

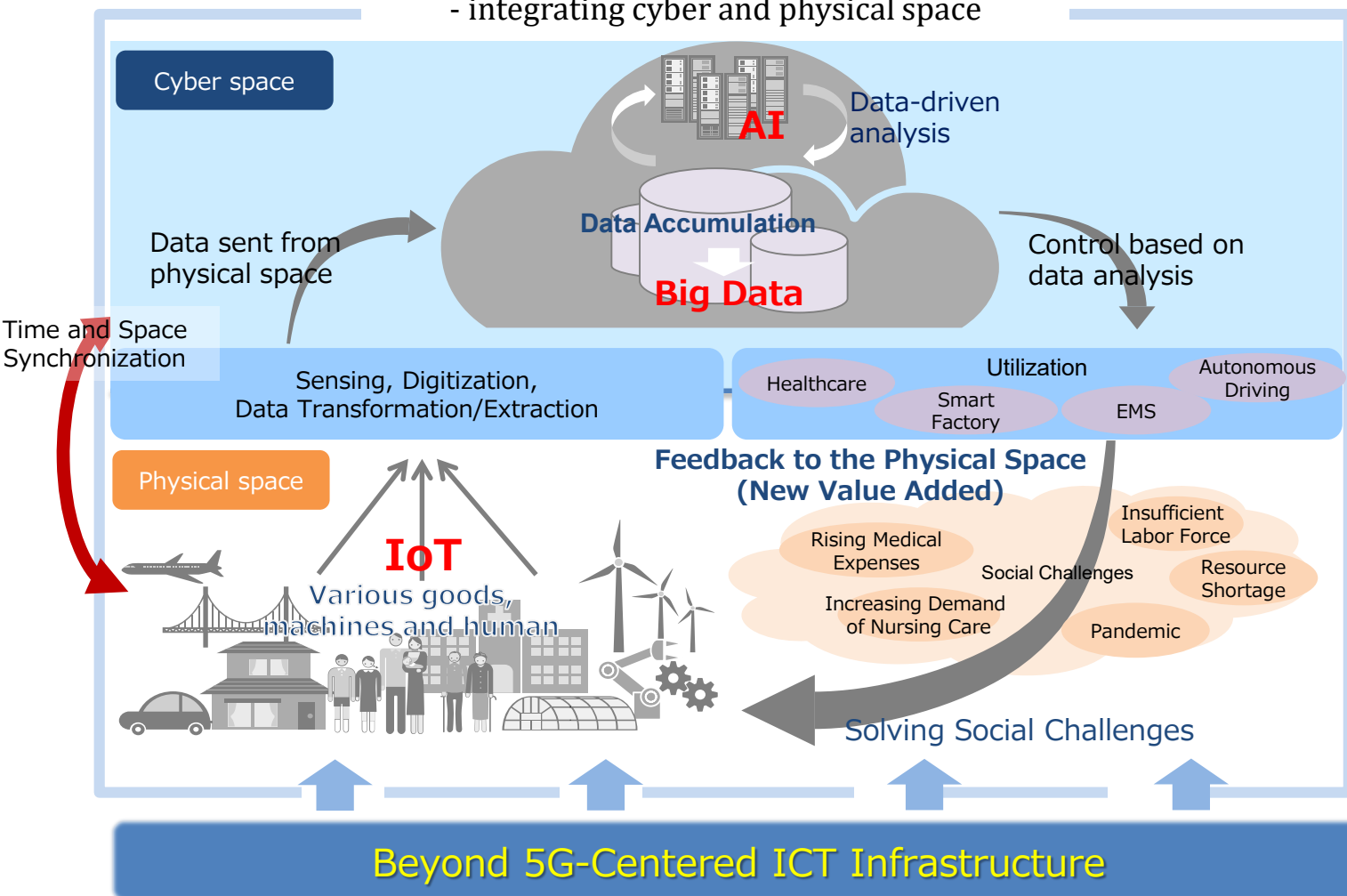
Beyond 5G Promotion Strategy

June 2020

**Ministry of Internal Affairs and
Communications, Japan**

Society in the 2030s

Cyber Physical System (CPS) - integrating cyber and physical space



Society in the 2030s

Vigorous & Resilient Society

Inclusive

A society where everyone can play an active role regardless of their attributions (ex. Locations, nationalities, ages, and handicaps)

Sustainable

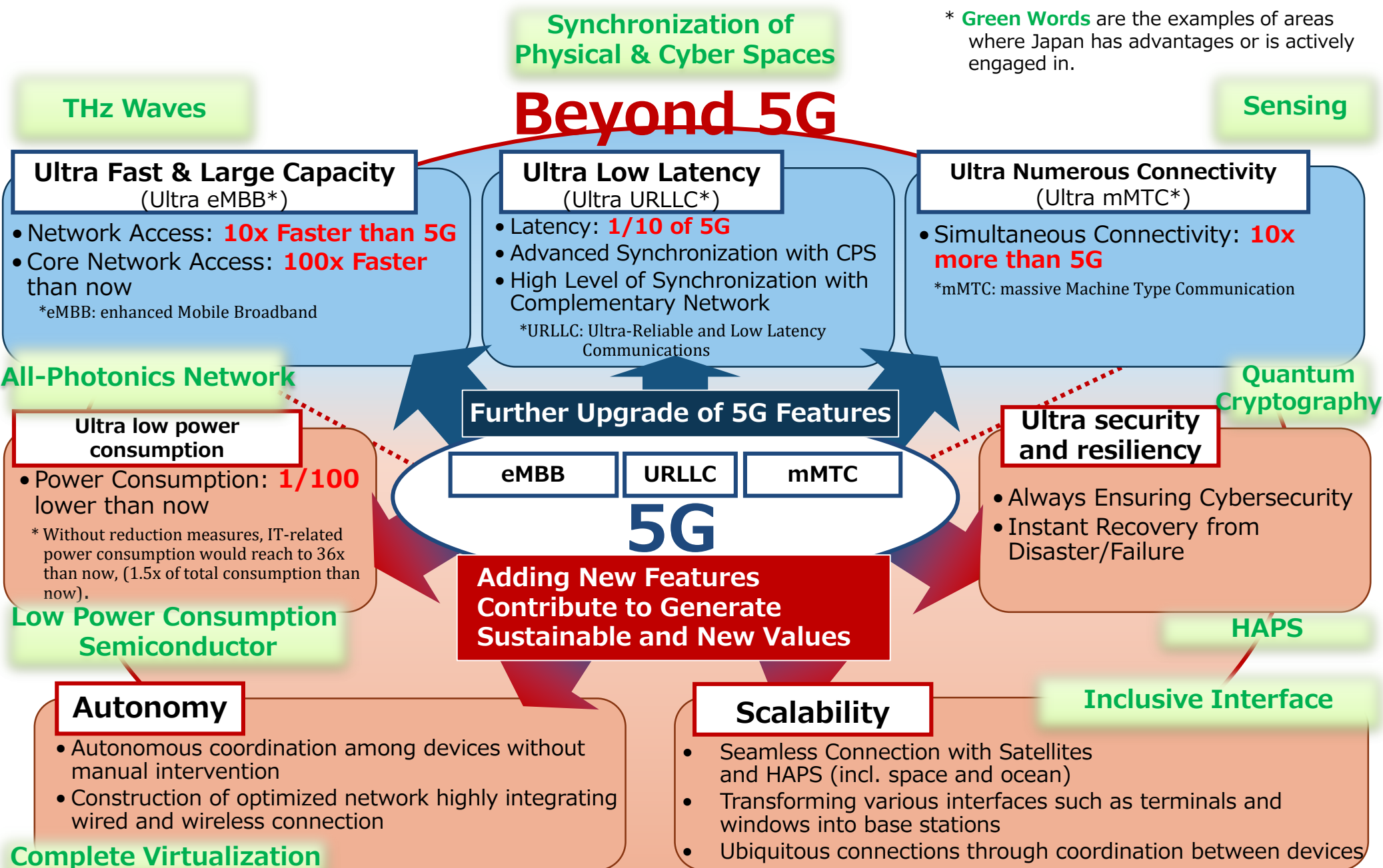
A society growing sustainably and efficiently, without social loss

Dependable

A human-centered society where safety and security are ensured, and trust is secured even under unprecedented circumstances

Realization of Society 5.0

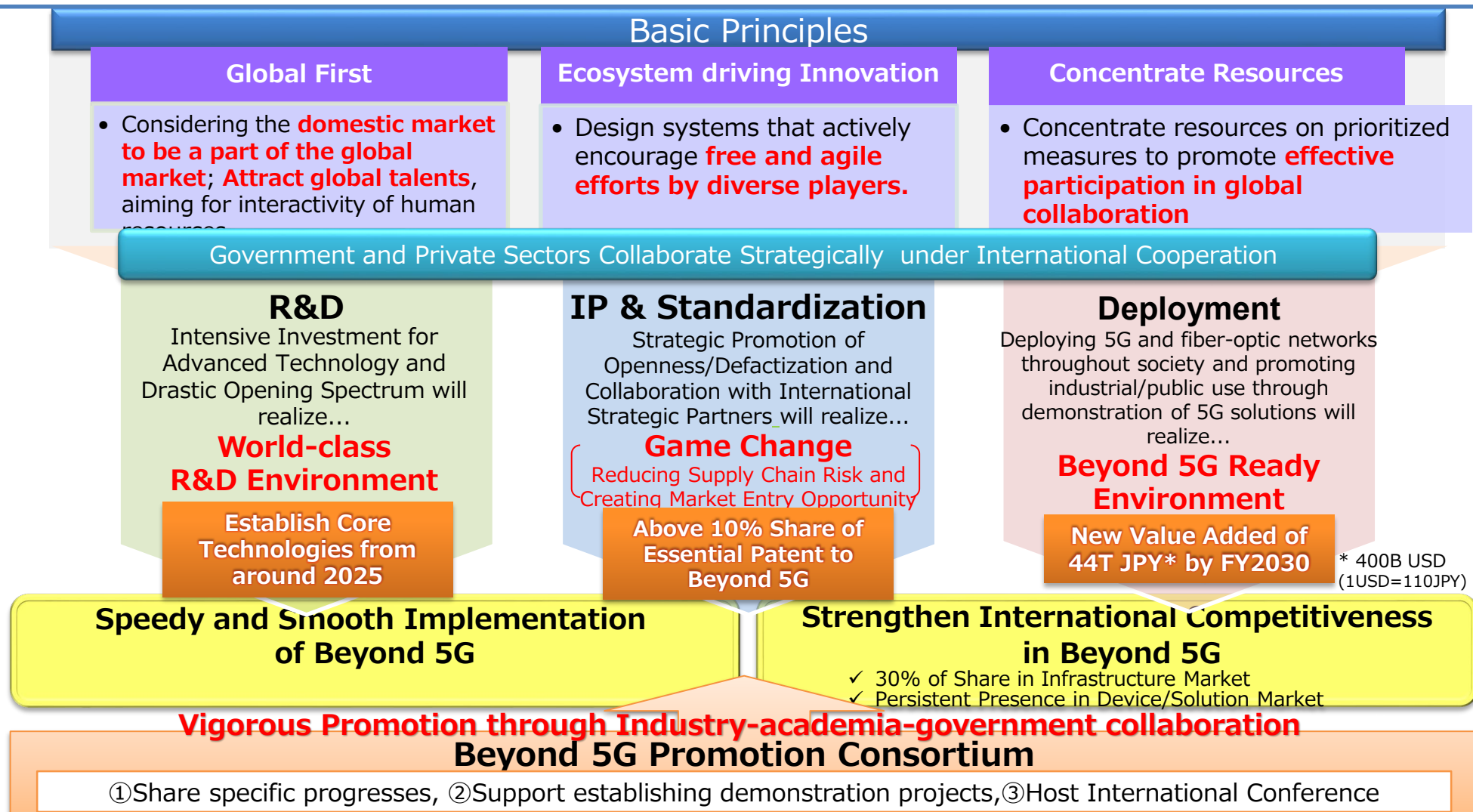
Key Features for Beyond 5G



Overview of Beyond 5G Promotion Strategy

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- **The Beyond 5G Promotion Strategy** features:
 - ① **Measures to realize Society 5.0**, towards an Inclusive, Sustainable, and Dependable society expected in 2030s.
 - ② **Emergency measures against COVID-19** and **measures for a post-COVID-19 growth strategy**, backcasting from Society 5.0.
- **Leading efforts based on this strategy** will be **shown to the world in 2025**, as a milestone year, when the OSAKA-KANSAI Expo is held.



* Cross-department taskforce in MIC will manage the progress of the Strategy. Progress report will be published annually, and the Strategy will be reviewed when necessary.

R&D

- Aim for the **early development of advanced technologies** that hold the key to the realization of Beyond 5G, and **concentrating government resources at the stage of seeds technology**.
- Develop a **world-class R&D environment** by establishing R&D bases and drastic opening up the spectrum.

Specific Measures

Promote R&D for Cutting-edge Core Technologies through R&D Platform

- Establish "**Beyond 5G R&D Platform**", where industry government and academia jointly working on R&D. **This platform will provide emulators and testbeds**, collaborate with other R&D platforms (e.g. SINET) and funding programs for young researchers.
- **Intensive R&D on advanced core technologies** for Beyond 5G for a limited period of time, in collaboration with related government organizations.

Strengthen Manufacturing Bases

- **Strengthen manufacturing bases** by developing core technologies for ICT systems to enhance 5G functions.
- **Introduce accreditation schemes** by the government for development and supply of devices that satisfy criteria for safety, reliability, supply stability and openness.

Review Special Tax Incentives for R&D

- Check whether special tax incentives are sufficient to promote R&D in the digital field and amend if necessary.

Ease Spectrum Regulation on R&D

- **Develop a scheme to enable the free use of high frequency spectrum**, including terahertz waves, for a limited period of time.
- **Mitigate license procedures for experimental use** provided certain conditions are satisfied.

Promote Disruptive Innovation and Develop Human Resources

- **Support disruptive ideas and innovative people through prizes and incentives** (e.g. the "wireless challenge").

IP & Standardization

- Aim for the realization of Beyond 5G and real **game change**, commit to IP acquisition and standardization activities.
- Particular emphasis on **(1) all-photonics; (2) open architecture; (3) maximum virtualization; (4) expansion to the air and sea; and (5) drastic enhancement of security**.

Specific Measures

Encourage Open/Close Strategy and IP & Standardization Activities

- Discuss **target setting** and **encouraging open/close strategy on technologies**, which are strengths for Japan, in national R&D projects.
- **The government to provide testbeds and emulators for interconnection and interoperability** in order to reduce industry burden and encourage the development of devices which are open and of a de-facto standard.
- **Support the private sector's international initiatives** for promoting implementation and standardization of the above (open, virtualized and all-photonics network, etc.).

Collaborate with Strategic Partners

- **Promote international joint R&D** and strengthened international collaboration **from an early stage**.

Develop Mechanism for Strategic Activities on IP & Standardization

- Establish the **Beyond 5G IP & Standardization Strategy Center**, where major players from industry, government and academia, strategically work on standardization, and utilize the center as a core to implement strategies.
- **Consider the adoption of open standards, such as contributions to international standardization, etc. as conditions to adopt R&D projects and spectrum assignments** in order to enhance the effectiveness of IP and standardization strategies.

Deployment

- Aim for the **early realization of a "Beyond 5G ready" environment**, where 5G is available at all areas and locations, and fully utilized in order to deploy Beyond 5G both speedily and smoothly.
- Promote the development of 5G and optical fiber networks throughout society and the industrial and public use of 5G.

Specific Measures

Deploy 5G and Fiber-optic Network

- **Promote the deployment of 5G and fiber-optic networks and the introduction of private 5G**; develop base station 3 times over than originally planned, available in all municipalities and promoting **infrastructure sharing**.
- Develop technology to **integrate rural data centers into a virtual, massive cloud**.

Realize Continuous Cybersecurity Functionality

- Promote standard setting based on **security by design**; introduction of technologies that **automatically detect falsification and vulnerability**; and the implementation of **quantum cryptography systems** in society.

Establish Use Cases for Solving Challenges

- Establish **5G solutions** for solving social challenges through **demonstration projects**; Establish schemes for **the 5G Solution Provision Center** that enables the use of various cloud functions such as **smart cities** on a common cloud platform (SaaS).
- Develop systems for **community-based solutions** to social issues **in collaboration with local universities, etc.**, to flexibly conduct demonstration projects using whole towns as "**Living Testbeds**".
- Intensively conduct demonstration projects for IoT, agricultural ICT, telemedicine in cooperation with **other countries for about three years**; Support the commercialization of ideas and develop human resources.
- **Promote digitalization of all of society** to realize a society where **ICT smoothly sustains people's lives and economic activities**, even in emergencies.

Beyond 5G Promotion Strategy Roadmap

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- Taking the current crisis as an opportunity, promote the digitization of the entire society at once, including the development of resilient and secure ICT infrastructure.
- The first five years is critical, as such promoting intensive efforts and utilizing Japan's strengths in the Advanced Implementation Phase must be done with a sense of urgency.
- The results of the leading efforts will be shown to the world as the "Beyond 5G Ready Showcase" at the OSAKA-KANSAI Expo 2025 in order to accelerate global deployment.

