

## Beyond 5G International Conference

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### 1. Introduction

In conjunction with the Beyond 5G Promotion Consortium, Japan's Ministry of Internal Affairs and Communications (MIC) co-hosted the "Beyond 5G International Conference" over two days, February 1 to 2, 2024, at the New Otani Hotel (Chiyoda Ward, Tokyo) in a hybrid format with online support.

Attending the conference were, from Japan, Makoto Gonokami, President of RIKEN (and Chairman of the Beyond 5G Promotion Consortium), Hideyuki Tokuda, President of the National Institute of Information and Communications Technology (NICT), Susumu Yoshida, Chairman of the Fifth Generation Mobile Communications Promotion Forum, Professor Emeritus of Kyoto University (Vice Chairman of the Consortium), Akihiro Nakao, Professor, Graduate School of Engineering, the University of Tokyo (Chairman of the International Committee of the Consortium), and representatives from industry, academia, and government, including telecommunications carriers and vendors, as well as many experts from overseas, including government officials from the United States, South Korea, Finland,

Germany, the United Kingdom, Brazil, and India, vendors, and "Beyond 5G/6G"-promotion organizations. It was evident from the conference that expectations for Beyond 5G are growing both domestically and internationally and momentum toward the realization of Beyond 5G is increasing. Welcoming a total of about 260 attending participants and 1080 online participants, the two-day meeting was a great success.

### 2. Initiatives by industry, academia, and government to achieve "Beyond 5G"

In his opening remarks, Chairman Gonokami of the Beyond 5G Promotion Consortium, emphasized the importance of international collaboration concerning information and telecommunications and promotion of research and development of advanced semiconductors, AI, quantum computing, and next-generation communication technologies in a unified and interrelated manner. He also delivered a strong message about his desire to expand the circle of international collaboration for the promotion of Beyond 5G around the world.

Following the opening remarks, in the government session, Mark

Cullinane, Director of Bilateral and Regional Affairs, Cyberspace and Digital Policy Bureau, U.S. Department of State, explained that Beyond 5G/6G is reliable and safe, and he pointed out that Beyond 5G/6G networks must be open and interoperable and introduced a project to support the deployment of Open RAN in Palau through Japan-U.S. cooperation. Kyeongrae Cho, Director of Innovation Network Team, Ministry of Science and ICT (MSIT), South Korea, explained the "K-Network 2030" strategy formulated in February 2023 and the areas that R&D will focus on toward commercialization of 6G. Laura Eiro, Director-General of the Data, Safety and Security Department, Ministry of Transport and Communications, Finland, explained the importance of security, sustainability, and standardization in regard to Beyond 5G/6G technologies. As for the development of Beyond 5G/6G technology, Tina Klüwer, Director-General of Directorate 5 - Research for Technological Sovereignty and Innovation, Federal Ministry of Education and Research (BMBF), Germany, emphasized the needs, sustainability, and resilience and safety of digital systems and networks.

■ **Figure 1: Opening speech by Makoto Gonokami, President of RIKEN**



■ **Figure 2: Lecture by Director Mark Cullinane of the U.S. Department of State**



In addition to that emphasis, she gave a presentation on the promotion of joint research and development between Japan and Germany.

Major international vendors then gave presentations on their initiatives and visions. Magnus Ewerbring, Ericsson's CTO for Asia-Pacific, explained that the innovation that continues to build and expand 5G networks will be utilized for the future standardization of Beyond 5G/6G. Dr. Wen Tong, CTO of Huawei Wireless, introduced how to design 6G networks in the coming AI era. Peter Vetter, President of Bell Labs Core Research, Nokia, gave a presentation on the importance of placing 6G networks as a main pillar complementing the use of AI and cloud computing. Dr. John Smee, Senior Vice President of Engineering at Qualcomm, explained that the company must consider how 6G systems should be built in consideration of lessons learned from investments in 5G.

As for presentations from domestic vendors, Nozomu Watanabe, Corporate Executive of NEC Corporation, spoke about Living Lab's efforts through industry-university co-creation with universities; Mototaka Taneya, Executive Managing Officer, CTO, Head of R&D, Sharp Corporation, spoke about the spread of Beyond 5G in the world and Sharp's efforts in response to that spread; and Shingo Mizuno, Corporate Executive Officer EVP, Vice Head of System Platform Business (in charge of Network Business), Fujitsu Ltd., spoke about the use of AI and efforts to achieve openness for the transition to 6G.

At the end of the first day, Seizo Onoe, Director of the Telecommunication

Standardization Bureau of the International Telecommunication Union (ITU), took the stage and explained the importance of worldwide outreach through standardization to bridge the gap between developed and developing countries in regard to mobile networking and the evolution of elemental technologies regardless of generation.

### 3. Japan's efforts to implement Beyond 5G

At the beginning of the second day, Hideyuki Tokuda, President of NICT, gave a presentation on research and development concerning Beyond 5G/6G, AI, quantum ICT, and cybersecurity, testbed and research-grant initiatives, and international cooperation with Germany and France. From the Beyond 5G Promotion Consortium, Morio Toyoshima, Director-General of the Wireless Networks Research Center, Network Research Institute, NICT, spoke about the Scalability Working Group of the International Committee Technology Subcommittee; Iwao Hosako, Executive Director of NICT's Beyond 5G R&D Promotion Unit, talked about the subcommittee's High Frequency WG; and Takehiro Nakamura, Chief Standardization Officer of NTT Docomo, Inc., spoke about the White Paper Subcommittee of the Committee for Planning and Strategy.

After the above-described speeches, representatives from domestic telecommunications carriers gave presentations on their visions and efforts toward implementing Beyond 5G. Sachiko Oonishi, Executive Vice President and Head of Research and Development

Market Strategy Division, NTT, explained about the Innovative Optical Wireless Network (IOWN) and NTT's version of a large-scale language model (LLM), called "tsuzumi," that achieves low power consumption. Toshikazu Youkai, Chief Network Officer, Managing Executive Officer, and Deputy General Manager of Technology Sector, KDDI Corporation, spoke about improving the quality of their robust telecommunications infrastructure, the evolution of the power to connect through partnering in Japan and overseas, and efforts toward a digital twin in the 6G era. Tomohiro Sekiwa, Senior Vice President & CNO of SoftBank Corporation, introduced the use of aerial solutions concerning the Noto Peninsula earthquake and the integration of AI into communications. Ryoji Osaka, Executive Advanced Technology Engineering Division Manager, Rakuten Mobile, Inc. explained the use of Open RAN and non-terrestrial networks (NTN) as effective disaster countermeasures.

In the government session, Yasuo Tawara, Director-General of the Global Strategy Bureau at the Ministry of Internal Affairs and Communications, said that in addition to supporting ultra-high-speed, large-capacity, low-latency, and numerous connections as an extension of 5G, NICT's funds will support R&D in areas such as optical networks and non-terrestrial networks (NTNs) with the aim of creating a Beyond 5G network that is reliable, safe, autonomous, while consuming less power. After that, Holly Creek, Acting Director of Digital Infrastructure, Department for Science, Innovation & Technology, UK, introduced the spectrum policy based on the UK's "Wireless Infrastructure

■ **Figure 3: Lecture by Director Kyeongrae Cho of MSIT of South Korea**



■ **Figure 4: Lecture by Director Seizo Onoe of ITU Telecommunications Standardization**



■ **Figure 5: Lecture by Director-General Yasuo Tawara of the Global Strategy Bureau, Ministry of Internal Affairs and Communications**



■ **Figure 6: Speech by Holly Creek, Acting Director, Department for Science, Innovation & Technology, UK**



Strategy,” which was announced in April 2023. Hermano Tercius, Secretary of Telecommunications of Brazil’s Ministry of Communications, gave a presentation on the status of 5G deployment in Brazil as well as the goals of their 6G project. Ravi A. Robert Jerard, Deputy Director-General (Standards-R&D-Innovation), Department of Telecommunications, Ministry of Communications, India, introduced the use of security, AI and quantum computing in regard to Beyond 5G/6G.

#### 4. Future outlook

For this international conference, the Beyond 5G Promotion Consortium invited representatives from overseas 6G-promotion organizations that have signed a memorandum of cooperation. David Young, Managing Director of Next G Alliance in the USA, Colin Willcock, Chairman of the Governing Board Europe’s 6G Smart Networks and Services Industry Association (6G-IA), and Pathak

Rajesh Kumar, Director-General of India’s Bharat 6G Alliance, each took the stage to discuss initiatives in each country and region and share the status of cooperation in various industries around the world.

In addition, moderated by Professor Nakao of the University of Tokyo Graduate School and Chair of the Beyond 5G Promotion Consortium International Committee, a panel discussion was held to discuss expectations for 6G initiatives and collaborations around the world.

Professor Matti Latva-aho, University of Oulu, and Director for Finland’s 6G Flagship, Abhimanyu Gosain, Senior Director of Northeastern University’s Wireless IoT Laboratory of PAWR (USA), and Professor Lee HyunWoo of Dankook University’s 6G Forum (South Korea) participated in the meeting and confirmed the need for international collaboration and cooperation to efficiently promote standardization of 6G technologies.

Professor Nakao also delivered a message of international cooperation to

establish values that can be shared across countries.

In closing the two-day conference, Susumu Yoshida, Chairman of the Fifth Generation Mobile Communications Promotion Forum, expressed his hope for further strengthening of international collaboration on future R&D of Beyond 5G and its future popularization and deployment.

At the Beyond 5G International Conference, in addition to discussing the further development and deployment of 5G, the participants shared their recognition of the need for long-term industry-academia-government collaboration—ranging from research of elemental technologies to social implementation and innovation—for promoting Beyond 5G, and they confirmed their commitment to international cooperation.

Note: The official posts of the “Beyond 5G Promotion Consortium” and “5th Generation Mobile Promotion Forum” are valid as of February 2024.

■ **Figure 7: Panel discussion facilitated by Professor Nakao of the University of Tokyo Graduate School**



■ **Figure 8: Closing remarks by Susumu Yoshida, Chairman of the Fifth Generation Mobile Communications Promotion Forum**

