

# B5G Field

## Beyond 5G Research and Development Promotion Unit

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The Beyond 5G Research and Development Promotion Unit was established in April 2021 as an organization that accelerates research and development while coordinating, both inside and outside of NICT, towards Society 5.0.

### Activities in 2021

The Beyond 5G Research and Development Promotion Unit (hereinafter "B5G Unit") was launched in April alongside the start of NICT's Fifth Medium-to-Long-Term

Plan, which lists "AI," "Beyond 5G," "Quantum Information and Communications," and "Cybersecurity" as four areas of research that should be strategically pursued (four strategic areas). Beyond 5G is one of these strategic areas, and the B5G Unit is a newly

established organization. Beyond 5G spans an extremely wide range of technical fields and needs to be addressed by NICT as a whole (Fig. 1). We are expected to play a coordinating role by aligning all the various organizations in each area of research.

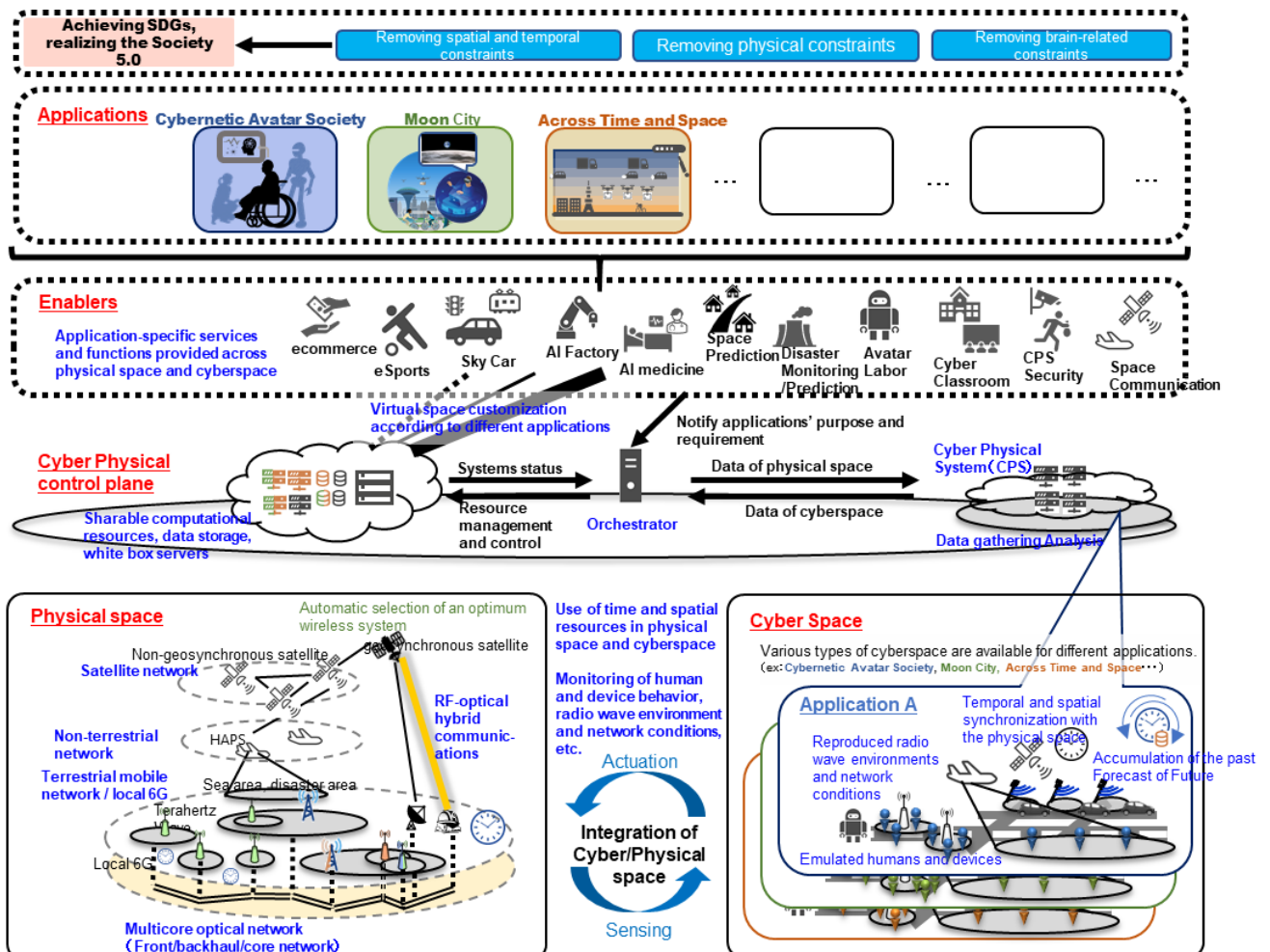


Fig.1 : Conceptual diagram of Beyond 5G / 6G technology

At the beginning, with the aim of promoting research and development of Beyond 5G, volunteers in various divisions of NICT gathered and held discussions about images of society and use cases that will be realized by Beyond 5G, as well as the necessary elemental technologies and the research and development roadmap to get there. These discussions were eventually compiled into a white paper and published in March 2021 as the "Beyond 5G / 6G White Paper (Japanese ver. 1.0)," and in August (English ver. 1.0).

At the same time as these discussions, NICT's Fifth Medium-to-Long-Term Plan was being formulated, and the idea to establish the organization was also conceived in parallel.

The B5G Unit includes the General Planning Office, Beyond 5G Design Initiative, and the Terahertz Technology Research Center (Fig. 2). The Beyond 5G Design Initiative specializes in the role of acting as a control tower for Beyond 5G. The Terahertz Technology Research Center is the section that actually promotes the research and development of the ele-

mental technologies that will be essential for Beyond 5G. The center currently focuses on two areas of research; the development of a Terahertz wireless testbed and Terahertz measurement technology. In addition to these research activities, the center also promotes international standardization at ITU-R and IEEE 802.

In addition to these organizations, we are involved in several other projects. One of our current projects is to conduct research and development of radio wave emulators under the commission of a Ministry of Internal Affairs and Communica-

tions project called "Advancing Radio Wave Simulation System Technologies in Virtual Space." Radio wave emulators are real-time simulations of complicated and large-scale radio wave systems in a virtual space. Radio waves will need to be used in all fields, particularly in the world of Beyond 5G, which is why the large-scale verification of radio systems is extremely important and the reason why this project is under our Unit. Another reason is that it is a horizontal process that involves people from a variety of research institutes at NICT.



Fig.2 : Organization of Beyond 5G Research and Development Promotion Unit