



総務省

Japan's Initiatives toward DX-Based State

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- **DX promotion initiatives required in Caribbean Small Island States**
- Japan's initiatives related to DX
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- Potential for future cooperation between Japan and Caribbean Small Island States
- Consideration on Pathway toward the DX state

(1) Infrastructure

(2) Government

**Establishing a
Digital State**

(3) Economy

(4) People

**(5) Digital regulatory frameworks
and cybersecurity**

(1) Infrastructure measures

- Studies of optimal development plans combining various digital infrastructures
- Necessary measures to improve people's ICT literacy

(2) Government (3) Economy (4) People

- Promotion of ICT solutions
- Support for the development and creation of systems to promote ICT solutions that contribute to solving social issues
- Support for ICT startups and development of ICT human resources

(5) Digital regulatory frameworks and cybersecurity

- Ensuring a robust and secure digital infrastructure
- Ensuring the safety, transparency, and resilience of AI and machine learning
- Developing human resources for cybersecurity

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Three Pillars

① **Development of Digital Infrastructure**

② Digital implementation to solve local issues

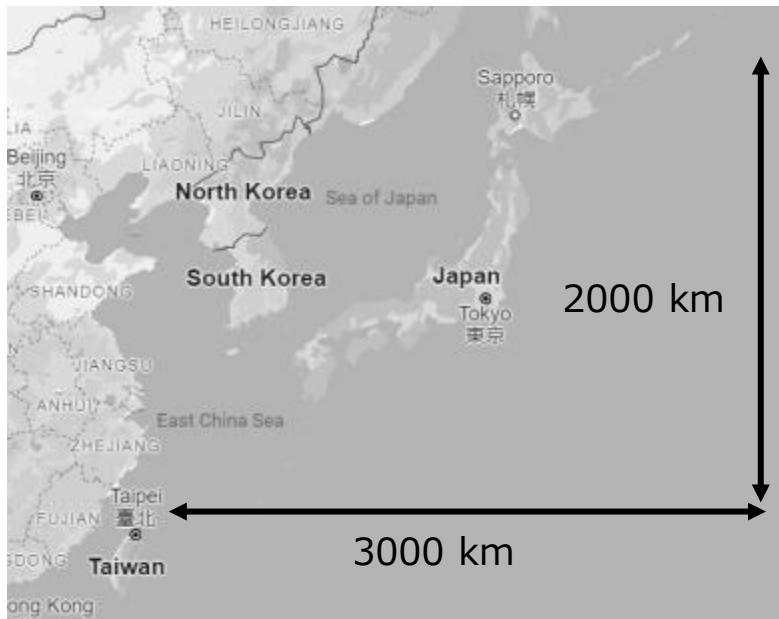
③ Efforts to ensure that no one is left behind

The goal of deployment

- ① **Fiber optic cables**
- ② **5G**
- ③ **Data centers and submarine cables**
- ④ **NTN**
- ⑤ **Beyond 5G**

A Comparison of the Caribbean and Japan

Japan



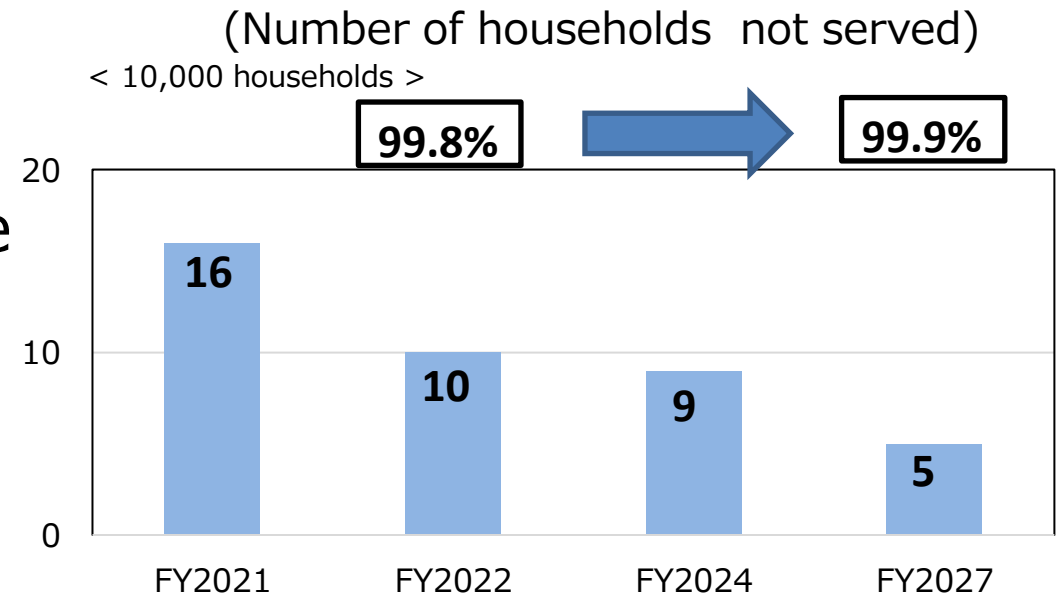
The Caribbean



14,121 islands
(416 inhabited remote islands)

Deployment target

By the end of FY2027,
99.9% household coverage



Financial Support for CAPEX and OPEX

- ① In disadvantaged areas, MIC provides financial support for the deployment of fiber optic cables.
- ② In unprofitable areas, maintenance and management costs will be supported by Universal Service Subsidies.

Deployment target

Step 1 Infrastructure deployment

Step 2 Local deployment

5G population coverage: Over 30% at the end of FY2020

FY2023

FY2025

FY2030

- **95%** of the nation
(280,000 stations in total)
- 5G base stations in all cities, towns, and villages

- **97%** of the nation
(300,000 stations in total)

- **99%** of the nation
(600,000 stations in total)

Policy measures

- ① Allocation of new 5G frequencies
- ② Revision of technical standards to enable efficient area coverage
- ③ Subsidies provided
- ④ Tax incentives (⇐ safe, trustworthy, open, etc.)
- ⑤ Promotion of infrastructure sharing

Issues to be resolved

1) Datacenter

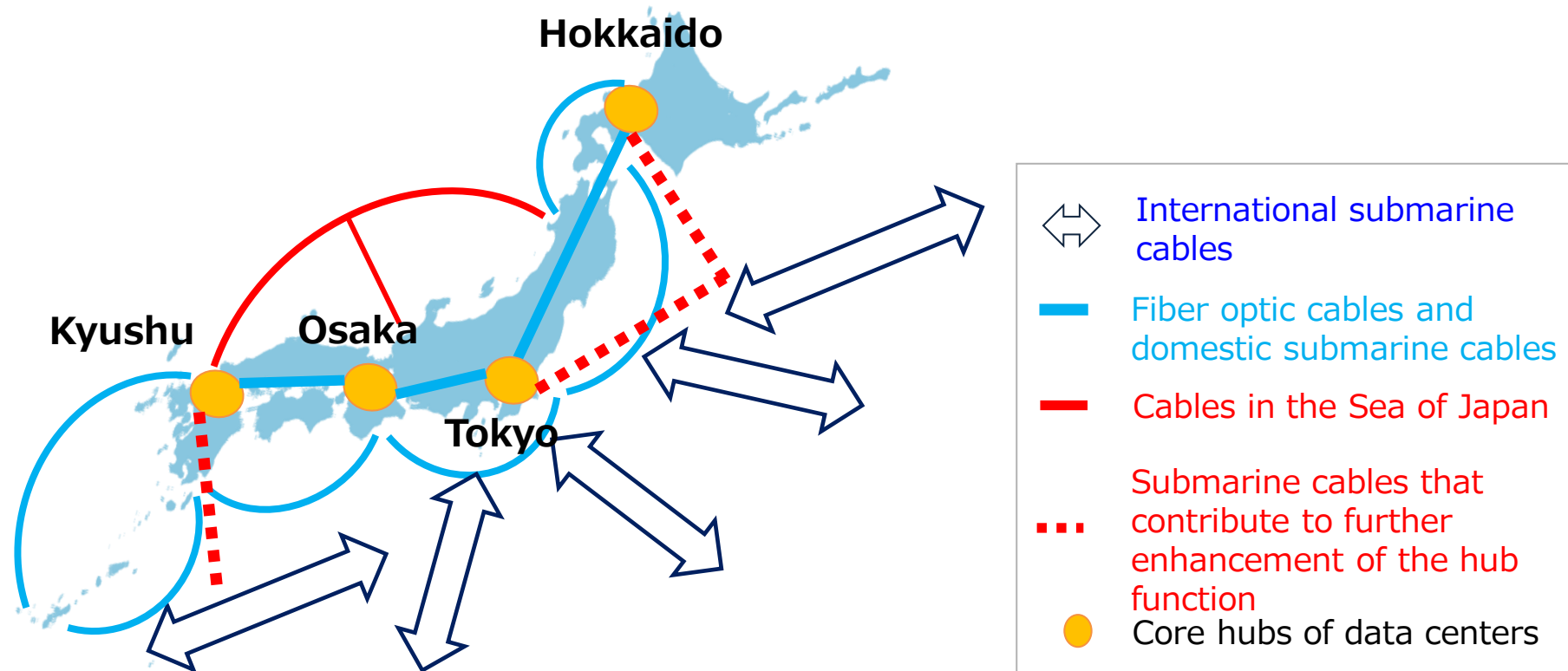
- About 60% of the data centers are in the Tokyo area and about 25% are in the Osaka area.
⇒ Decentralization of datacenter is urgently needed to enhance resilience to natural disaster.

2) Submarine cables

- Submarine connections are missing across Japan Sea in contrast with the Pacific.
⇒ Japan Sea Loop Cable is also required to enhance resilience to natural disaster.
- Japan is aiming to consolidate Japan's position as a safe, secure and reliable hub of the global data flow.
⇒ Promoting multi-routing of international submarine cables.

Specific measures

- Subsidies (390 million USD) to development of data centers and submarine cable, which helps reduce the burden of initial investment.



Policy direction

- Initiatives to promote the introduction of HAPS and satellite communications services

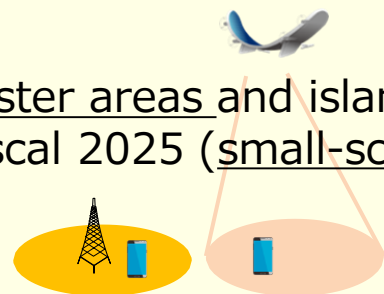
Specific measures

1 HAPS

- Formulation of international rules, development of domestic systems necessary for practical applications, and demonstrations at Expo 2025 Osaka in Japan

<HAPS Service Deployment Image>

Covering disaster areas and islands in spots since fiscal 2025 (small-scale start)



Sophistication

Developing high-speed, high-capacity services nationwide

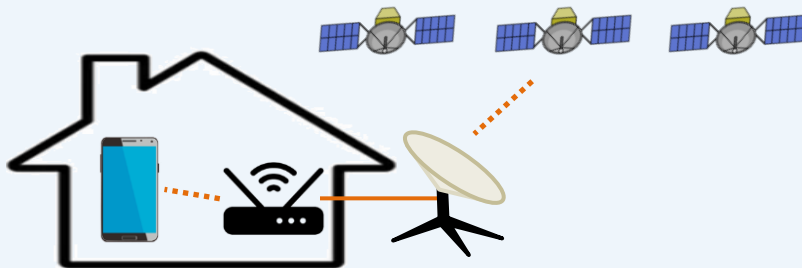


2 Satellite communications

- **Securing frequencies and establishing necessary systems**

<An example of satellite constellation services>

Broadband services using dedicated terminals



Direct communication services with smartphones in dead zones



Specific measures

● Features of B5G

✓ ×10 high speed

✓ ×1/10 latency

✓ ×1/100 energy consumption

● Promoting international standardization and establishing international consensus and rules

<Key Technology Areas of Beyond 5G>

① All-optical network technology

② Non-terrestrial network (NTN) technologies, such as satellites and HAPS

③ Secure virtualization and integrated network technology

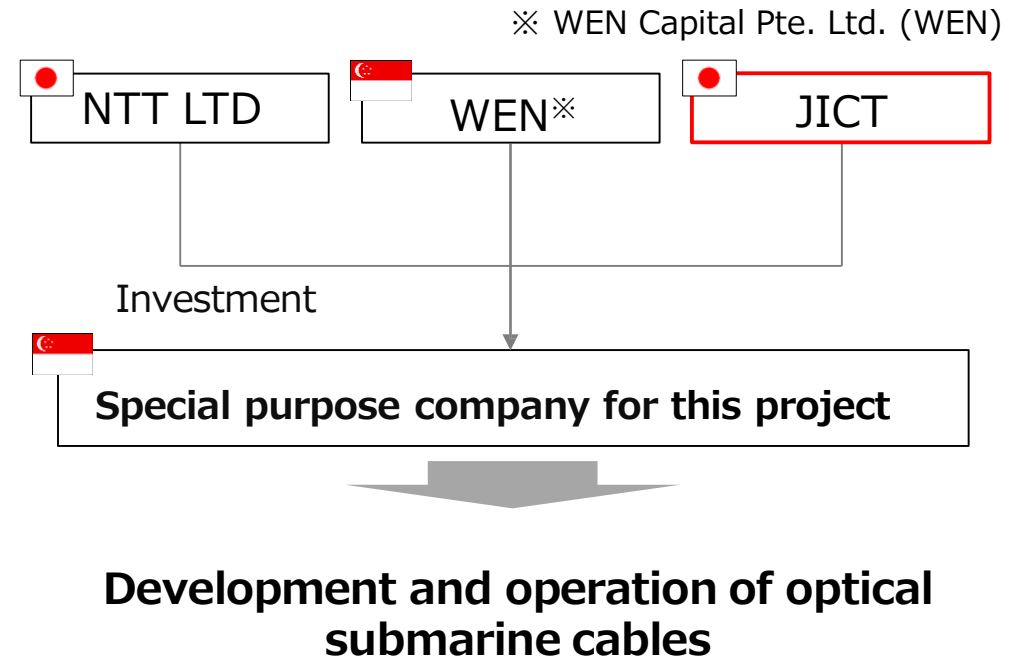
- JICT※, together with NTT Ltd., has participated in optical submarine cable projects in Southeast Asia and other regions, and it has made investments and loans up to 78 million US dollars.
- JICT will respond to increasing communication demand in the region and contribute to overseas development of high-quality infrastructure and realization of a Free and Open Indo Pacific.

※ Fund Corporation for the Overseas Development of Japan's ICT and Postal Services (JICT)

【Project Image】



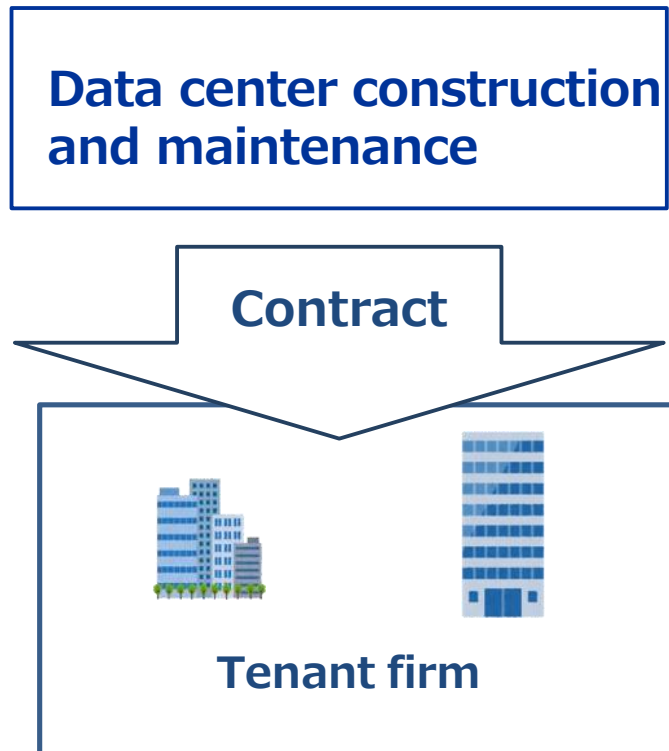
【Project Scheme】



JICT※, together with GDCHC※, has participated in the construction, maintenance, and operation of data centers in India, and it has made investments up to 86 million US dollars.

※ Fund Corporation for the Overseas Development of Japan's ICT and Postal Services (JICT)
※ NTT Global Data Centers Holding Asia Pte. Ltd (GDCHC)

【Project Image】



【Project Scheme】

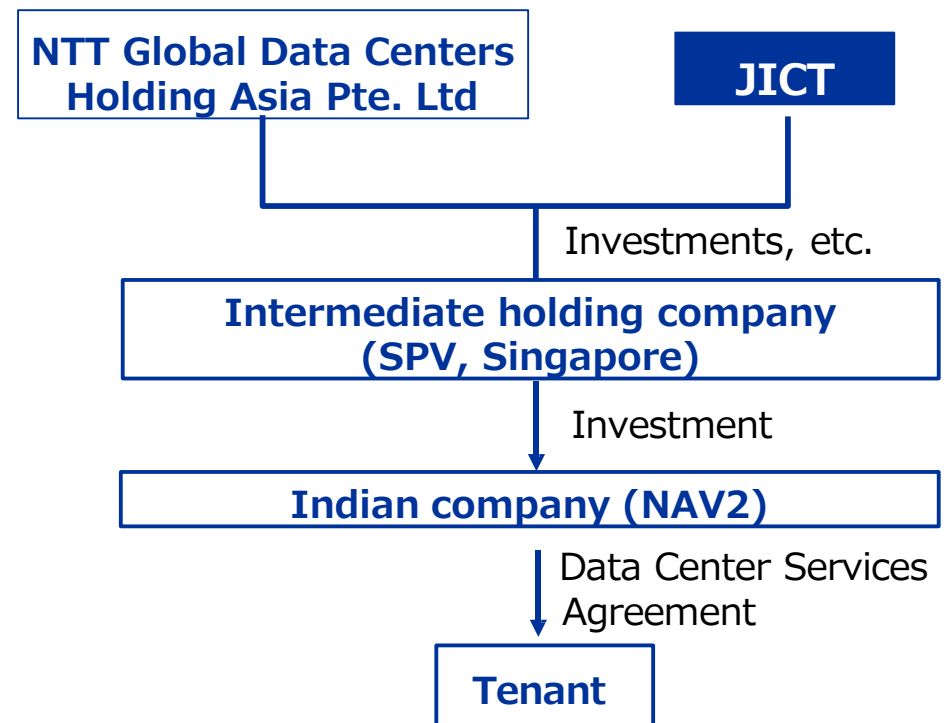


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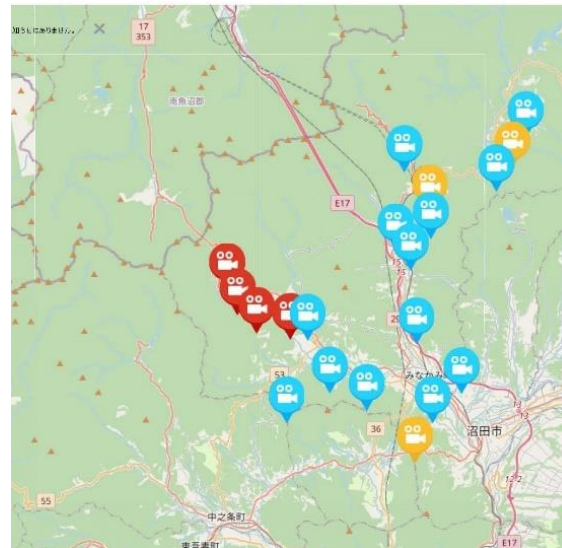
Speeding up Collection of Disaster Information Using Rain Gauges and Live Cameras (Minakami-machi, Gunma)

- Local torrential rains are an issue.
- A rain gauge and a live camera were installed to collect information.
- Some information is available on the website for residents.
- The system automatically notifies relevant personnel when rainfall exceeds 20mm/h.

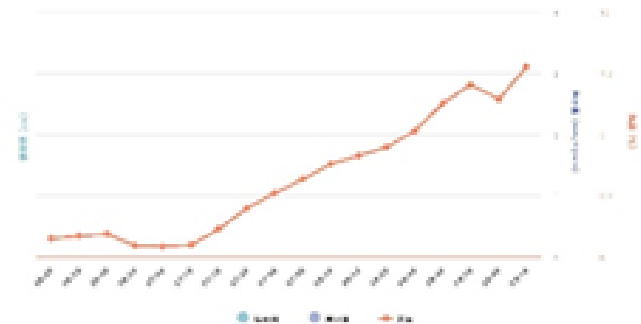
Related URL: <http://157.112.102.76/>



Live camera



Data from rain gauges



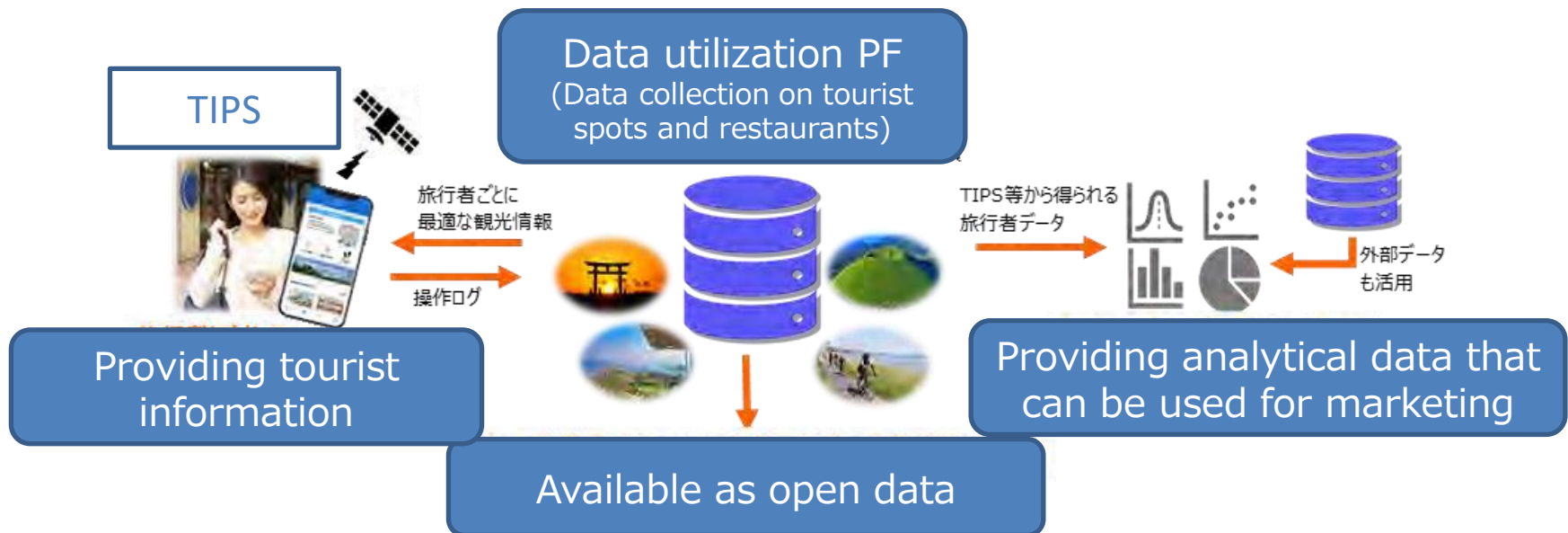
Red Tide Monitoring System

- In the area where early red tides are generated, Oita prefecture has installed an automatically elevating observation machine that can monitor red tides in near real time for 24 hours.
- Observation data on the website can be viewed by anyone.
- This system reduces the effort required for monitoring, and it enables damage mitigation.



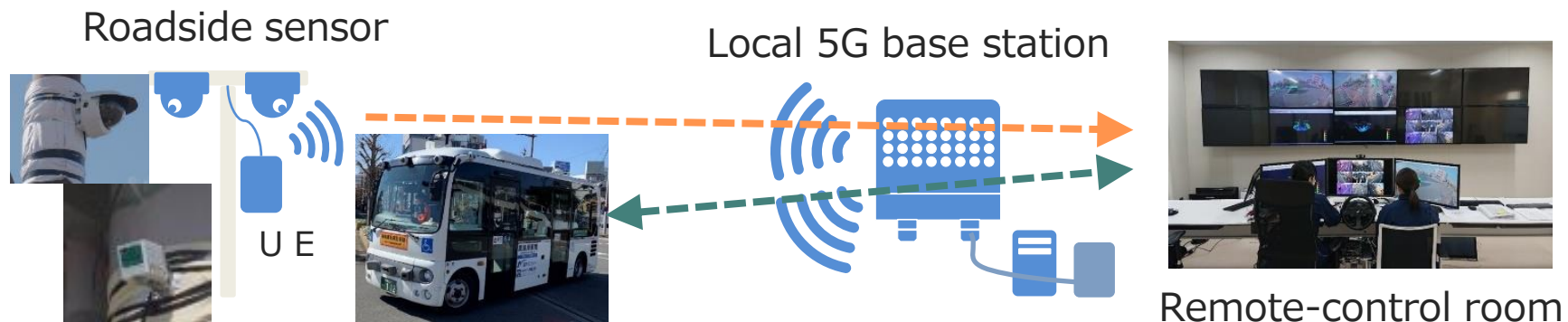
Digital Marketing for Tourism

- Promote open data by collecting about 10,000 items, such as tourist spots and restaurant information.
- The Shizuoka Prefecture official sightseeing app TIPS was developed in collaboration with PF.
- Provide optimum information according to the user's attributes (age, residence, interests, location information, etc.).
- Store operation logs as big data, and use them for digital marketing.



Remote Self-Driving Bus Utilizing Local 5G (Maebashi-shi, Gunma)

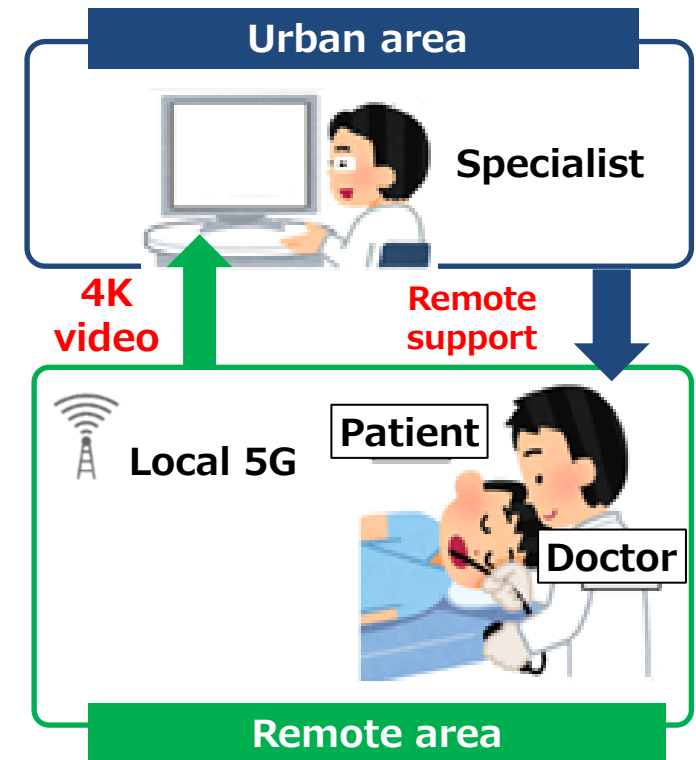
- A self-driving bus using local 5G.
<Information transmission between the vehicle and the remote-control room>
 - ✓ Transmission information: camera images, etc. (inside and outside information for grasping driving conditions)
 - ✓ Local 5G transmits sensor information and high-quality camera images
 - ✓ Using AI and other tools, it transmits the necessary information when needed
- <Transmission of information between the roadside system and the remote-control room>
 - ✓ Transmission information: camera images, etc. (especially blind spots of autonomous vehicles)
 - ✓ Local 5G transmits sensor information and high-quality camera images



- Unmanned driving of autonomous tractors, etc. under remote monitoring (simultaneous driving of multiple vehicles, driving on public roads between fields, etc.)
- Big data collection and analysis of growth data, etc. obtained from various sensors (formulation of optimal agricultural plans, etc.)
- Network utilization combined with multiple existing infrastructures (wastewater monitoring using various sensors and cameras, etc.)

Remote Support of Specialists Utilizing Local 5G [Nagasaki Prefecture]

- ① Providing highly specialized medical care through remote support by specialists via smart glasses and 4K cameras at core hospitals on remote islands, etc.
- ② Remote medical care and care support through smart glasses worn by nurses at facilities for the elderly on remote islands, etc. where doctors are not permanently stationed



1. There are challenges for strengthening mobile phones and fixed-line internet services
2. Achieving intercarrier roaming in emergency
3. Satellite communications using mobile phones
4. Mobile phone services using HAPS

(1) Remote medical care services utilizing medical ICT

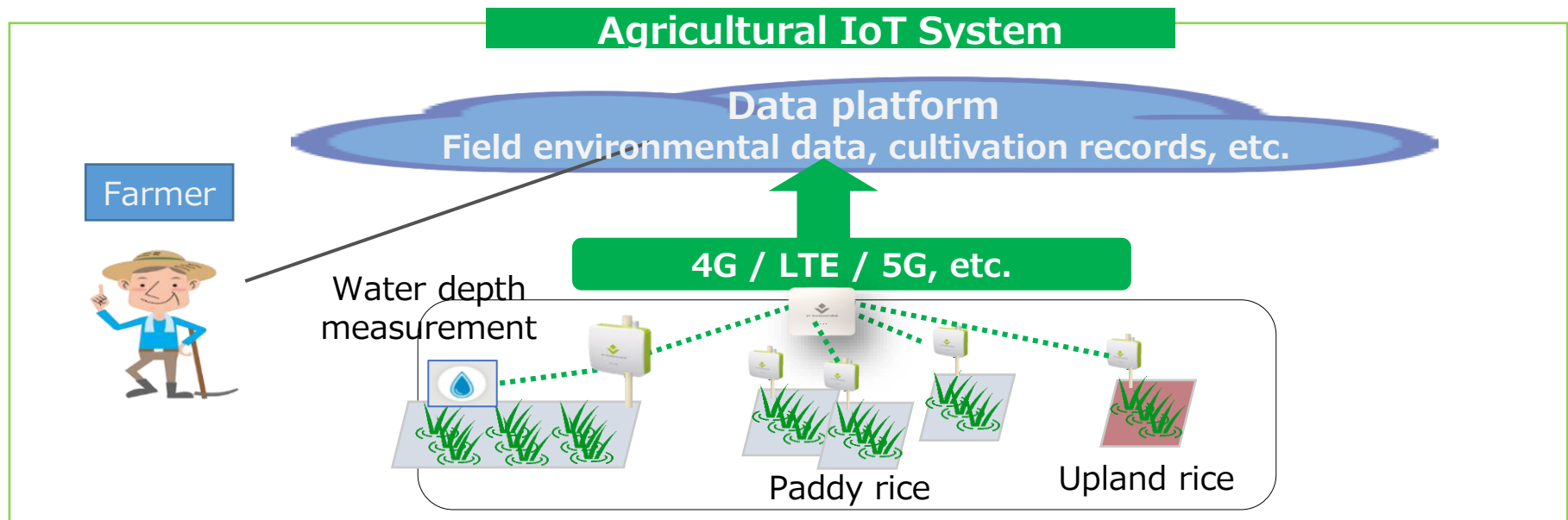
- Since fiscal 2017, demonstration experiments have been conducted by Allm Inc. in 12 countries (Peru, Chile, Brazil, Mexico, Colombia, Thailand, Vietnam, Germany, Spain, Malaysia, Russia, and Uzbekistan).
- It has been adopted by 1250 medical institutions in 32 countries worldwide.
- Using remote examination of CT and other images by specialists means unnecessary traveling can be reduced, so patients that do need to be moved can be quickly transported to specialists.



International Cooperation Project

(2) Agricultural IoT System

- Softbank demonstrated an agricultural IoT system that improves the efficiency and productivity of agricultural work by aggregating and analyzing sensor data (temperature, humidity, water volume, etc.) and proposing the optimal water volume, harvest time, etc. in Colombia, Ecuador, and Brazil.
- Productivity increased by 20% or more by forecasting the optimum harvest time.
- Costs were reduced by 23% by optimizing the number of pesticide sprays, based on pest predictions.



International Cooperation Project

(3) Smart Aquaculture in Scotland

- The introduction of remotely operable AI technology is expected to improve the productivity of labor used for salmon farming.
- A demonstration of ICT and digital solutions for the aquaculture industry in collaboration with a producer of farm-raised salmon in Scotland

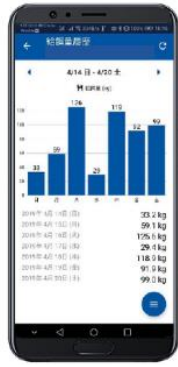
<Feeding and observing with mobile apps>



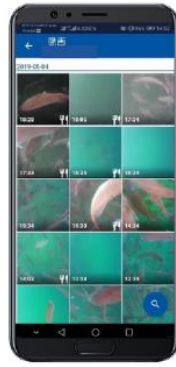
Camera monitoring



Feeding

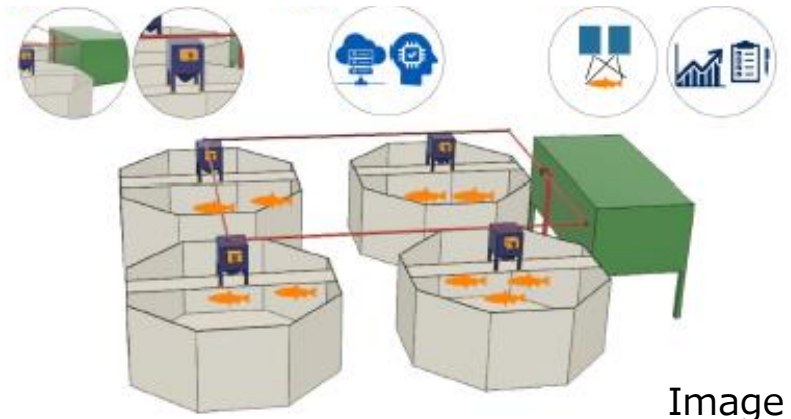


Food check



Data storage

1. Feeding works improvement
2. AI eating analysis
3. Confirmation of growth results



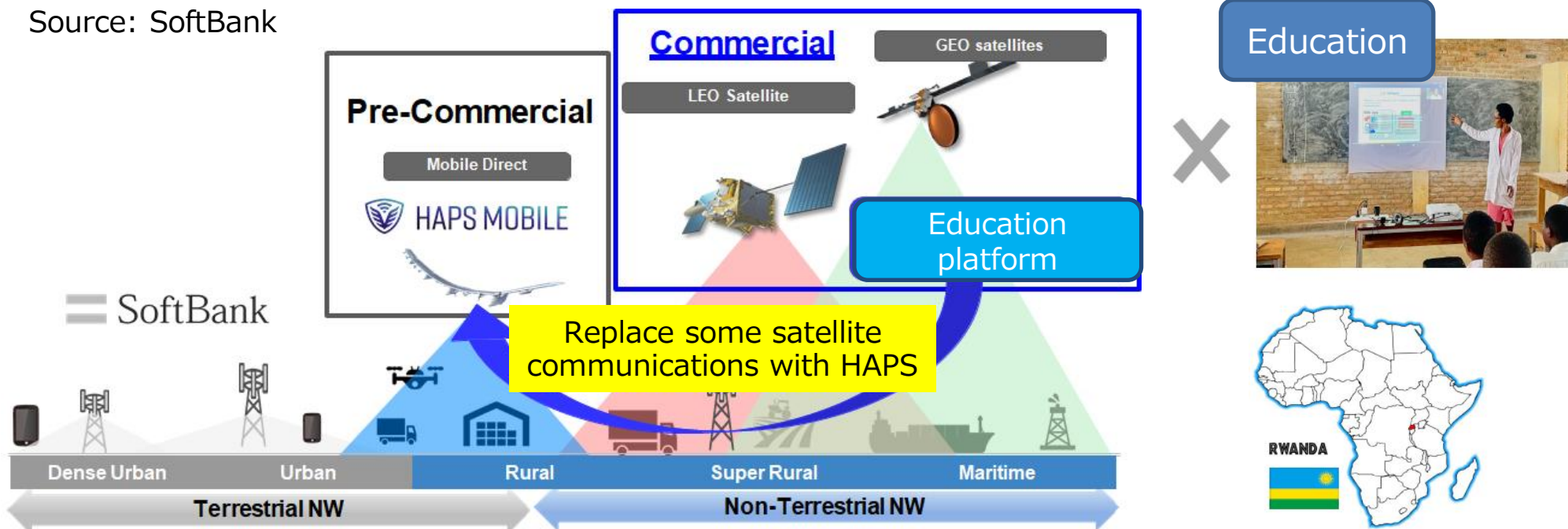
Image

International Cooperation Business

(4) Distance Learning Utilizing Non-Terrestrial Networks

- A demonstration of distance education using a non-terrestrial network (NTN) that provides communications from communication satellites, etc. in Rwanda.
- Using the opportunity in Rwanda, SoftBank also aims to expand the program to other African countries.

Source: SoftBank



(5) Medical ICT Deployment to Improve Maternal and Child Health

In Uzbekistan, providing assistance to children and pregnant women is an issue.

<Contents of the Survey>

1. Maternal and child health: using ICT to disseminate the Electronic Maternal and Child Health Handbook
2. Nurse training: using the remote training system to eliminate disparities

Using LMS (the learning management system)

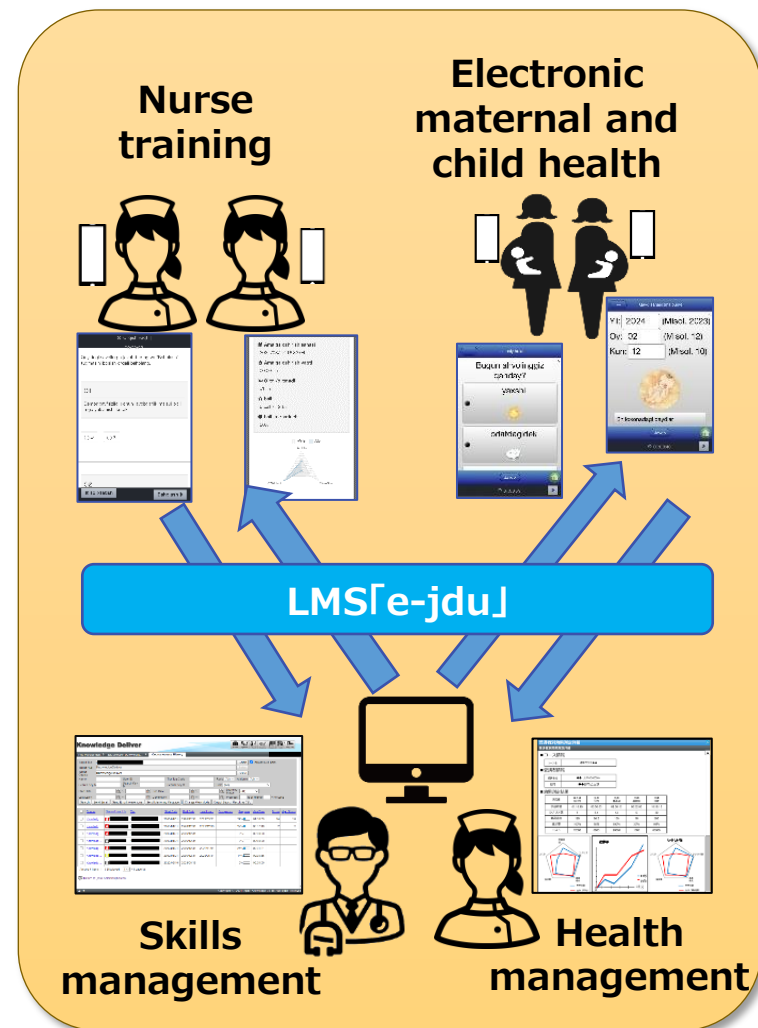
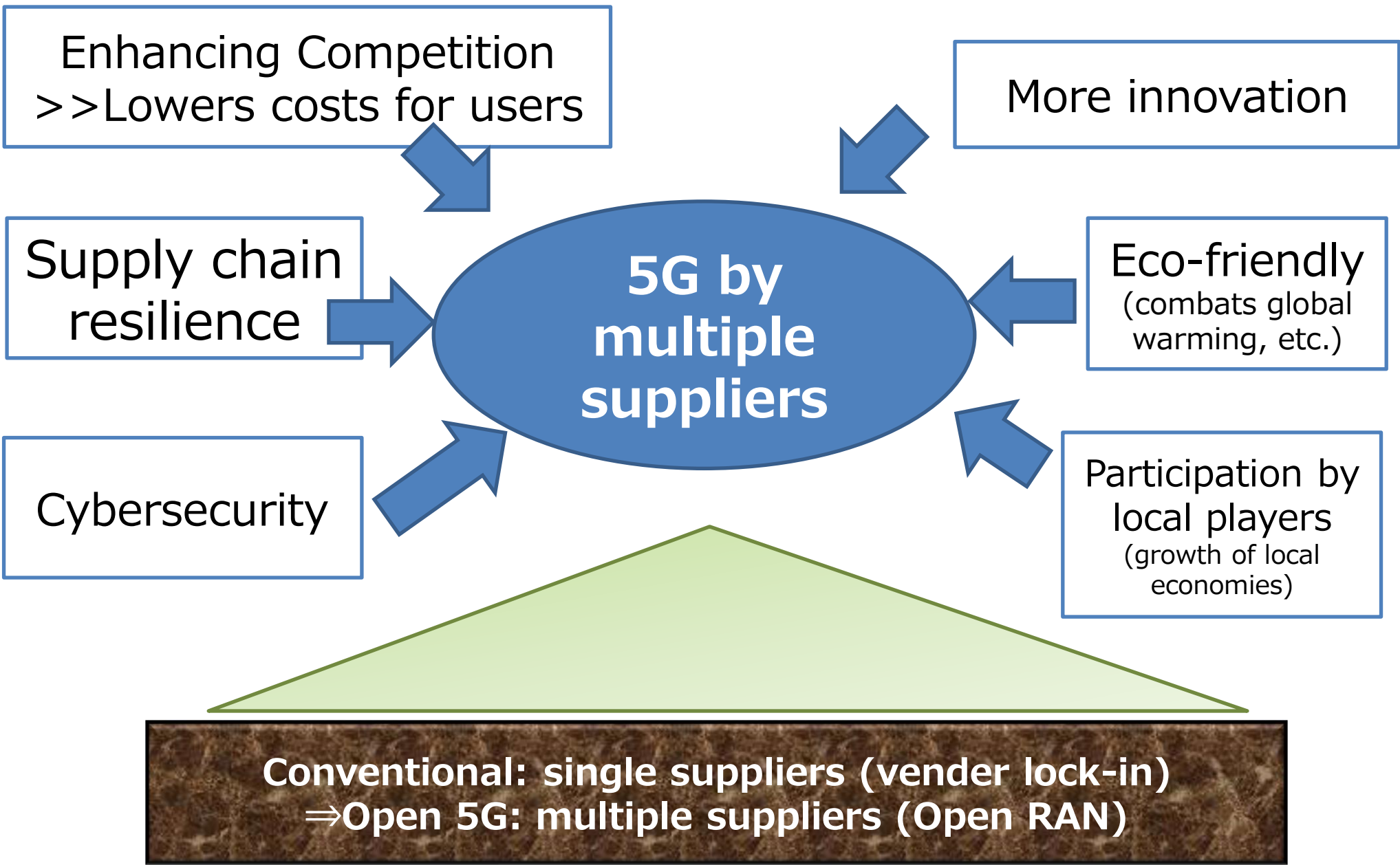
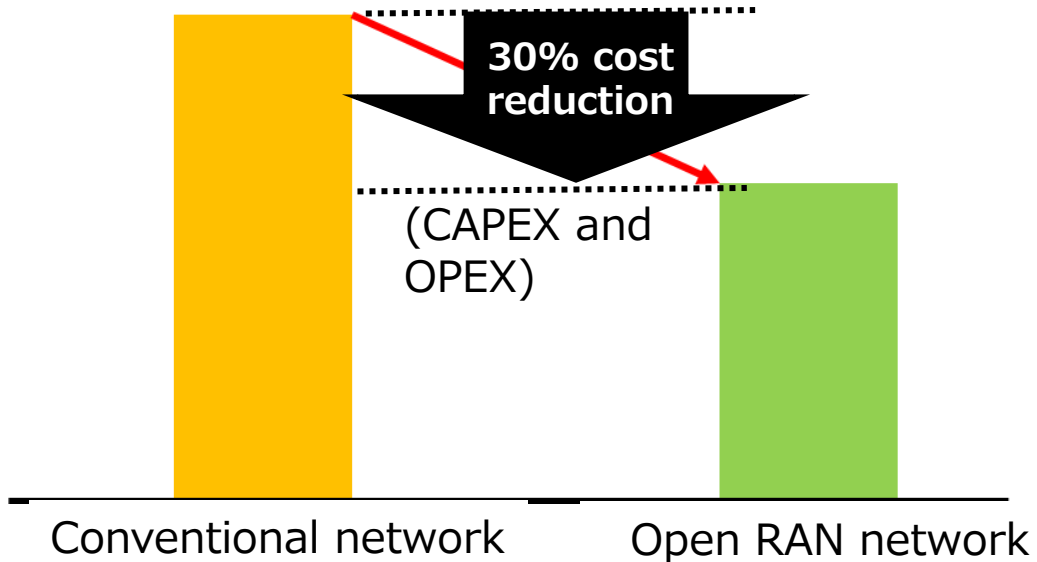


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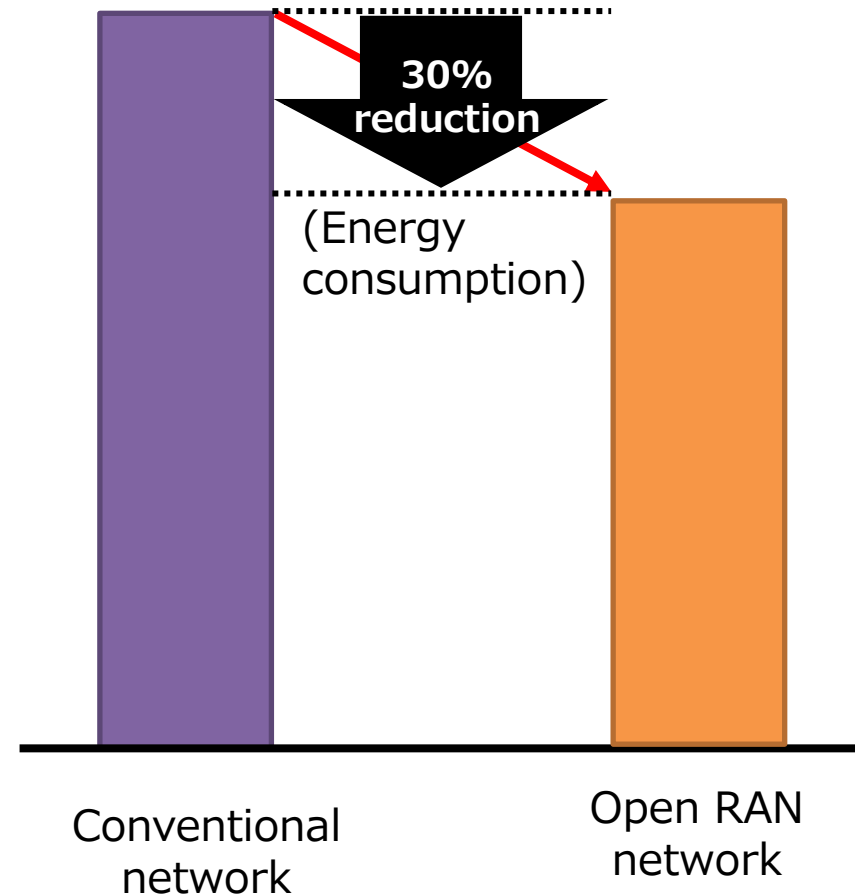


(1) Cost reductions



- ✓ Price competition among multiple vendors
- ✓ Reduction of site costs through downsizing
- ✓ Reduction of personnel costs and energy consumption through virtualization

(2) Energy consumption



Open RAN enables the following:

- ✓ **30% cost reduction**
- ✓ **Reduction of energy consumption by 30%** over the long term.

(1) Conditions for being assigned 5G frequencies

Mobile carriers are required to implement cybersecurity measures, including supply chain measures, as a condition for being assigned 5G frequencies.

(2) Tax incentives

Tax incentives are provided to support the introduction of 5G networks that are secure, reliable, and open.

(3) Reporting on telecommunication accidents

Reporting telecommunications accidents that are over a specific size is required under the Telecommunications Business Act (Act No. 86 of 1984) for telecommunications carriers.

(4) Support for OTIC

All of the MNOs in Japan (NTT Docomo, KDDI, SoftBank, and Rakuten Mobile) and the YRP Research and Development Promotion Committee established Japan OTIC in December 2022 for verifying the interoperability of multi-vendor devices.

(5) Support for the international deployment of Open RAN

1 Open RAN demonstration project in Thailand

Demonstrating private 5G using Open RAN compliant equipment in industrial parks in Thailand

2 Open RAN demonstration project in Peru

Building an Open RAN-compliant multi-vendor 5G network and demonstrating a 5G service that provides live footage of a stadium football match in a multi-angle remote area

3 Indoor infrastructure sharing in Vietnam

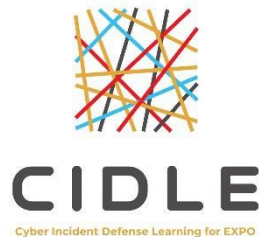
Demonstrating 5G indoor infrastructure sharing, which contributes to cost reductions for telecommunications carriers

National Institute of Information and Communications Technology (NICT) National Cyber Training Center



Practical cyber defense exercises for administrative organizations and critical infrastructure providers

*3,000 attendees with 100 sessions held annually



Practical cyber defense exercises for the Japan Association for the 2025 World Exposition



Develop young innovators under 25 years old

*About 50 trainees are selected for a one-year high-level cybersecurity training program

1. Cybersecurity exercises

The following exercises are provided for government agencies, critical infrastructure businesses, and others in ASEAN countries (about six sessions per year)

- ✓ CYber Defense Exercise with Recurrence (CYDER)
- ✓ Digital forensic exercises
- ✓ Malware analysis exercises
- ✓ Exercises for trainers involved in digital forensic and malware analysis
- ✓ Exercises based on an ASEAN needs survey
- ✓ Exercises pertaining to trusted digital services



Cybersecurity exercise

<Past Activities>

- Cybersecurity exercises are held once every two months since the opening of the centre in September 2018.
- Over **1,200 people** participated in exercises provided by Japan as of January 2024.
- Like-minded third parties have granted the centre the use of their original training exercises.

Cybersecurity Training and Exercise Programs for Pacific Island Countries

- MIC conducted a training exercise in Guam in February 18–26, 2024, to support capacity building efforts in the region.
- Thirteen government officials and critical infrastructure personnel related to cybersecurity participated from countries in the Micronesian region (Palau, the Federated States of Micronesia [FSM], the Marshall Islands, Nauru, and Kiribati). For the training exercises, the CYDER incident response exercise, which is used at AJCCBC to support developing countries, was used.
- MIC plans to consider and provide more effective training exercises in FY2024, based on the results of the training exercises in FY2023.

- Following the results of the G7 Hiroshima Summit in May 2023, the “Hiroshima AI Process” was launched to study international rules on generative AI.
- The outcomes of the Hiroshima AI Process included the “Hiroshima AI Process Comprehensive Policy Framework” and the “Work Plan to Advance the Hiroshima AI Process”.
- These achievements were endorsed by the G7 Leaders in the G7 Statement issued on December 6.
- The Hiroshima AI Process, based on the above “Work Plan”, will be further promoted.

Guiding Principles for Organizations Developing Advanced AI Systems ①

1. Take appropriate measures throughout the development of advanced AI systems, including prior to and throughout their deployment and placement on the market, to identify, evaluate, and mitigate risks across the AI lifecycle.
2. Identify and mitigate vulnerabilities, and, where appropriate, incidents and patterns of misuse, after deployment including placement on the market.
3. Publicly report advanced AI systems' capabilities, limitations and domains of appropriate and inappropriate use, to support ensuring sufficient transparency, thereby contributing to increase accountability.
4. Work toward responsible information sharing and reporting of incidents among organizations developing advanced AI systems including with industry, governments, civil society, and academia.
5. Develop, implement and disclose AI governance and risk management policies, grounded in a risk-based approach including privacy policies, and mitigation measures, in particular for organizations developing advanced AI systems.
6. Invest in and implement robust security controls, including physical security, cybersecurity and insider threat safeguards across the AI lifecycle.

Guiding Principles for Organizations Developing Advanced AI Systems ②

7. Develop and deploy reliable content authentication and provenance mechanisms, where technically feasible, such as watermarking or other techniques to enable users to identify AI-generated content.
8. Prioritize research to mitigate societal, safety and security risks and prioritize investment in effective mitigation measures.
9. Prioritize the development of advanced AI systems to address the world's greatest challenges, notably but not limited to the climate crisis, global health and education
10. Advance the development of and, where appropriate, adoption of international technical standards.
11. Implement appropriate data input measures and protections for personal data and intellectual property.
12. Promote and contribute to trustworthy and responsible use of advanced AI systems.

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Potential for Future Cooperation between Japan and Caribbean Small Island States

- Sharing experiences and knowledge on digital infrastructure and ICT solutions through seminars and demonstration projects
- Cooperation among international organizations, multilateral frameworks, and standardization activities related to the development of digital infrastructure that promote the safe and proper distribution of data

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1. DX does not solve problems.
2. From the user's point of view, what kind of system should be introduced to realize what? If necessary, how can the system be improved? How does the government plan to finance it?
3. Different regions require different infrastructure. It is vital to proactively consider optimization that meets needs.