Creating a metaverse for all through international standards

2nd ITU forum on metaverse
Outcome Document

Organized by: ITU

Hosted by: CAICT 中国信通院 SAIA 上海市人工智能行业协会

Contents

Acknowledgements

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The Outcome Document was developed by Victoria Papp, Yining Zhao, Nicholas Flack, Chiara Co and Cristina Bueti (ITU).

The technical coordination of the report was conducted by Cristina Bueti (ITU).

Additional information and material related to this report are available at the Creating a metaverse for all through international standards webpage and the Focus Group on Metaverse Webpage.

If you would like to provide any additional information, please contact Cristina Bueti (ITU) at tsbfgmv@itu.int.

Executive Summary

The International Telecommunication Union (ITU) organized the 2nd ITU Forum on "Creating a metaverse for all through international standards". It took place on 7 July 2023, in Shanghai, China, in conjunction with the World Artificial Intelligence Conference (WAIC). The Forum was held as a physical event with remote participation and brought together over 13,000 participants. It was kindly hosted by China Academy of Information and Communications Technology (CAICT) and Shanghai Artificial Intelligence Industry Association (SAIA). The Forum was preceded by the 2nd meeting of the ITU-T Focus Group on metaverse, which took place from 4-6 July 2023, at the same venue.

It fostered dialogue and cooperation among stakeholders to discuss the role of international standards in shaping the metaverse. Key topics of discussion included the role of standards in building an open and interoperable metaverse, the industrial metaverse, and the role of enabling technologies in unleashing a new era of immersive and interactive experiences. It also encouraged the exchange of ideas, best practices, and innovative approaches to unlocking the future of the metaverse in a way that benefited all individuals and societies.

The Forum served as a global platform for stakeholders, including policymakers, industry leaders, experts, and academics, to discuss and collaborate on the development of international standards that could facilitate the creation of an inclusive, open, safe, and interoperable metaverse.

Opening ceremony

Zhiqin Wang, serving as the moderator of the opening remarks welcomed both in-person and online attendees. Zhiqin Wang emphasized the significance of striving for an open and inclusive metaverse that benefits all individuals. She also highlighted the importance of standards in shaping the future of the metaverse.

In the speech delivered by Seizo Onoe, he welcomed the participants and expressed his gratitude to the hosts, China Academy of Information and Communications Technology and the Shanghai Artificial Intelligence Industry Association SAIA, for their support. Seizo Onoe stated that ITU is proud to gather diverse stakeholders from around the world to discuss international technical standards for emerging fields like the metaverse. He underscored the role of international standards in shaping this future. Seizo Onoe reiterated the goal of creating a metaverse that is truly inclusive and beneficial for everyone and acknowledged the positive start they have made. He concluded the speech by thanking everyone and wishing them a successful event.

Shujian Fan started by praising the ITU for organizing the event and welcomed both in-person and online participants. He emphasized the importance of information technology and the metaverse, highlighting their role in driving innovation and industry development. Shujian Fan stressed the importance of standards in the metaverse and how they enable cooperation among enterprises, universities, and industries. He discussed the potential of the metaverse to support literature, tourism, education and the global industry. Shujian Fan concluded the opening remarks by expressing best wishes for a successful event and meeting.

Speakers

Zhiqin Wang,
Vice Dean, CAICT, China

Seizo Onoe,
Director, Telecommunication Standardization Bureau, ITU

Shujian Fan,
Deputy General Director, Science and Technology Department, Ministry of Industry and Information Technology, China

Keynote Speech

In her keynote speech Michelle Khoo discussed how embracing the metaverse could potentially unlock a trillion-dollar opportunity in Asia. She highlighted that over 60% of the world's youth aged between 15 and 24 reside in Asia, a region that is home to more than 1.3 billion mobile gamers, the largest player base globally. Michelle Khoo emphasized that Asia manufactures over three-quarters of mobile phones and semiconductors, and its favorable demographics, supply chain market share, and growing influence on socio-cultural trends underline the region's potential role in shaping the metaverse. With millions of people already engaging in gaming, socializing, attending concerts, and making purchases on metaverse platforms, the region is an exciting one to watch.

Michelle Khoo also addressed the challenges that come with rapidly maturing technologies such as AI and the metaverse. She posed questions about how society, businesses, and regulators can ensure that the next internet evolves to be more human-centric rather than technocentric. She also explored what it means to be human in the face of technologies that can mimic or even surpass human capabilities. As a starting point for contemplating the future of the internet, she delved into questions that need to be considered to shape the metaverse.

In conclusion, Michelle Khoo suggested that, in a world where the internet has all the answers, asking questions may be the most human thing left to do.

Speakers

Michelle Khoo,
Director, Deloitte Center for the Edge

Session 1: Key technologies powering the metaverse

In a session moderated by Shane He and aimed at discovering the cutting-edge technologies that are poised to revolutionize the metaverse and unleash a new era of immersive and interactive experiences, Teppo Rantanen outline Tampere's history and development programs, focusing on the Data-driven City for Citizens initiative. The program aims to use data and test future technologies, such as digital twins, advanced analytics, and virtual assistants, to create conditions for metaverse development.

Paul Higgs discussed the role of standards in developing metaverse products and applications, raising concerns about the remaining challenges and opportunities for standardization in the metaverse ecosystem. Emphasizing the importance of blockchain technology and next-generation NFTs for an interoperable functioning economy in the metaverse, Jean-Marc Seigneur highlighted the need for addressing issues of authenticity in legacy NFTs through Signed NFTs. He also highlighted the need for an interoperable ownership of the metaverse.

Presenting on the role of emerging technologies and accessibility standards in attracting a diverse customer base, including persons with disabilities, Yong-Jick Lee stressed the importance of considering accessibility in the introduction of emerging technologies to eliminate the digital divide and generate social benefits. Salma Arafa spoke of the rise in investments in travel startups and tourism tech, focusing on key metaverse technologies such as AI, analytics, AR, and VR. She highlighted the potential of the metaverse to contribute to the global GDP, with AR/VR estimated to contribute $1.5 trillion by 2030 and $3.6 trillion by 2035.

Christina Yan Zhang discussed the Tampere Metaverse Strategy Vision 2040, emphasizing the role of generative AI, brain-computer interfaces, and quantum technologies in development of the metaverse. The strategy aims to mitigate risks and maximize generative AI's impact for a secure digital future.

Speakers

Shane He,
Vice-chairman, ITU Focus Group on metaverse

Christina Yan Zhang,
CEO, The Metaverse Institute

Teppo Rantanen,
Executive Director of Economic Policy, Competitiveness and Innovation, City of Tampere, Finland

Paul Higgs,
Vice President, Video Industry Development, Huawei

Jean-Marc Seigneur,
Director of the Certificate of Advanced Studies on Blockchain, DLT and dApps, University of Geneva

Yong-Jick Lee,
President, Center for Accessible ICT, Korea

Salma Arafa,
Innovation Specialist, World Tourism Organization (UNWTO)

Session 2: Shaping an inclusive and open metaverse: the role of standards

Highlighting the critical importance of international standards in creating an open, safe, interoperable and accessible metaverse for all, session 2 brought together experts from a number of international standards organizations. Moderating the session Cristina Bueti highlighted the unique role of the International Telecommunication Union as an open collaborative platform for metaverse standards development.

Shin-Gak Kang highlighted the role of ITU-T in leading the work on the metaverse and mentioned ITU-T's Focus Group dedicated to the metaverse. He then provided an explanation of the findings from the first and second meetings of the Focus Group. Shin-Gak Kang reiterated the importance of the "citiverse," and how the Focus Group is ready to explore this emerging topic.

Discussing the need for standardization to support the engineering and information technology in the metaverse, Ming Li highlighted the work of the ISO/IEC JSEG15 to develop a common understanding and definition of the metaverse. Speaking about the Internet Engineering Task Force's work related to metaverse standardization, Shuping Peng highlighted the organization's efforts to create a more seamless and interoperable metaverse experience.

Emphasizing the necessity of metaverse standardization for manufacturers and clients, Shuo Liu introduced the research scope and work contents of CCSA TC602. He summarized their work and future plans, showcasing how metaverse standardization can better serve various industries. Ralf Ma presented an overview of IEEE's efforts related to the metaverse, including definition, classification, technologies, standards, and conferences, highlighting the organization's commitment to shaping the metaverse landscape.

Closing the session, Dennis Fu discussed the Khronos Group's vision for metaverse open standards and the Metaverse Standards Forum, an independent industry consortium with over 2,400 members globally. He explained the Forum's development and structure, emphasizing the importance of interoperability for successful metaverse standardization.

Speakers

Cristina Bueti,
Counsellor, ITU

Shin-Gak Kang,
Chairman, ITU Focus Group on metaverse

Ming Li,
Co-convenor, ISO/IEC Joint SEG – Metaverse

Shuping Peng,
Chair of Metaverse Side meeting, IETF

Shuo Liu,
Working Group Leader, CCSA TC602 WG2

Ralf Ma,
Chair, Metaverse Working Group, IEEE

Dennis Fu,
Vice-president of China Business Development, Khronos

Keynote Speech

In his keynote speech, Neil Trevett introduced the Metaverse Standards Forum, a unique organization that has recently been incorporated as an independent non-profit industry consortium, less than a year after its initial launch. The Forum's mission remains unchanged—to enable, foster, and promote cooperation and coordination over metaverse-related interoperability between standards organizations, companies, and universities.

Initially launched by the Khronos Group in June 2022, the Metaverse Standards Forum now has over 2,400 members and multiple active Working and Exploratory Groups focused on driving pragmatic interoperability advances. Neil Trevett highlighted that interoperability is key to the metaverse scaling to its full potential beyond siloed games, experiences, and worlds. The Forum does not develop standards itself but accelerates the mission of industry initiatives working for metaverse interoperability by fostering participation, building cooperative consensus and insights, and driving wider visibility for their efforts.

The Metaverse Standards Forum has grown to include a diverse range of members and maintains a pipeline of member-driven Exploratory and Working Groups to address metaverse interoperability challenges and opportunities across multiple domains. In conclusion, Neil Trevett invited all interested organizations to participate in the Metaverse Standards Forum and contribute to the collective effort of shaping the future of the metaverse through the development and adoption of robust standards.

Speakers

Neil Trevett,
Chair, Metaverse Standards Forum

Exhibition: What's next? Showcase of metaverse applications

The ITU Forum on the metaverse featured an exhibition moderated by Yuntao Wang, called "What's next? Showcase of metaverse applications," where Wenjie Xiang, the Co-founder of Hangzhou Lingban Technology, and Yu Cheng, a Marketing planning expert from NetEase Yaotai, presented their innovative metaverse products.

Wenjie Xiang spoke about Hangzhou Rokid Technology Co., Ltd., a leading technology company specializing in artificial intelligence (AI) and augmented reality (AR) solutions for various industries. Xiang highlighted Rokid's AR solutions, including smart glasses and wearable devices that provide workers with real-time information, hands-free operation, and remote collaboration capabilities. He explained that these devices minimize the need for manual documentation and reduce errors. Moreover, Rokid's AR technology supports remote assistance, enabling experts to guide on-site workers through complex tasks, leading to time and cost savings.

Yu Cheng presented NetEase Yaotai's contributions to the metaverse, leveraging the company's technological expertise in 3D game engines and two decades of experience in game development. Cheng introduced Yaotai's interactive video conferencing platform, enabling users to engage in conferences, exhibitions, and other events such as birthday parties using their customized avatars. This platform allows users to walk around, initiate conversations, and participate in various activities, providing a more immersive experience than traditional video conferencing.

Speakers

Yuntao Wang,
Deputy Chief Engineer of Cloud Computing and Big Data Research Institute, CAICT, China

Wenjie Xiang,
Co-founder, Hangzhou Lingban Technology

Yu Cheng,
Marketing planning expert, NetEase Yaotai

Session 3: Exploring the industrial metaverse

Radia Funna moderated the discussion on the industrial metaverse. Emphasizing the need to close the metaverse networking, computing, and security gaps, Jean-Dominique Coste presented Airbus' exploration of the metaverse's potential impact on aviation. Speaking next, Qiang Peng introduced iSoftStone's AIGC integrated industrial metaverse platform, iSSMeta.ai, highlighting the efficiency benefits of the industrial metaverse. In the following presentation Julien Maisonneuve emphasized the need to focus on the industrial metaverse, where it could bring qualitative change in critical applications, highlighting the importance of end-to-end interoperability and ITU's role in ensuring it.

Speaking about the Power Metaverse, Jie Song outlined use cases from both the user and grid sides. He highlighted potential future applications in energy transmission, regulation, and planning. Zhijie Li shared Changan Automobile's belief that metaverse applications could cover the entire automotive industry process and discussed a "Management + Technology + Standardization" working model to explore metaverse applications in different scenarios.

In his presentation, Cheng Chi explained how the Industrial Metaverse focuses on integrating advanced information and communication technology with the real industrial economy and emphasized the need for consensus and standardization in its development.

In closing, Chen Zhengwei discussed INESA's efforts to promote metaverse enabling technologies such as Digital Twin, as a leading smart city total solution provider and operator. He mentioned the company's focus on powering smart city building initiatives both in China and abroad.

Speakers

Radia Funna,
Futurist and creator of the xHuman theory

Qiang Peng,
Isoftstone Group Executive Vice President, Chief Digital Officer and Director of Innovation Research Institute

Julien Maisonneuve,
Standardisation Manager, Nokia

Jie Song,
Senior Engineer, State Grid, China

Zhijie Li,
Senior Engineer, Intelligent Research Institute, Chongqing Changan Automobile

Cheng Chi,
Industrial Internet and IoT research Institute, CAICT, China

Jean-Dominique Coste,
Senior Manager, Airbus Blue Sky

Chen Zhengwei,
Executive Vice President, INESA Group Smart City Institute and Chief Architect, INESA Intelligent Tech Inc.

Closing Remarks

In his closing remarks, Shin-Gak Kang, expressed gratitude to Forum hosts and organizers, acknowledging Yuntao Wang for his outstanding efforts in organizing the event. Shin-Gak Kang noted the excellent contributions from speakers, moderators, and participants, whose insights, expertise, and passion made the Forum a remarkable platform for advancing a shared vision of an inclusive, open, safe, and interoperable metaverse.

The Forum explored key topics such as the role of standards in building an open and interoperable metaverse, industrial metaverse applications, and the role of enabling technologies in driving a new era of immersive and interactive experiences. These conversations enriched the understanding of the challenges and opportunities ahead and laid a strong foundation for collaborative efforts in developing international standards for the metaverse.

Shin-Gak Kang stressed that the ITU Focus Group on the metaverse remains committed to fostering dialogue and collaboration among stakeholders worldwide, and he looked forward to working with everyone in developing international standards that shape the metaverse's future. In closing, Shin-Gak Kang thanked everyone for their participation, contributions, and the TSB metaverse team for their tireless efforts in ensuring a successful Forum.

Speakers

Shin-Gak Kang,
Chairman, ITU Focus Group on metaverse

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