



Rountable 01

Economic Opportunities in the Metaverse

November 4th, 2022

Meta • Artificial Intelligence Institute of Seoul National University • XR Hub Korea • Metaverse • omniverse • s-curves • hype cycle • economics of innovation • economic opportunity • accessibility • trust • interoperability • mobility • human resources • workplace discrimination • social norms • decentralized system of government • regulation • governance

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Meta and the Artificial Intelligence Institute of Seoul National University (AIIS), as an initiative of XR Hub Korea, conducted the first in a series of four roundtable discussions, focused on building the Metaverse responsibly. The first roundtable discussion was on “**Economic Opportunities in the Metaverse**”, with the next three scheduled roundtables slated to focus on Equity & Inclusion, Privacy & Data, and Safety & Well-being.

Arturo Gonzales (former Director, Meta Policy Campaigns and Programs) presented the report, “**The Potential Global Economic Impact of the Metaverse**”. Soohyung Lee (Professor, Graduate School of Int'l Studies, Seoul National University, Korea) presented on “**The Metaverse's Implications for Jobs and Employment**”.

The discussion* was moderated by Yong Lim (Director, Seoul National University AI Policy Initiative; Associate Professor, School of Law, SNU). 15 experts from 9 countries across the Asia Pacific region shared their views on the following questions:

1. What is the Metaverse?
2. What is needed to maximize the benefits and opportunities in the Metaverse?
3. What are the challenges (e.g., technological, regulatory, trust or cultural) that could hinder the economic growth and development of Metaverse-related industries?
4. The successful future of the Metaverse calls for coordinated action by a wide range of ecosystem actors. **What should governments and other key players do, to bring together telecom operators and the technology sector, businesses and start-ups, researchers and academics, Metaverse users, various government agencies, and the general public?**
5. The economic imperative of the Metaverse goes beyond the Internet economy, with sectors ranging from manufacturing to wholesale trade and agriculture standing to benefit. **What strategic sectors must be targeted, to cultivate immediate and emerging opportunities?**



1 What is the Metaverse?

The Metaverse is the next generation of the Internet - a more immersive, 3D experience. Its defining characteristic will be a feeling of presence, as though you (the user) were right there with another person or in another place. The Metaverse represents the next evolution of technologically enabled social connections, and is the natural successor to the mobile-Internet. It consists of a series of interconnected digital spaces, characterized by “co-presence”, “continuity”, and “co-creation”. It will allow us to move seamlessly between interconnected digital spaces; and will enable us to do things we are not able to do in the physical world, jointly with others from anywhere on the globe.

How will the Metaverse impact the workplace?

The Metaverse will complement the physical workplace, and will be a powerful facilitator for new work arrangements. Freed from fixed physical representations, the Metaverse has the potential to reduce discrimination in the workplace and increase opportunities for the disabled. The Metaverse can also expand the available talent pool for certain jobs, allowing for increased cross-border work opportunities. To fulfill its potential, the Metaverse will have to overcome the equivalent of “Zoom fatigue,” and the perception that moving interactions from the physical into the virtual space weakens social ties. Once these challenges are overcome, the Metaverse has the potential to profoundly impact global real estate markets, and also might potentially disrupt existing tax and labor regimes.

2 Maximizing the benefits and opportunities of the Metaverse:

The Metaverse would ideally be linked to job creation and find uses in obviously socially beneficial sectors such as tourism, health care, and government services. It is also important for a vibrant community of supply chain actors and developers to emerge, and for the public to become more familiar and comfortable with the new technologies that will enable the Metaverse. Government investments may also be necessary to usher in such changes. Participants also mentioned the urgent need for high-quality content to be developed that will draw more users into the Metaverse.

3 Challenges (technological, regulatory, trust, cultural or other) that could potentially hinder the emergence and growth of Metaverse-related industries:

Participants highlighted a number of challenges, including that many parts of the world economy remain closed, restricting capital and information that might otherwise feed into the Metaverse. Some new technologies (for example block-chain technology) might solve some, but perhaps not all, of these largely geopolitical challenges. The current high price of the hardware devices needed to access the Metaverse was discussed as a second challenge, resulting in a situation where access to the Metaverse is still considered to be a luxury or a novelty. Participants also commented on the limited content currently existing in the Metaverse. Numerous participants expressed concern about the Metaverse’s “interoperability,” or its ability to allow seamless interactions between users of different hardware or users accessing the Metaverse through different access portals. Some also mentioned the ongoing

challenge of monetizing content in the Metaverse, which has clear implications for the long-term enthusiasm of the private sector to invest in this new technology. Others mentioned ongoing concerns about allowing children to join the Metaverse due to potential safety and well-being issues. Finally, some participants worried that the development of the Metaverse, which would also be so crucially dependent on access to 5G mobile networks and new hardware systems, might only widen the economic gap between those who have access to such new technologies and those who do not.

Participants proposed a range of potential solutions to these problems, including the use of AI to help govern the behavior of users in the Metaverse. Others spoke of a framework where platforms could serve as the designated regulators of content within their curated spaces, in a form of delegated regulatory authority.

4 Bringing together key players (various government agencies, telecom operators, the technology sector, businesses, start-ups, researchers, academics, users, and the general public):

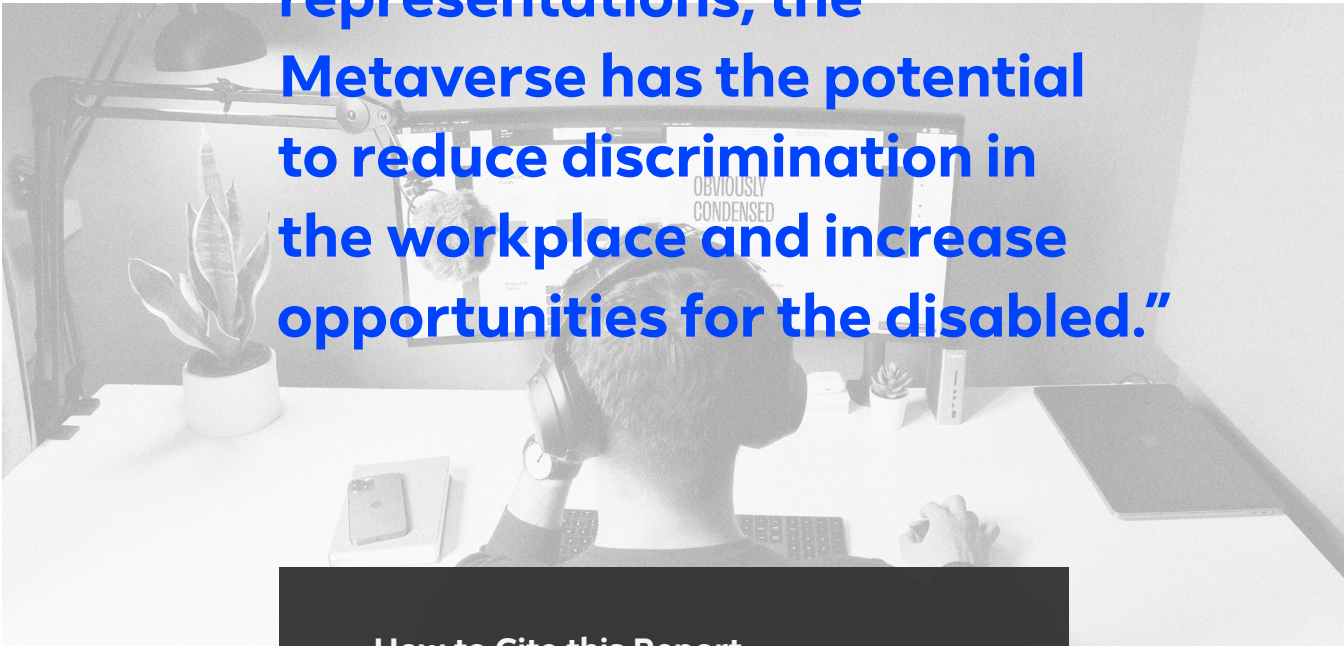
On the topic of coordinating action between the many stakeholders that would be involved in the creation of a future Metaverse, participants mentioned the importance of coordinating between relevant government ministries, and in particular choosing a lead ministry tasked with coordinating activities across the government and championing relevant policy proposals. Such a centralized focal point could also facilitate the exchange of information between the telecommunication sector and various research institutes. Contributors also noted the need to build so-called "digital trust," further expand the reach of the Internet, and encourage interoperability within the Metaverse. Others remarked that the government could incentivize the growth of a vibrant start-up ecosystem, while also acknowledging that governments were only likely to make such investments if they perceive tangible opportunities arising from that sector. Governments can also work to raise general digital literacy among the population, support research and academia, and encourage the interoperability of telecommunications infrastructure.

5 Strategic sectors that should be targeted in order to cultivate short-term and emerging opportunities:

Participants noted several strategic initiatives that would (in their opinion) make it more likely for the potential of the Metaverse to be realized. The first was the content creator economy, which (as noted above) would serve as the draw for more users to engage in the Metaverse. To achieve

this, participants noted the need to build a strong supply of talent, notably arts students capable of working with digital technologies such as 3D modeling, etc. Panelists also noted the potential of the tourism sector, agriculture, and the garment sector to drive forward the development of the Metaverse, given their high potential for making use of such technologies. Similarly, sectors that rely on the recruitment, training, customer interactions, and employee engagement could also make use of the Metaverse's potential.

All of these ideas, however, must be more than mere novelties: they must actually generate economic benefits for those who adopt them. Indeed, commentators predicted that the adoption trajectory for the Metaverse adoption will be driven by consumers, primarily in the retail, education, health-tech, and office productivity sectors. Other productive uses will follow from those beachheads.



“Freed from fixed physical representations, the Metaverse has the potential to reduce discrimination in the workplace and increase opportunities for the disabled.”

How to Cite this Report

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* This report was prepared by SNU AI Policy Initiative (principal: Stephan SONNENBERG)

1 What is the Metaverse?

On-line searches for the term “Metaverse” have skyrocketed since 2021, and yet there still exists no universally accepted definition of what the Metaverse actually is. To put it in simple terms: today we engage with and ‘surf’ on the Internet; in the future we will be immersed within it. The Metaverse is the “next generation of the Internet — a more immersive, 3D experience. Its defining quality will be a feeling of presence, [as though you, the user] are right there with another person or in another place” entirely.

Metaverse is the “next generation of the Internet — a more immersive, 3D experience. Its defining quality will be a feeling of presence, [as though you, the user] are right there with another person or in another place” entirely.

–Nick Klegg–



Arturo Gonzalez
Director, Advocacy & Research, Meta

Our engagement with digital innovation is constantly evolving. We currently find ourselves in the early stages of another period of technological innovation; a transition from the Internet of today towards the Metaverse. Some elements of the Metaverse already exist, including many of the technological hardware and infrastructure we will require to access it. These include the Internet, smartphones, AR/VR technologies, digital financial systems, and digital assets (Arturo Gonzalez).

In its most idealized form, the Metaverse will provide a meaningful experience to its users; one where collaboration between governments, industry, and the general public will be effective and value-additive. For the Metaverse to reach this potential different access points into the Metaverse must be inter-operable and beholden to a common set of technical standards. Such a new and decentralized global community will allow for a new set of values and governance norms to emerge (Richard Mahuze), which may also open the doors to a renewed economic expansion and job creation (David Kuo Chuen Lee). That said, those driving the evolution of the Metaverse have yet to design a bridge linking it to the physical world (Rubio Chan).



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2 Economic Opportunities

The Metaverse matters for a number of reasons, not the least of which being its potential to open hitherto unimaginable economic opportunities.

Economics of Innovation

Presenter: Arturo Gonzalez, “The Potential Global Economic Impact of the Metaverse”

How shall we measure the economic ‘value’ of the Metaverse? By referring to the ‘economics of innovation.’

Economic growth models come in handy when demonstrating the correlation between technological innovation and economic benefits. New technologies tend to be born, flourish, and subsequently fade away



Arturo Gonzalez
Director, Advocacy & Research, Meta

again in an endlessly repeating innovation cycle, and the Metaverse is no exception. The so-called “s-curve” is used to depict the rise and decline of innovative technologies. The early “hype cycle” similarly explains how innovations go through multiple phases in their adoption, and how the expectations and incentives of consumers, producers and other market participants change over the lifecycle of a new technology. The Metaverse’s own lifecycle is likely to be non-linear as well. The Metaverse can currently be said to be in the midst of its first phase; the so-called ‘innovation trigger’. In other words, the Metaverse is poised for takeover, and therefore represents a promising vehicle for substantial economic growth and innovation in the years ahead.

According to an internal study commissioned by Meta, assuming that the mass adoption of the Metaverse began in 2022, the Metaverse would grow by 2031 to contribute a staggering 2.8% of global GDP, or a staggering 3 Trillion USD globally. In the Asia-Pacific region, Metaverse-related economic activities would constitute approximately 2.3% of the regional GDP, equivalent to 1.024 trillion USD.

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Those able to find niches in the Metaverse are those most well-placed to realize those tremendous opportunities. There is therefore an urgent need to expand and democratize the opportunities for all to take advantage of the Metaverse. This means we need to continue expanding the capacity of the Internet and open up additional spaces for e-commerce.

Many of the physical devices necessary to engage in the Metaverse remain expensive, and the technical challenges of maneuvering the Metaverse also remain high. So far, these two factors limit access into the Metaverse to those parts of the population with both the financial means and the technological savvy to access it. Basic economic theory suggests, however, that with increasing investments and user numbers these barriers will begin to come down (Arturo Gonzalez, Rubio Chan).

The Metaverse can be thought of in terms of three interconnected layers: the user’s virtual experience, applications, and content. In recent years, the Metaverse has mostly been thought of as the emerging frontier for new investment opportunities, and yet only a very limited number of people have experienced the Metaverse as it is envisioned.

Those economic activities that currently take place within the Metaverse are usually still linked to product marketing and customer engagement. Some major brands, such as Gucci or Adidas, are trying to innovate in this emerging economic space. Other users are exploring the potential of the Metaverse as a virtual workplace, or a place to simulate in the virtual world what travel in the physical world might be like. This is already leading to some modest job creation, even at this very early phase of the technology’s lifecycle.



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At present, the physical devices required to enter into the Metaverse are not yet convenient enough to supplant the convenience of existing smartphone technology. Engineers must continue to develop those devices. Furthermore, these various devices must be joined together as seamlessly as our smart devices are connected today. In order for the Metaverse to reach its full economic potential, however, several technological challenges must still be overcome, including the facilitation of seamless cross-platform payments, universal ID verification processes, security, and other privacy-related issues. Many start-ups are currently trying to tackle these problems. Currently, only NFTs and photos are available for trade over the Metaverse (Jamie Cheung).

The first Meta XR hub in Asia is located in Taiwan. Many in Taiwan are eagerly adopting the Metaverse, backed by government incentives and a strong interest by the business community in the new opportunities afforded by the platform. This is creating a series of new industries, new supply chains, and R&D opportunities. It is also driven by a population that is increasingly familiar with VR and AR technologies. This growth of the Taiwanese Metaverse is poised to create opportunities for all stakeholders (Sandy C.C. Lin).

Likewise, the Metaverse holds enormous potential in Vietnam as well. The State of Vietnam is currently driving forward the technological development and digital transformation of large sectors of its economy (Dau Anh Tuan).

By contrast, the least developed layer of the Metaverse is content. Creators and designers are only in the initial stages of developing meaningful content. Expected innovations in greater telemetry will greatly facilitate their ability to succeed (Rubio Chan).

Immediate Opportunities

Some argue that the economic imperative of the Metaverse goes beyond the Internet economy itself, touching also on more traditionally 'physical world' sectors such as manufacturing, wholesale trade, and agriculture (to name just three). This raises the question: what strategic sectors should be targeted to capture the immediate and longer-term opportunities of the Metaverse (Sachindra Smararatne).

Talent Supply

Presenter: Soohyung Lee, "Metaverse: Economic Implications for Jobs and Employment"

The Metaverse is growing rapidly. From the user's point of view, it provides two types of virtual spaces – one for non-productive activities (e.g., games and leisure activities) and another for productive activities (e.g., work and business). The COVID-19 public health emergency has accelerated the transition of working arrangements into on-line environments, entrenching the work-from-home movement and the freedom of physical representation as key features of many of today's work environments. The pandemic has also surfaced a number of problems with those trends, such as declining productivity levels,



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and the increasing reliance on non-verbal communications in remote, on-line settings.

The Metaverse is poised to accelerate and deepen the transition to new, more ideal remote working arrangements. Its widespread adoption could drastically reduce the need for physical working space, which would have a significant impact on global real estate markets. It would also expand the pool of eligible workers across national borders, thereby increasing labor mobility and potentially also reducing the likelihood of entrenched discrimination.

That said, these changing work arrangements necessitate a clear definition of roles and workplace ethics that would hold across these diversified work environments (physical and virtual). In addition, we might worry about the health impacts of spending even more time in primarily sedentary on-line environments, as well as the likelihood that inequality might accentuate as a result of such a technology that initially is accessible primarily to the rich (and white collar) workers. Thinking about these issues now is important while the designers are still laying the foundations for a future Metaverse.

There are a large number of arts graduates in the university system, who can be re-skilled and up-skilled as content creators. Those in the graphic-arts can be up-skilled to be 3D modelers and creators of the universes that will populate the Metaverse. These same skills can also be utilized in the manufacturing sector, where entire processes can be rendered graphically in the Metaverse. In the case of Sri Lanka for example, the travel industry, tea plantations and indoor horticulture (agriculture), and the garment sector could stand to benefit from such technological innovation. (Sachindra Smararatne).

The COVID-19 pandemic highlighted the need for corporations to focus more on the challenge of employee retention, particularly with regard to office-based staff. The Metaverse could be one important tool allowing companies to boost their engagement with their existing employees, thereby retaining top talent (John O'Mahony).

No More Top-down Approach

In the physical world, working together at the general level is difficult, hence everything tends to be separated into vertically-organized units (e.g., call centers, tech centers). But with the Metaverse, it is possible to build one's own support structure. Here, more organic approaches can be pursued, allowing designers to avoid top-down structures and responses based on pre-defined rules. Meta and other stakeholders could invest in facilitating such integrated support structures. In Pakistan, for example, we did that with the startup community. (Suleman Shahid).

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Rubio Chan

Co-Founder, Blockbusters Lab Ltd



Soohyung Lee

Associate Professor, Graduate School of International Studies, Seoul National University

Academia

Researchers and academia can also play a huge role in developing the Metaverse and use it as a tool to solve complex problems that had not been solved any other way (Suleman Shahid).

3 Social, governmental, policy and regulatory issues in the Metaverse: Challenges

The Metaverse and its evolution also raises complex social, governance, political and regulatory challenges. To what extent will it improve the standards and systems we currently have in the physical world? Will the Metaverse also give rise to unexpected (or expected) negative impacts? Will boundaries need to be set in the Metaverse, and if so, to what extent? A few such themes were discussed in the policy dialogue, which are summarized below.

Discrimination

As was discussed above, many believe that the Metaverse can decrease the potential for discrimination – especially based on age, gender or beauty standards – that many people face in their everyday lives. The Metaverse can also expand the size and diversity of the labor force thanks to easing of physical requirements. This is especially impactful for those who cannot typically participate in certain markets, be it by virtue of their nationality or the fact that they may be differently abled. This promise also brings with it novel issues pertaining to the establishment of appropriate social norms in virtual spaces, which may be different from those that govern in our current conventional physical environment (Soohyung Lee).

Many proponents of the Metaverse anticipate huge economic upsides to the Metaverse, usually denominated in the language of expected profits. At what point, however, should we also demand of the Metaverse and associated economies a “social upside” to this new technology. Can the Metaverse of the future not just match, but ideally exceed the standards of social protection, human dignity, and empowerment that we find in our physical environment today? If not, the Metaverse might inadvertently usher in a roll-back of social protection, especially for the vulnerable (the young, minorities, etc.) in the name of economic profit. (Stephan Sonnenberg)

Another consideration pertains to the lack of infrastructure in many parts of the world, and therefore the unequal access to the Metaverse. Not all countries and not all communities within a country have the same privilege to participate in the Metaverse as do others. If indeed the Metaverse should be inclusive, the gap between the developed and

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the developing parts of our world must be minimized, otherwise it risks growing wider (Hammad Cheema).

Education

The Metaverse is most commonly associated with commercial or entertainment objectives, but it also has the potential to make a major impact in the educational systems of the world. At present, the Metaverse remains accessible to only a small segment of the global community. Once it reaches a critical mass in the broader population, however, it stands poised to usher in a new era of educational progress, especially for those segments of society that may have been excluded from high quality education in the past (Rubio Chan).

Taxation

The Metaverse opens new opportunities for remote working, including remote work arrangements spanning different jurisdictions. This poses the question of which government (or which governments) should be responsible for regulating and taxing such remote work arrangements. There are many different opinions on this issue. The ability of the Metaverse to reach its full potential may depend in part on the definition of common accepted procedures or structures that will avoid misunderstandings or negative governance externalities associated with its use in a professional setting (Soohyung Lee).

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Global Community – Cultures, Religions, Beliefs

Relatively stable societies, communities and institutions often develop their own reasonably stable set of social or cultural norms, often with fixed roles. When suddenly people from very different places and institutional contexts come together and work in a collective – as might be the case in a Metaverse-based organizational context – new organizational, cultural and societal dynamics may emerge. This transition will have to be managed, and disputes between those various institutional or cultural proclivities will need to be managed. Institutions embracing the Metaverse as part of their work environment will need to invest effort and resources to ensure that the Metaverse is a safe and appropriate environment for its workers (Hammad Cheema).

Health and Welfare of Users

In some instances, engaging with colleagues in the Metaverse may have significant upsides. But for others it may also have significant negative side effects, including mental health risks and greater potential for harassment and misinformation. Those who incorporate the Metaverse



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into their professional work environment have a responsibility to guard against such potential harms. (Stephan Sonnenberg, Soohyung Lee).

4 Regulatory Concept for the Metaverse - Redistribution of Opportunities in New Ways?



Arturo Gonzalez
Director, Advocacy & Research, Meta

One way of thinking about the challenge of regulating the Metaverse is to take inspiration from the so-called "Tragedy of the Commons." According to this model, individual interests tend to dominate community-interests, resulting in a situation where communally owned resources tend to be depleted and community interests suffer. These are situations where regulations are essential; this is also the reasons why markets benefit from certain types of regulations. In such situations, regulators should:

1. Identify when there is a market failure;
2. Find ways to create new markets from efforts to correct for those market failures;
3. If there are no market failures, regulators can still identify ways to use regulations to enhance markets. (Arturo Gonzalez):

Technology as a Regulation

We often talk about how technology drives innovation and disrupts industries. But technology will also play a very important role in the governance and regulation of the Metaverse itself. Leading platforms and the technology they deploy may end up playing the role of quasi-regulators for certain emerging industries. We need to think about the role that technology, and the firms that deploy such technologies, can play in the governance structures that will apply to the Metaverse.

There is much discussion about "co-regulation" and how stakeholders need to collaborate when it comes to designing new regulations for emerging technologies. But we should also be cognizant of the many challenges that will follow. For example, in some cases regulators have delegated regulatory tasks to private companies or actors, sometimes entrusting them with the responsibility of coming up with solutions and remedies for perceived problems without providing much of any guidance. This can create a lot of headaches for the companies (platforms) that are being called to participate in regulation. If we are serious about making the Metaverse inter-operable, we will need to be cognizant of the challenges posed by the multi-dimensional and multi-jurisdictional setting of the Metaverse (Yong Lim).



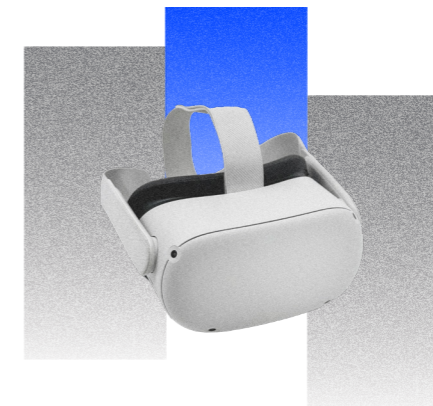
David Kuo Chuen Lee
Professor,
Singapore University of
Social Science (SUSS)

Mass Adoption

The promotion and widespread adoption of the Metaverse depends crucially on appropriate regulation and government support. If we consider digital infrastructure to be a public good, supported by government budgets, then mass adoption will take place. Without such support, the adoption process will be very slow. Governments will need to finance the building of public infrastructure to host the Web 3.0. The public policy perspective is therefore very important (David Kuo Chuen Lee).

Human vs Technology - Ethics and Accountability

Something to further consider is the question of "who is governed, and who is governing?" Is it the human who will govern AI, or is it AI that will govern the behavior of humans? The incorporation of AI and blockchain technologies into the Metaverse can be one step in the direction of having technology govern humans as they interact in the Metaverse (David Kuo Chuen Lee).



CLOSING REMARKS

This discussion was an opportunity to discuss important issues related to the economic opportunities afforded by the Metaverse. These discussions are an important aspect of efforts to build a responsible and ethical Metaverse. There remain many unanswered questions about the Metaverse, its side effects, and various social, economic, cultural and ethical risks that might be involved in a transition towards the Metaverse and Metaverse-based technologies

in coming years. Three future roundtables will discuss additional issues related to the Metaverse, specifically (2) equity and inclusion, (3) privacy and data, and finally (4) safety and well-being. Our aim is to facilitate these discussions so that they may inform a range of different actors with an interest in the future of the Metaverse as well as the various social, professional and cultural transactions that may soon take place within the Metaverse.