

F-03

Utilization of sub-terahertz for ultra-high capacity communication over 100Gbps

Social Issues that we have focused on

In order to realize the ultrahigh-speed communications exceeding 100 Gbps expected in the 6th generation mobile communication system (6G) and ultrahigh-capacity communications exceeding 100 times the system capacity (total communication speed per unit area) of the 5th generation mobile communication system (5G), novel technologies to utilize sub-terahertz bands efficiently are required.

Initiatives to resolve issues

Overview

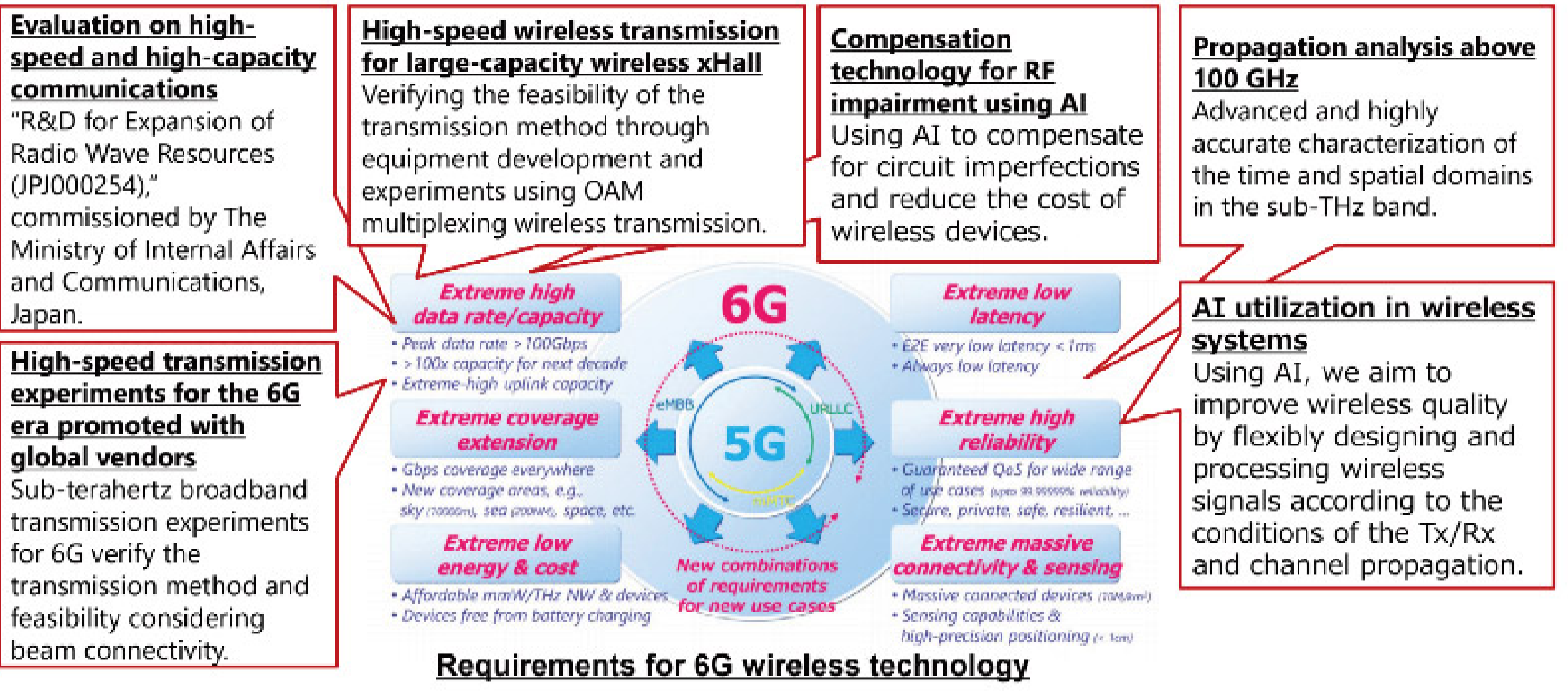
In order to utilize sub-terahertz bands of 100 to 300 GHz efficiently, we use the latest technologies, including device (systemization) technologies for handling ultra-wide bandwidth, analysis technologies for identifying the radio propagation environment, and waveform generation technologies for efficient transmission.

Technology to Support Initiatives

We will achieve unprecedented ultra-high-speed transmission using ultra-wideband sub-terahertz systemization technologies and its peripheral technologies, especially multiple channel bonding technology, OAM transmission system technology, and high-precision real-time propagation characteristic analysis technology.

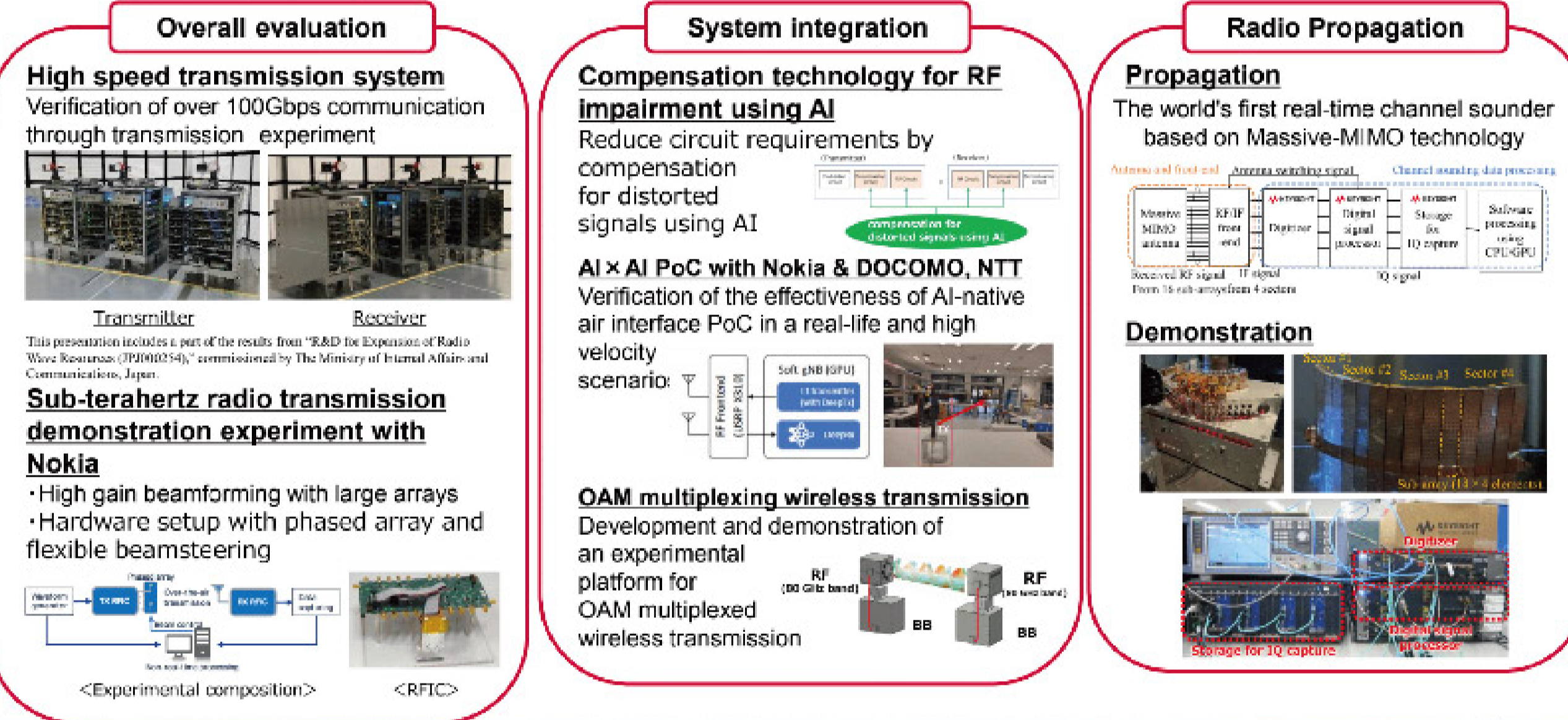
Technological research and development areas

Organizational structure on our research and development for 6G Sub-THz communication



Details on research and development

Introduction of R&D results



Co-creation
Partners

NEC Corporation / Nokia Solutions and Networks Japan G.K.
Keysight Technologies / Fujitsu Limited



If we can provide an ultra high-speed wireless communication environment using the sub-terahertz band, it will be possible to realize a new social infrastructure that integrates real and cyber space. It will also be possible to transmit information based on the five senses, as well as multisensory information that conveys the atmosphere and sense of security of a place.

System evaluation requires, as indicators, the understanding of temporal and spatial characteristics such as delay time and direction of arrival. Being able to properly estimate these characteristics in the subterahertz band will enable more stable, faster, and higher capacity systems can be designed.