercial worlds advertised with references to Web3 actually have technical ties to blockchain or crypto-assets.

To some extent, the term "Metaverse" has also taken on a life of its own, becoming a synonym for immersive, virtual worlds. In the course of the marketing attention for Metaverse business models, long-established phenomena such as multiplayer online worlds, VR-mediated services (e.g. remote medicine, virtual concerts) or collaboration services (video meetings) have also received new attention. However, these are not necessarily technically related to blockchain or crypto-assets. Although they occasionally

¹⁰ Brown, CNBC 04.11.2022, available online at <https://www.cnbc.com/2022/11/04/web-inventor-tim-berners-lee-wants-us-to-ignore-web3.html>.

¹¹ Steve Rose, 'The metaverse will be our slow death! Is Facebook losing its \$100bn gamble on virtual reality?' Guardian 07.12.2022, available online at: <https://www.theguardian.com/technology/2022/dec/07/metaverse-slow-death-facebook-losing-100bn-gamble-virtual-reality-mark-zuckerberg>

¹² Lawler, Verge 13.10.2022, available online at <https://www.theverge.com/2022/10/13/23402418/decentraland-metaverse-empty-38-users-dappradar-wallet-data>.

¹³ Padtberg, Spiegel 04.11.2022, available online at <https://www.spiegel.de/international/zeitgeist/the-crypto-art-crash-what-remains-of-the-nft-hype-a-7213968b-7e13-408c-ac08-83a8c3d94cc4>.

adopt the associated terms of Web3/Metaverse, they are in fact neither technically nor functionally dependent on them.

II. Legal policy and fundamental rights classification of the Web3

The blockchain-based Web3 just outlined and its commercial implementation in the form of Metaverses must be fundamentally questioned. A central point of criticism is the introduction of the category "ownership" in relation to personal data (data in the Web3 would predominantly qualify as personal data in accordance with GDPR, which I will elaborate further under III.).

Classifying transactions and objects recorded via blockchain as legal property is the logical consequence of Web3 and is accordingly explicitly addressed in essential documents of the Web3 community.¹⁴ This ownership of digital, personal objects is presented as an advantage and conceptually framed as control, self-determination or sovereignty. It is true that the right to exclude others from using or otherwise interfering with one's own property is a central element of property rights (Exclusivity). However, another central element is the right to transfer property with the consequence that the exclusive power then belongs to the new owner. In the context of Web3, which aims to extensively map aspects of social and cultural participation in the digital realm, this would allow people to permanently relinquish essential aspects of their digital lives to third parties.

In the current legal policy debate, ownership of (personal) data is predominantly and decisively rejected. In Germany it is considered incompatible with the fundamental right to informational self-determination for formal reasons alone. The Federal Constitutional Court already stated in its 1983 census ruling that personal data represent a "reflection of social reality that cannot be exclusively assigned to the person concerned alone".¹⁵ This understanding of the protection of personal data already precludes, according to the traditional perspective of German constitutional law, the establishment of exclusive rights to such data.

Moreover, when examined from the perspective of the ground-breaking European fundamental right to protection of personal data (Art. 8 EU Charter of Fundamental Rights), data ownership proves a poisoned promise as well. Interpreted as a fundamental right to the protection of the digital body¹⁶ it becomes clear that ownership of parts of the digital twin created in the Web3 is incompatible with human dignity. Dystopias considered to be fictional until now would become real. It must be assumed that endowing parts of the digital

¹⁴ Ethereum Blog (version of 29.11.2022), available online at <https://ethereum.org/en/web3/>.

¹⁵ BVerfG, Judgment of 15 December 1983 - 1 BvR 209/83, para. 148.

¹⁶ Engeler, Der Konflikt zwischen Datenmarkt und Datenschutz - Eine ökonomische Kritik der Einwilligung, NJW 2022, 3398, 3401.

twin with ownership – as proposed by Web3 – will sooner or later expose the digital body to commercial exploitation. The ownership that was initially assigned to the individual could either be transferred directly to operators of the digital platform as remuneration or would be subject to exploitation by the digital landlords of the Web3 in another form. The former would amount to digital slavery¹⁷, the latter simply copies familiar dependencies and exploitation of the analogue world into the digital realm. Play-To-Earn business models like Axie Infinity are examples of such scenarios and have already demonstrated how Web3 fostered the creation of a digital precariat in the Philippines.¹⁸ Web3 inherently fails to address this. Not only does it not question the basic dynamics of a free market economy. Conceptually and ideologically it even explicitly opposes government-mediated attempts to redistribute wealth and resources more fairly. It is no solution whatsoever to the concentration of resources in the hands of few. The new internet will belong to the same investors as the old one, warned former Twitter CEO Jack Dorsey.¹⁹ The Web3 does not change the unequal distribution of power and wealth in the (digital) world, but merely provides another resource to the old and new owners of the Web3 to exploit: personal data.

In terms of legal history, the future of Web3 shares obvious similarities to the (violent) transformation of agricultural common property into private property during the transition from feudal society to the modern age. Just as it greatly improved personal freedom when individual labour was cut from feudal dependencies and put into individual control it equally seems to increase sovereignty from digital corporations when individual digital activity is endowed with individual ownership rights. However, this comparison should not be seen as encouragement, but as a dramatic warning. Historically, the liberation of workers from feudal dependency led to significant segments of the population being forced to offer their labour on the market under precarious conditions as the means of production remained privately owned. This process of separating individual power from control over the environment depended upon is addressed as “primitive accumulation” by the critique of political economy.²⁰ It is precisely this development that threatens to repeat itself in the digital realm with Web3. To put it bluntly (and slightly modified for our context), the words of *Rousseau*²¹ can be used as a warning:

¹⁷ See Caspar, *Datensklaven*, Ullstein-Verlag, expected 01.06.2023 (<https://www.ullstein.de/werke/wir-datensklaven/hardcover/9783430210812>).

¹⁸ Lobe, *Mit der rosa Datenbrillen am Pool*, taz 19.08.2021, available online at <https://taz.de/Digitale-Klassengesellschaft!/5790029/>.

¹⁹ <https://twitter.com/jack/status/1473139010197508098?s=20>.

²⁰ Marx, *Capital: A Critique of Political Economy*, Volume One, Part VIII.

²¹ Rousseau, "Discourse on the Origin of Inequality, part two", *The Basic Political Writings*, Hackett, p. 64.

" The first man who, having recorded digital actions on blockchain, said 'This is mine', and found people naïve enough to believe him, that man was the true founder of Web3. From how many horrors and misfortunes might not any one have saved mankind, by breaking up the chain of blocks, and crying to his fellows: Beware of listening to this impostor; you are undone if you once forget that the digital spaces belong to us all, and the web itself to nobody."

At present, the overwhelming view in German civil law literature does not assign a legal quality to records on blockchains.²² In order to implement the visions of Web3, adjustments to the current law would therefore be necessary. I expect that corresponding demands for recognition of blockchain entries by property law and safeguarding this Web3 ownership by governmental authority are only a matter of time, as this is the only way investors will be able to realize the expected gains from their billions spent on digital land and other assets in the long term. Such demands must be clearly and decisively rejected today and in the future.

The Web3 correctly identifies power asymmetries and unequal distribution of resources in the (digital) world as problematic. However, the introduction of blockchain-enable ownership fails not only at delivering a solution but brings the inequality of the analogue world (manifested in ownership rights) into the digital world.²³ Ownership of data is not a solution to this inequality but would be the biggest mistake a society could make on its way into the digital age.

III. Data protection law aspects

In addition to these fundamental points of criticism, there are also specific data protection concerns, all of which follow from the very nature of blockchain technology.

In principle, whenever individual transactions or objects are recorded and logged in the Web3 via blockchain, this qualifies as processing of personal data within the meaning of Art. 4 (1) GDPR. This assessment follows directly from the purpose of this recordings which is to attribute ownership to individuals. The GDPR therefore applies and the fundamental right to protection of personal data under Article 8 CFR is affected. Following the basic architecture of the blockchain, these entries are – as a matter of principle – usually public. Despite the use of pseudonyms in the entries themselves, the entries are considered

²² Richter, NJW 2022, 3469, 3471ff. (who, unfortunately, uncritically repeats misleading media portrayals of NFT speculative gains in the introduction to his otherwise astute remarks).

²³ Parallels to "cyberpunk" are unavoidable, see for example Engeler, Cyberpunk, Dateneigentum und digitale Leibeigenschaft, DeathMetalMods 17.04.2017, available online at: <https://www.deathmetalmods.de/cyberpunk-dateneigentum-und-digitale-leibeigenschaft/>.

personal data.²⁴ Moreover, the more transactions are assigned to an individual pseudonym, the easier it is to resolve the pseudonyms. Off-chain storage of personal data and mere storage of links in the blockchain is not a solution, as this would decisively weaken the necessary connection between ownership rights logged via blockchain and the individual persons these rights are assigned to. Especially in the context of Web3 it seems inevitable to have at least some link between blockchain-logged objects and natural persons as this would be a requirement for any court system to be able to rule on eventual ownership disputes between individuals.

The application of the GDPR raises the question of controllership for the decentralised architecture of blockchains. In the literature,²⁵ there are convincing arguments that all parties who maintain a copy of the blockchain and are involved in its consensual updating would be classified as joint controllers within the meaning of Art. 26 GDPR. In practical terms, this would mean that all parties would be subject to obligations of disclosure, deletion, and documentation, which would lead to unmanageable liability risks for non-commercial users.

Finally, the blockchain technology – by design – does not allow for individual entries to be deleted. While this is considered a feature by blockchain advocates (it is intended to increase trust in the accuracy of the entries), undeletable blockchain entries obviously collide with the rights of objection and deletion granted by the GDPR.²⁶ This fundamentally calls into question the feasibility of Web 3. This conflict is not limited to the GDPR though. It is also unclear how the moderation obligations of the Digital Services Act are to be implemented in an environment which is built upon immutability and indelibility.

²⁴ Ebbers, Karaboga, Bremert et al, Forum Privatheit, White Paper Datenschutz in der Blockchain 2021, p. 14, available online at <https://www.forum-privatheit.de/aktuelles/blockchain-und-datenschutz-whitepaper/>.

²⁵ Quiel, Blockchain-Technologie im Fokus von Art. 8 GRD und DS-GVO, DuD 2018, 566.

²⁶ Peuker, Sydow/Marsch, DS-GVO / BDSG 3rd edition 2022, Rec. 37.

B. On the joint questionnaire of the political groups

1) What are the concepts and considerations underpinning, respectively, “Web 3.0” (in the sense of the semantic web), “Web3” and “the Metaverse”, what are the differences between them and what are the anticipated opportunities and risks associated, and what do they each mean for the structure and architecture of an open, free and also secure and user-centred network – in short, do they represent a version of the internet that is to be prevented?

I refer to my general remarks. A blockchain-based Web3 is to be opposed with determination.

2) What are the technical, security-related, infrastructure-critical, conceptual, social, financial policy, foreign policy and societal risks of Web3, what are the risks in terms of personal rights and civil liberties?

I refer to my general remarks. The introduction of “ownership” of personal data, which is inevitably linked to the introduction of a blockchain-based Web3, would have elementary detrimental effects on digital society.

3) Are the existing European regulatory approaches (such as DSA, DMA and GDPR) sufficient and which regulatory measures beyond these do you view as suitable or necessary in order to contain the risks of Web3 and what options do you see for otherwise mitigating the risks mentioned?

I refer to my general remarks. The Web3 is fundamentally incompatible with key achievements of European digital and data law.

4) How do you assess the opportunities and risks of cryptocurrencies – in general and in the context of Web 3.0?

The term “cryptocurrency” must be questioned. According to common criteria, crypto-assets are not “currencies”. The Web3 in the sense of a blockchain-based and ownership-infused concept also exists as a reaction to the problem that there are no practical uses for crypto-assets other than speculation and money laundering. Referring to my general remarks on Web3 no advantages of crypto-assets are currently apparent that justify their existence – within or outside Web3.

5) What specific application areas and added value, aside from virtual gaming, can metaverses offer (e.g., in medicine or engineering)?

I refer to my general remarks. The term “Metaverse” is a marketing term that is closely connected to the concept of a blockchain-based Web3, which is to be rejected.

Well-known and established use cases of virtual worlds are to be clearly separated from this. They can and should be discussed independently from the narratives of the "Metaverse".

6) Unlike Web 3.0, Web3 describes a new generation of the internet, based on blockchain and in which users are to have control of their data (the concept for Web3 includes, for example, decisions on DAOs, the establishment of a token-based economy, financial services using DeFi protocols). What is your assessment of the potential of Web3, especially in light of the fact that without a central intermediary, the user often forgoes convenience?

I refer to my general remarks. The basic assumption of the question is misguided. The promise of "more control" in the Web3 is poisoned. A blockchain-based Web3 should be categorically rejected.

7) Which political measures are advisable in order to ensure that metaverse spaces currently being created are based on European values—in particular data and consumer protection—and the principles of the digital EU single market—in particular fair competition and sustainable ("green IT") and manipulation-free (no "dark patterns") design?

The question is difficult to answer without a definition of "European values". Assuming the term references European fundamental rights and their implementation in European law, no new challenges arise from the term "Metaverse". In the context of the Digital Services Act, for example, it does not play a significant legal role whether a gaming-stream is watched via Twitch on a monitor ("Web 2.0") or a concert is consumed in a 3D world via VR glasses ("virtual world"). In both cases, offensive real-time comments must be moderated, and data protection law must be observed in the case of processing personal data. In general, it is important to warn of the misbelief that new commercial manifestations of well-known technologies always pose new social and legal challenges.

8) What specific starting points are there, with regard to the development of the internet so far (Web1, Web2), for transferring development towards a user-oriented, decentralised and secure internet into global governance mechanisms?

Non-profit, federated models, e.g. ActivityPub and the social network Mastodon based upon it, deserve further appreciation and promotion.

9) How do you assess digital civil society's stance on the topic of Web 3.0 and blockchain/DLT, which, among others, indicate a significant potential for abuse along with consequences drawing criticism from a social and socio-political

perspective (see for example Jürgen Geuter/"tante", Molly White with the blog "Web3 is going just great", letter from crypto experts to the US Congress)? Is your impression that policymakers are giving appropriate consideration to the views expressed?

Where civil society positions itself critically towards blockchain and Web3, these viewpoints are to be supported. My perception is that there is an immense fear of missing out on trends among German political actors and within the private sector. For reasons that are difficult to understand rationally, the assumptions persist that blockchain is such a trend not to be missed. Due to this misguided assumption there seems to be a need to find practical applications for blockchain and, if necessary, artificially create them. This irrational element makes debate almost impossible as this assessment of blockchain is not evidence-based but self-referential.

10) Are you aware of applications for blockchain technology beyond cryptocurrencies that cannot be performed more efficiently and with less damage to the environment, etc. with existing technologies. How can the balance of opportunities and risks be assessed from a sociopolitical perspective?

No. Under these circumstances, a rational consideration can only lead to refrain from the use of blockchain.

11) Does research offer a unanimous definition of the metaverse and if not, which definition would you recommend to policymakers when dealing with this concept and what role in this do the existing concepts of Augmented Reality, Assisted Reality, Virtual Reality and Extended Reality play?

I refer to my general remarks. The Metaverse is essentially a marketing term for virtual worlds planned on the basis of the blockchain-based Web3. The term should only be used with restraint in political and legal debate. This would enable an effective engagement with actual already existing applications from the field of virtual reality (augmented reality, assisted reality, virtual reality and extended reality).

12) What is your assessment of the research situation in Germany on the topic of metaverses compared with the rest of the world in terms of professorships, publications, state research funding and third-party financing for metaverses and Web 3.0?

I will refrain from answering this question.

13) In your assessment, how have companies in Germany prepared for the metaverse so far, in particular when compared with the USA and China, and do

you see the risk that due to a lack of prioritization of the topic, we in Germany could miss out in technological and economic terms on keeping up with the global frontrunners?

I will refrain from answering this question.

14) What risks may arise from state attempts to regulate the new technology at too early a stage, what basis for standardisation can already be used for dealing with metaverses, what is your assessment of how things stand in Germany and Europe regarding framework conditions that would enable metaverses and in terms of funding programmes, and what measures would you recommend to policymakers as a priority in order to utilize as best as possible the economic and societal opportunities of the metaverse?

The existing legal framework is well prepared for the challenges of virtual services. The term "Metaverse" is misleading in this context. Insofar as this refers to business models based on the blockchain-based Web3, the legal question does not arise, but rather the political challenge of counteracting its technical establishment. For the rest, I refer to my general remarks.

15) What business form are DAOs and do they need to be regulated in order to protect end customers from fraud and misuse?

Decentralised autonomous organisations (DAOs), defined as the sum of pre-conditioned transactions running on blockchains ("smart contracts"), can take varying legal forms. The legal relevance of the results of such automated processes is also a matter of ongoing debate, which makes it almost impossible to answer the question in general. The central risk of DAOs is that they are primarily used to conceal asset relationships and responsible parties. Since they currently appear almost without exception in the context of unregulated speculation with crypto-assets, their regulation would primarily be a treatment of symptoms. It seems more advisable to address the cause.

16) How can consumer protection rights and principles be implemented in decentralised blockchain systems such as those of Web3?

By not using blockchain systems.

17) "Web 3.0", which to date remains only a vision, is celebrated for its decentralised structure, for limiting the power of larger platforms and for locating data sovereignty with the users. What entity, in your opinion, would at all be in a position to replace the existing infrastructure systems of platforms and access

nodes with blockchain technology? And where would the energy to operate the blockchain technology come from?

I refer to my general remarks.

18) In your view, are the visions of a “Metaverse” and/or a “Web 3.0” suitable for substantiating and strengthening the digital sovereignty of Germany and Europe vis-à-vis China or the USA, for example? What exactly would have to happen in terms of hard and software used, and – where applicable – at regulatory level?

The term "digital sovereignty" is highly ambiguous and open to interpretation. Understood as individual control over one's own digital life, Web3 and its commercial manifestation ("metaverse") are a considerable risk, regardless of where the people concerned are located. Understood as economic dominance, no commercial success of such business models is evident so far, for which competition seems worthwhile. In terms of political hegemony, Web3 is categorically unsuitable due to its objective (overcoming governmental power).