

# Beyond 5G R&D Promotion Project



Hand in Hand,  
Creating the Future of 2030

# Beyond 5G R&D Promotion Project (Outline)

Regarded as the next generation 5G to be adopted around 2030, “Beyond 5G” (or “6G”) links physical space (real space) and cyberspace (virtual space) and is expected to provide core functions as the backbone of Society 5.0. The Japanese government is aiming at swiftly and smoothly adopting Beyond 5G based on the assumption that it will be utilized even more than the current 5G by almost all organizations and industries as an infrastructure supporting economic activities and the lives of Japanese people.

According to ***Beyond 5G Promotion Strategy—Roadmap towards 6G—*** issued in June 2020 by the Ministry of Internal Affairs and Communications, the schedule of the project for adopting Beyond 5G around 2030 is divided into the Leading Activities Phase and the Activities Acceleration Phase. In particular, the roadmap calls for concentrated promotional efforts to be carried out within a certain period during the Leading Activities Phase. It is described specifically in the roadmap that there is a need to focus on enhancing the ability to research and develop technologies advantageous to Japan and technologies indispensable for Japan in order to ensure future international competitiveness concerning Beyond 5G; concentrated financial support by the government must be provided from the initial basic/fundamental R&D stage before a full-scale global development race starts. commercialization, and then reflecting them in international standards.

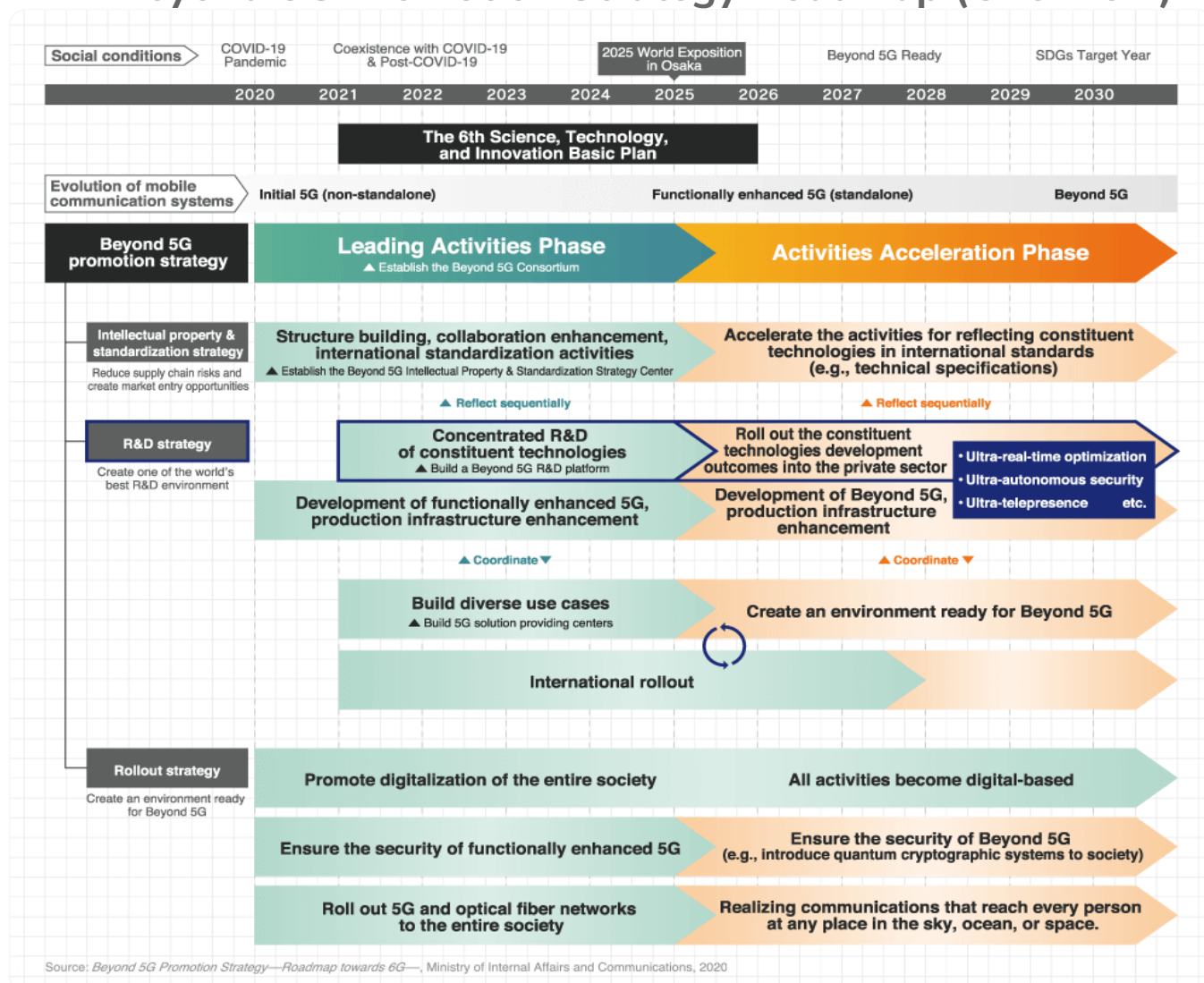
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For more details



## Beyond 5G Promotion Strategy Roadmap (Overview)





# 02 The Three R&D Programs

Based on the R&D Policy of the Ministry of Internal Affairs and Communications, NICT will implement the below-described three R&D programs. We will call for project proposals for each R&D program and decide the project implementers based on the results of an evaluation carried out by an evaluation committee consisting of external experts.



## Beyond 5G Function Realization Program

R&D for this program is commissioned by calling for the implementers of individual R&D themes in sequence while referring to the R&D Themes Candidate List of the R&D Policy and taking the available budget into account.

### Key issues

The aim of the key issues is to create high-level R&D achievements by setting specific and clear development targets (e.g., numerical targets). We prepare the R&D plan for key issues and then call for project implementers.

### General issues

The development targets of the general issues are left up to the ideas of external proposers. We specify only the research outline and then widely call for proposals concerning the specific R&D topics.



## Beyond 5G International Joint R&D Program

This program promotes international joint R&D projects of cutting-edge constituent technologies conducted in collaboration with strategic partners in the technology fields where coordination is possible. As the development targets are left up to the ideas of external proposers, we widely call for proposals concerning the specific R&D topics.



## Beyond 5G Seeds Creation Program

This program supports a wide range of diverse R&D projects to generate innovation by creating seeds for technology. As the development targets are left up to the ideas of external proposers, we widely call for proposals concerning the specific R&D topics.



# Beyond 5G Use Cases



In the NICT White Paper released in August 2021, we assumed three scenarios based on the views of social life around 2030 to 2035. By backcasting from the future society described in these scenarios, we summarized Beyond 5G/6G concepts, use cases, and essential technologies.

## Scenario (1) Cybernetic Avatar Society

## Scenario (2) City on the Moon

## Scenario (3) Transcending Space and Time

Source: NICT Beyond 5G/6G white paper version 1.0 (released in August 2021)

### Simultaneously participate in company meetings and visit my son's class remotely with multiple avatars

A teleconference in the company and a remote visit to my son's school coincided. The avatar for the company meeting was set to autonomous alter-ego mode, the AR was used to check the status of the meeting. For the agenda item I was interested in, I went back into the remote alter-ego mode and made a statement. Don't tell my son that I slipped out of the class visit during that time!



### Mental and Physical Support Avatar

I enjoyed lunch with my father, whose physical functions are deteriorating, using an avatar. I remotely controlled the assistive devices to help my dad eat. EEG analysis showed that his understanding had not deteriorated, which was a relief. This is probably thanks to the AI interactive nursing care system my father uses every day.



### Remote negotiation across languages, cultures, and customs

Our products are popular in Europe and the Middle East, and today we had a remote meeting with a client in Turkey. I didn't know anything about the Turkish language, culture, and customs, so I was worried if I would be able to communicate with them, but thanks to the simultaneous interpretation system that takes into account each other's cultures, we will be able to sign a new contract with the client.



### XR Teleconferencing among 3D Avatars

I was a little nervous when the president's avatar appeared in front of me, but I moved next to the president in 3D space, handed him a product VR prototype, and asked him to experience it remotely with haptic gloves. We were able to get his go-ahead right away.



### Avatar on the Moon/Street View in Space

A user on the ground performs an activity on the Moon by plugging in an avatar on the lunar surface. Enables real-time work to be performed at lunar plants, construction sites, and lunar laboratories while on the ground. In addition, real-time images of the universe can be enjoyed from the ground via webcams mounted on satellites.



### Moon Travel

This is a system for high-capacity communication with Earth and the lunar base during an actual trip to the Moon in the future. This system will provide safe and secure travel that allows us to contact our grandparents on Earth without problems even during long trips. We are entering an era in which people can enjoy space travel even for leisure and can send photos taken during their trip to Earth via SNS.



### Vertical Flow of People, Things, and Information

Lightweight delivery drones fly over low-rise areas, personal cars fly over mid-rise areas, and large transport planes fly over high-rise areas. In addition, there are also large warehouses in the stratosphere, from which packages can be delivered directly to remote locations. A large transportation sky car casts a shadow on my path.



### Omni-Cloud Gateway

We are entering an era of the omni-cloud, where we are surrounded by cloud resources. The omni-cloud provides computing resources, information resources, communications resources, and even power resources. The key will be the gateway that connects us to the cloud.



## For inquiries about Beyond 5G R&D Promotion Project



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