Chapter 4

Status of ICT Policy at MIC

Section 1 Promotion of Comprehensive ICT Policies

1. Current State and Challenges

(1) Arrival of aging society with fewer children and distressed local economy

In Japan, the low birthrate and population decrease have become increasingly serious. Decline in births is progressing at a faster speed than past projections. Total fertility rate once recovered to 1.45 but has been slightly decreasing in the past few years. Progress of declining birthrate and aging has significant impacts on socioeconomics through population (especially working-age population) decrease, which include decline in labor supply, contraction of the economy and market, lower economic growth rate, fewer leaders in communities and society, increasing burden on working generations and decline in the level of administrative services.

In particular, many regions are facing various social challenges to solve toward regional revitalization: increase in the number of vulnerable road users, shortage in workers who provide medical/nursing care services, decline in retail/daily-life-related services in communities and increasing burden of infrastructure maintenance/management.

In this context, ICT utilization is expected to enable the employment of people who had few employment opportunities due to various social reasons including child care, family care and disabilities, while at the same time contributing to improvement of corporate productivity and business processes. Construction of a structure for new value creation taking advantage of digital technologies would help problem solving and attraction enhancement in communities.

(2) Preparedness for intensifying disasters

In recent years, weather disasters have become increasingly serious and frequent due to climate change, and large scale earthquakes including the Nankai Trough earthquake, subduction zone earthquakes around Japan Trench and Chishima Trench, are imminent. Furthermore, because infrastructure that was intensively developed in and after the high-growth period will age at once hereafter, it is necessary to ensure steady maintenance/renewal of infrastructure. However, preventive maintenance cycle is not yet established. Failure to make appropriate responses would not only increase medium- to long-term total cost but also cause dysfunction of administrative and socioeconomic systems of Japan.

In order to overcome these national crises, protect lives and assets of the people and maintain important functions of the state and society, it is necessary to advance Japan's development as a disaster-resistant country by accelerating and deepening the efforts for disaster prevention/mitigation and national resilience.

For more efficient implementation of the measures for disaster prevention/mitigation and national resilience, it is essential to take advantage of digital technologies that have been rapidly developing in recent years. It is expected that ICT utilization will enable high-quality disaster countermeasures including efficient and effective transfer/sharing of disaster information and thereby help realization of a disaster-resistant resilient society. In addition, it is necessary to ensure reliable and prompt communication through broadcasting at times of disaster by promoting measures toward a resilient and disaster-resistant broadcast network.

(3) COVID-19 pandemic

The COVID-19 pandemic triggered the need to adopt a non-contact/non-face-to-face lifestyle in various scenes of daily life including shopping, commuting and leisure activities. Enterprises also need to introduce a non-contact/non-face-to-face workstyle and improve operation efficiency amid slumping consumption. When social conditions are greatly changing in this way, various problems of Japan including its delay in digitalization have come to the surface due to the COVID-19 pandemic. On the other hand, there are also positive changes toward the future: changes in workstyle using digital technologies, an increased awareness of environmental problems and an increased interest in living in the countryside. In addition, there are new moves and attempts including young people and enterprises playing active roles in the world.

In this context, we need to spread digitalization at the micro level -individuals, homes, awareness/action of enterprises- and accelerate the move toward "post-coronavirus" society by changing systems and structures across society including legacy corporate organizations, and by changing workstyle and manpower training toward more diversity, resilience and flexible response to changes.

(4) Changing world affairs

Trade issues between the United States and China have become increasingly serious, and their competition

in 5G, quantum and other cutting-edge technologies is intensifying. When changes in the power balance in international society have become increasingly accelerated and complicated, new challenges including security in economy and technologies have come to the surface. On another front, with the progress of science and technology in recent years, activities in outer and cyber spaces have increased, which has brought about a big opportunity but also generated new risks and threats.

In this context, while cooperating with the international community, Japan needs to work on its economic security policy including strengthening of ICT supply chain and construction of safe and reliable ICT infrastructure, and countermeasures against cyber-attacks and other new challenges accompanying the progress of innovative ICT.

2. Initiatives for Promotion of Comprehensive ICT Policies

(1) Promotion of initiatives toward the Digital Garden City Nation

The Vision for a Digital Garden City Nation is a plan to connect to the world by digitalizing rural areas, creating new waves of changes and narrowing the gap between rural and urban areas. In November 2021, the Council for the Realization of the Vision for a Digital Garden City Nation chaired by the prime minister was set up in order to achieve the vision while promoting regional vitalization through digital transformation.

In response, MIC set up the Promotion Headquarters of the Vision for a Digital Garden City Nation in November 2021 and has been promoting initiatives based on the three pillars behind the vision: (1) development of digital infrastructure; (2) development and securing of digital human resources and initiatives to leave no one behind; and (3) digital implementation to solve regional challenges.

Related data
Council for the Realization of the Vision for a Digital Garden City Nation
URL https://www.cas.go.jp/jp/seisaku/digital_denen/index.html

Related data
MIC Promotion Headquarters of the Vision for a Digital Garden City Nation
URL https://www.soumu.go.jp/main_sosiki/singi/denen_toshi/index.html

(2) Consideration of information and communications policies toward 2030

Considering the increasing presence of overseas platform operators in Japan's information and communications market and supply chain risks due to changing international situations, MIC consulted the Information and Communications Council regarding "Desirable Information and Communications Policies toward 2030" in September 30, 2021. In response, the council conducted research and investigations on the direction and urgent tasks of information and communications policies in order to achieve the realization of Society 5.0[1] and ensure economic security.

In order to ensure the independence, existence and prosperity of Japan, and to ensure strategic autonomy and acquire strategic indispensability of the ICT industry which is playing an increasingly important role as a strategic core industry, the report finds the following as necessary: (1) advancement and maintenance of information and communications infrastructure; (2) maintaining and strengthening of international competitiveness of the information and communications industry (R&D, solutions, human resources); and (3) construction of a free and highly reliable information space **(Figure 4-1-2-2)**. In this process, considering the challenges facing Japan and factors of "digital defeat" of its ICT industry, the report presents the direction of the initiatives (e.g. development and introduction of new technologies with potential to become game changers, customer/market-oriented business development process, implementation of solutions by integrating manufacturing technologies and digital infrastructure).

It also presented eight priority fields and items of focus in each field. The fields are: (1) spread and advancement of 5G and its overseas expansion; (2) expansion of broadband; (3) R&D, implementation and international standardization of the next-generation networks; (4) study on future vision of broadcasting and broadcasting system; (5) construction of a safe and secure environment for internet use; (6) promotion of content services; (7) security of cyber security overlooking the entire cyber space; and (8) strengthening of human resources and promotion of its use. For the above, the report finds it essential to start new initiatives free of existing ways through organic linking of roles (vertical division) and cross-functional initiatives across stakeholders, relevant government offices and MIC departments.

[1] Vision set forth in the Fifth Science and Technology Basic Plan (Cabinet Decision on January 22, 2016). This is a human-centered society balancing economic development and resolving of social issues through the sophisticated integration of cyberspace with physical space by maximizing ICT ("Super Smart Society"). Industry-academia-public-private initiatives have been promoted toward its realization by around 2030.

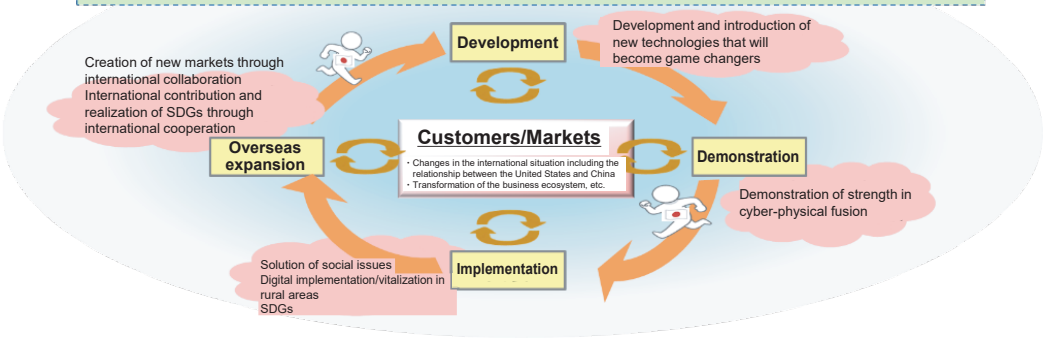
Figure 4-1-2-2 Basic approach toward the realization of Society 5.0

Information and communications policies to support Society 5.0 and economic security

In order to ensure the independence, existence and prosperity of Japan, we aim to ensure strategic autonomy and to acquire strategic indispensability of the information and communications industry which is playing an increasing role as a strategic core industry.
(1) Advancement and maintenance of information and communications infrastructure that supports Society 5.0
(2) Maintaining and strengthening of international competitiveness of the information and communications industry (R&D, solutions, human resources)
(3) Construction of a free and highly reliable information space

Resilient and vigorous society in the 2030s (Society 5.0)

- ✓ **Inclusive: society where everyone can be active**
- ✓ **Sustainable: society which sustainably growing**
- ✓ **Dependable: society that enables activities with security**



Related data
General Policy Committee, Information and Communications Policy Section, Information and Communications Council
URL https://www.soumu.go.jp/main_sosiki/joho_tsusin/policyreports/joho_tsusin/sougou_seisaku/index.html

Column 2 "Recommendations on Information and Communication Administration from Young Administrators—a Roadmap to MIC 2.0"

In September 3, 2021, MIC published "Recommendations on Information and Communication Administration by Young Administrators—a Roadmap to MIC 2.0" that is a recommendation by a team formed to propose innovations.[2]

The team was set up in July 2021 and 45 mostly young officials became members through public recruitment in MIC. They held intensive discussions on challenges of information and communication administration and necessary reform toward the desirable state, and compiled the result in the recommendation. Prior to its release, the team handed the recommendation to Minister Takeda for Internal Affairs and Communications (at the time) and they exchanged opinions.

The recommendation made proposals in six fields, some of which have been reflected in budgetary requests and discussions at expert committees. Below is a summary of the recommendations.

1. Information distribution/cross-cutting field

MIC has been returning the ICT development results to society and promoting advancement of social life and economic activities. However, with the rapid progress of digitalization under the COVID-19 pandemic and other factors, new challenges of "post COVID-19 age" have come to the surface. In order to ensure prompt and appropriate response to the challenges, it is necessary for the entire organization to strengthen its system so that limited resources will be concentrated on the right policy issues through true "selection and concentration." Specifically, MIC should work on the four issues: (1) strengthening of information collection and analysis functions; (2) promotion of selection of external human resources for higher positions; (3) full focus on hands-on approach; and (4) organizational reform of MIC departments.

2. Technology/international affairs

In order to respond to an increasingly volatile, uncertain, complex and ambiguous society, it is necessary to frame policies free from the traditional approaches. In addition to the current initiatives, the following new initiatives should be promoted.

- Strengthen linkage of technology development, social implementation and international deployment to establish systems/environment and policy schemes for streamlined promotion.
- In order to promote problem solving through ICT, make broad and flexible efforts including development of peripheral technologies and uncharted territories without excessive consideration of jurisdiction.
- In order to build person-to-person relationships in international affairs, make special personnel consideration including higher titles to staff members who work on international negotiations.

3. Communications/radio waves

Communications/radio waves is a core industry that is expected to exceed 100 trillion yen in the future and a strategically important industry that will have a decisive influence on the future of Japan depending on the current policy. In future policy making, the three perspectives of (1) national level, (2) local level, and (3) global level, and approaches of "attack" and "defense" will be useful. There are a variety of issues to tackle, which include economic growth/regional revitalization; safe, secure and low-cost ICT use environment; and security of outer/cyber spaces and electromagnetic waves. In addition to considerations of bold funding for promotion of local and enterprise digital transformation through construction of even more resilient infrastructure and local 5G, we should reform systems toward more competitive and transparent spectrum allocation.

4. Broadcasting

"Broadcasting" has led media content in Japan and played a public role, but its environment is rapidly and irreversibly changing due to the spread of smartphones and rapid progress of video distribution platforms. It has become natural to view "what one likes" "at any time" and "anywhere" without being aware whether it is through "broadcasting" or "communication." In this context, it is clear that we will not be able to meet the needs of the public/viewers if we stick to the past "broadcasting" forms/business model.

MIC needs to study "past," "present" and "future" of "broadcasting" and advance specific reforms to contribute to (1) ensuring of "reliable" service, (2) contents that meet "viewers' demand" and (3) challenge to "go beyond" television.

[2] https://www.soumu.go.jp/menu_news/s-news/01tsushin01_02000321.html

5. Postal Affairs

Post offices have fulfilled their role as important infrastructure of communities since their establishment, but their presence is gradually weakening and they are now regarded as "a symbol of analog technology" amid the rapid digitalization of society. In order to continue to be necessary for people throughout the ages, post offices should specify a roadmap for "data utilization" and show their presence again as a source of "regional revitalization" in addition to maintaining the existing services.

Japan Post Group and MIC need to take the following actions:

- Entry into community infrastructure business: Stadt Werke Post Office Style
- Exchange of people leading regional revitalization project: "Dispatch of digital human resources by using post offices"
- Creation of new dialog opportunities: "Post administration dialog"

6. Organizational culture/ways to proceed with work

MIC has been working on workstyle reform and review of operations, which include the activities of the team. However, the team makes the following recommendations on operational environment and personnel system reform from the perspective unique to administrative affairs of information and communications.

Regarding operation environment, MIC should put its operations completely online on the premise of telework. In order to support this process, it is necessary to further improve ministry LAN and efficiency of routine tasks. For personnel system reform, it is necessary to take measures to proactively support active career development of each official. Training of experts who can play active roles in the frontline of security, privacy, international relationships and other fields is a pressing issue. In order to prevent concentration of tasks on specific officials, it is necessary to reduce gaps in work experience/knowledge and to study the desirable state of information exchange network with private enterprises.

Section 2 Trends in Telecommunication Policy

1. Summary

(1) Initiatives so far

For over 35 years since the liberalization of telecommunications business and the enforcement of the Telecommunications Business Act in 1985, there have been a large number of new entries into the telecommunication market. Under the competition principle, price reduction and service diversification/upgrading have impressively advanced through the progress and introduction of a variety of communication technologies including IP/ digitalization and mobile broadband. In the past, MIC has constantly reviewed various policies and institutions in its approach to ensure provision of reliable telecommunication services while at the same time maintaining the innovations and dynamism of the telecommunication services.

For example, Japan's telecommunications market has experienced major environmental changes, including the popularization of mobile phones and the rollout of broadband, and the progress of competition between groups of players, mainly mobile carriers, in recent years. Considering these changes, MIC has developed rules to ensure a fair competition environment. Furthermore, to address the issue that mobile bills are high compared with other countries and price plans of carriers are too complex to understand, MIC has taken measures for enabling people to access the low-price and diverse mobile phone services that are daily necessities today.

MIC has also developed rules to cope with growing and diverse problems in the use of telecommunication services caused by information gaps between users and carriers, or inappropriate solicitation by business, and the growing global risks of complication and sophistication of cyber-attacks.

(2) Future challenges and direction

Telecommunication business provides services indispensable for people's daily lives and socio-economic activities. As the social structure of Japan is moving toward "rapid population decrease and extreme population aging," it is expected that the roles of ICT for regional revitalization will increase, which include strengthening of regional industrial infrastructure and promotion of migration to rural areas. It is thought that the roles ICT should play are also increasing in vitalization of economic activities including creation of new businesses and productivity improvement, in realization of safe and secure society and for solution of social challenges in medical, education, administration and other sectors. Importance of telecommunication services is further increasing.

In this context, it is extremely important for individuals and Japan's socio-economy to ensure the benefits for telecommunication service users and to develop digital infrastructure as the foundation to promote innovations in the entire society and to support digitalization/digital transformation.

It is expected that not only the telecommunications market, but even Japan's social structure will further drastically change and the existing social/economic models that have been assumed will no longer apply. There is an increasing need to solve social challenges and create values by using advanced information and communications technologies.

For this purpose, it is necessary to create an environment where all entities in Japan can use safe, secure and reliable information and communications services.

2. Development of a Fair Competitive Environment

(1) Analysis/validation of the telecommunications market

i Validation of the telecommunications market

Since fiscal 2016, MIC has conducted integrated market validation including analysis/validation of market trends and confirmation of adequateness of the operation of telecommunication businesses. With the aim of obtaining advice from objective and technical perspectives, MIC has held the Meeting for Telecommunications Market Validation consisting of experts and other members. Since December 2020, MIC has held a "study meeting on the ideal way of ensuring fair competition" under the Meeting for Telecommunications Market Validation to conduct a study from the perspective of ensuring fair competition in the telecommunications market.

Based on the recommendations concerning the need for strengthening market validation in the report of the study meeting, MIC released "Basic Policy on Market Validation in Telecommunications Business" in December 2021. Based on this policy, MIC will formulate an annual plan presenting implementation policy of market validation, etc. and implement market validation measures according to the plan.

ii Development of a fair competition environment in the mobile market

(i) Validation of the competition rules in the mobile market

In order to realize low-cost and diverse services through active competition among business operators, MIC has been taking measures for development of a fair competition environment in the mobile market. In 2019, the Telecommunications Business Act was amended for separation of communications charges and terminal device charges, prohibition of excessive customer retention and other purposes. Since 2020, effects of the measures taken based on the amendment and their impact on the mobile market have been continuously examined at the "Working Group (WG) on Verification of Competi-

tion Rules" set up under the "Meeting for Telecommunications Market Validation."

(ii) Formulating and releasing an action plan

Based on the "2020 Report on Verification of Competition Rules" (October 2020) of the WG and others, MIC released "Action Plan for Creating a Fair Competitive Environment for the Mobile Market" which specifies the issues that should be addressed to improve the fair competition environment in the mobile market.

As part of the efforts in response to the action plan, in order to improve the environment toward lower mobile phone charges, MIC and the Consumer Affairs Agency jointly published "Reminder regarding display of 'down payment' and terminal selling prices in the mobile phone industry – to people considering purchase of a mobile phone terminal" in November 2020. In addition, MIC opened "Mobile Phone Portal Site (provisional version)" posting neutral information to help users in choosing the plan that meets their needs on the MIC website in December 2020, which was followed by an official version on April 2, 2021. Further in April 2022, MIC renewed its design and extensively expanded the content to promote further understanding of consumers.

Related data
Mobile Phone Portal Site
URL https://www.soumu.go.jp/menu_seisaku/ictseisaku/keitai_portal/

(iii) Prohibition of SIM lock in principle

In November 2020, MIC set up "Switching Facilitation Taskforce" under the Working Group (WG) on Verification of Competition Rules. The task force conducted intensive, specialized, and technical studies to facilitate switching between carriers.

Based on the report of the taskforce (May 2021) and the "2021 Report on Verification of Competition Rules" (September 2021) of the WG, MIC developed rules for in-principle prohibition of SIM lock and early dissolution of existing contracts. Mobile operators are also advancing their initiatives including abolition of penalty payment, start of portable carrier mail address service and introduction of eSIM. In this way, development of a fair competition environment in the mobile market is progressing.

(2) Development of interconnection rules

i Review of calculation method of mobile connection charge

Since February 2021, mobile operators have been sequentially offering new low-cost price plans for mobile communication. Competition among MNOs and MVNOs in the mobile market is expected to further lower charges and upgrade and diversify their services.

Based on the Fifth Report (September 2021) of the "Study Group on Calculation of Interconnection Charges, etc.," MIC partially amended the Enforcement Regulation of the Telecommunications Business Act to request telecommunications carriers installing Category II designated telecommunications facilities for report on details of the calculation method of mobile interconnection charges and specific values of the basis of calculation.

ii Review of the system for wholesale telecommunications services

MNO's voice call charges (measured rate) were not lowered for a long period of time. As a cause of the high voice call charges for a long time, ineffective negotiations between MNOs and MVNOs were suggested by the "2021 Report on Verification of Competition Rules," the "Fifth Report" of the "Study Group on Calculation of Interconnection Charges, etc." and others.

Based on the recommendation by the "Study Group on Calculation of Interconnection Charges, etc." (February 2022), a bill for partial amendment of the Telecommunications Business Act was submitted to the Diet in March of the same year and enacted in June. The bill newly provides obligations of wholesalers to provide wholesale telecommunications services using designated facilities and present information contributing to smooth negotiation at the request of their customers. MIC plans to study details toward its smooth enforcement.

iii Review of the interconnection system for fixed telephones

MIC consulted the Information and Communications Council on "Ideal State of Interconnection System with Consideration at Stage of Migration to IP Networks" on April 2020 and received its partial report in September of the same year and the final report in September 2021.

Based on the final report, a bill for partial amendment of the Telecommunications Business Act was submitted to the Diet in March 2022 and enacted in June of the same year. The bill includes the change of the area for calculation of the share of subscriber lines installed by individual telecommunications carriers under the Category 1 designated telecommunications facilities system from prefecture to their service areas. MIC plans to study details toward its smooth enforcement.

Based on the final report, MIC amended the regulation for the Category 1 designated telecommunications facility interconnection charge (Ordinance of the Ministry of Posts and Telecommunications No. 64 of 2000) in order to establish provisions on voice connection charge of subscribed telephones at the stage of migration to IP networks. At the same time, concerning the right to set charges for calls from subscribed telephones to mobile phones, MIC amended the examination criteria related to the Telecommunications Business Act (MIC Official Directive No.75 of 2001) and formulated the ruling policy on the right to set user charges.

3. Development and Maintenance of Digital Infrastructure

(1) Promoting optical fiber development

Today when people's movement is restricted with the spread of COVID-19, the importance of using digital technologies is further increasing to enable non-face-to-face/non-contact lifestyle including telework, remote education and remote diagnosis. As a result, ultra-fast broadband using optical fiber has become indispensable for socioeconomic activities and people's lives. Furthermore, its need as the trunk circuit to support 5G, which was commercialized in 2020 and whose area development is advancing, is also rising. The early national deployment of 5G is expected, but the development is delayed in depopulated areas, remote islands and other geographically disadvantaged regions.[3]

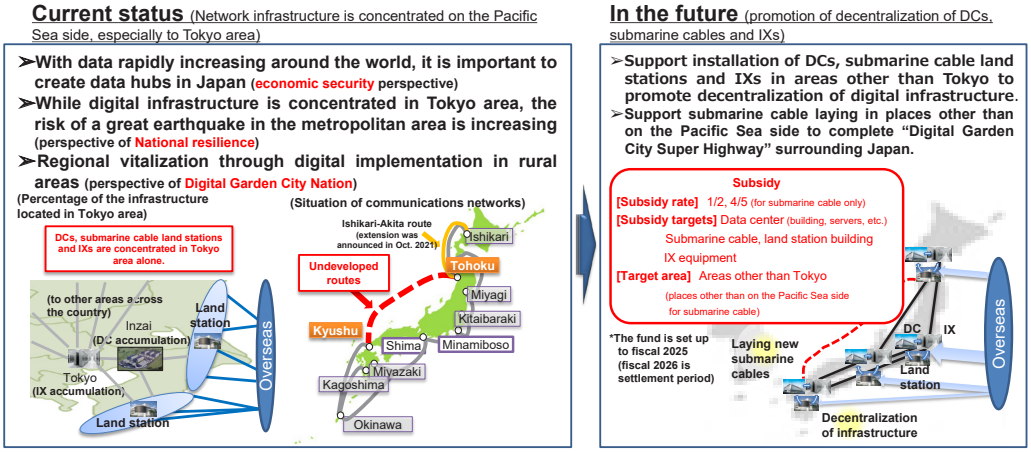
In this context, since fiscal 2019 MIC has been implementing the "project to promote advanced wireless environment" to subsidize a part of operating expenses of optical fiber development by local governments, telecommunication carriers, or others as a premise of high-speed and large capacity wireless communications including 5G. In fiscal 2021, expenses of maintenance/management of optical fiber, etc. in isolated islands by local governments were added to the eligible expenses. In March 2022, MIC announced "Infrastructure Development Plan for a Digital Garden City Nation." Under the plan, MIC is working to increase the household coverage of optical fiber from 99.3% at the end of March 2021 to 99.9% by the end of March 2027.

(2) Decentralization of data centers, submarine cables, etc.

While the data distribution amount through digital infrastructure (e.g., data centers, submarine cables) has been increasing every year with the progress of digitalization, the COVID-19 pandemic triggered a rapid increase of the data distribution amount. Because this increase is expected to continue globally, the importance of digital infrastructure is thought to further increase. In these circumstances, the majority of Japan's data centers are in the Tokyo area. In the event of an earthquake in the metropolitan area, there is a risk that breakdown of data centers would cause disturbance in the use of various services, information of which is managed by data centers, not only in Tokyo area but also in other regions. Furthermore, communications with overseas for use of services provided by foreign enterprises, for example, require optical fiber cables laid on the sea bed (submarine cables). If submarine cables are damaged due to natural disaster or other causes, there is a risk of disruption of communications with overseas.

To address this issue, MIC in cooperation with METI and other relevant government offices considered digital infrastructure development. As a result, MIC decided to provide financial support to contribute to the realization of "a Digital Garden City Nation Vision" by encouraging construction of regional data centers and submarine cables to develop resilient communication network locations toward improvement in resilience and communication network efficiency. Specifically, under the "Project on Strengthening Digital Infrastructure by Decentralizing Data Centers, Submarine Cables, and Other Facilities" **(Figure 4-2-3-1)**, the "Digital Infrastructure Development Fund" is established to support private businesses who decentralize data centers, submarine cables, etc. under FY2021 supplementary budget.

Figure 4-2-3-1 Outline of the project for resilient digital infrastructure through decentralization of data centers, submarine cables, etc.



[3] See Chapter 3, Section 2.

(3) Securing broadband services

Based on the Final Report on the "Comprehensive Review of Competition Rules in the Telecommunications Business Sector" (Information and Communication Council on December 17, 2019), MIC has held the "Study Group on Broadband Infrastructure" since April 2020 for technical and concentrated study on the desirable state of broadband infrastructure. With the shift from "development" to "maintenance" phase of communications infrastructure in mind, the study group discussed various issues including measures for securing broadband services and compiled its final report in February 2022.

Based on the recommendations of the final report, a bill for partial amendment of the Telecommunications Business Act was submitted to the Diet in March 2022 and enacted in June of the same year. The bill includes positioning of certain broadband services as a new type of "universal telecommunication service" and establishing a grant system for telecommunication carriers providing broadband service in unprofitable areas. MIC plans to study details toward its smooth enforcement.

4. Ensuring Safe and Reliable Telecommunications Infrastructure

(1) Establishing systems for technical standards on telecommunications facilities

Considering the advancement of communication networks and diversification of use forms with the penetration of IoT in recent years, and for the purpose of securing a network environment for secure and stable use of various IoT services, the IP Network Facilities Subcommittee of the Department on Information and Communications Technology under the Information and Communications Council has studied "technical requirements for telecommunications facilities in response to the spread of IoT" since December 2017.[4] The partial report[5] of the Information and Communication Council in September 2021 made the following recommendations on accident reporting/validation systems to ensure a safe, secure and reliable information and communication network:

① Regarding accidents in communication services that are provided to important infrastructure, establish necessary rules including clarification of the approach to prompt report to MIC and addition of report items pertaining to quarterly accident report,

② Regarding disturbance of cloud service provided to communication services, clarify in the current guidelines the approach to eligibility for communication accidents,

③ Separately from the communication accident report system, establish necessary rules for incidents (situation indicating a possible communication accident) including prompt reporting of serious incidents, and

④ Establish necessary rules including prompt reporting of serious incidents caused by cyber-attacks and more flexible reporting deadline of the detail of serious accidents.

Based on the partial report, a bill for partial amendment of the Telecommunications Business Act was submitted to the Diet in March 2022 and enacted in June of the same year. The bill includes new provisions for obligation of prompt reporting of serious accidents. MIC plans to study details toward its smooth enforcement.

Under the progress in introduction of virtualization technologies to and use of cloud services in communication networks and the further increase in diversity and complexity of the structure for providing communication services, since April 2022 the committee has studied "technical requirements of telecommunications facilities in response to increased diversity and complexity of networks associated with the development of virtualization technology."

(2) Securing communication services in disasters

i Continuous information sharing, etc.

In recent years, natural disasters including earthquakes, typhoons, heavy rain, heavy snow, flooding, sediment disasters and volcano eruptions have occurred frequently in Japan. As a result, communication services have been disturbed due to power failure, communication equipment failure, cable breakage, etc.

In order to ensure more appropriate response by reviewing past responses to disasters and by confirming the systems among MIC, designated public corporations and other major telecommunication carries at normal times to ensure communication services at a time of disaster, MIC has been holding the "Liaison Committee on Securing Communications Services in the Event of Disaster" since October 2018. The Liaison Committee shares information and exchange opinions on tasks including the system for immediate response and cooperation, prompt assessment of damage and restoration in order to ensure communication services in disasters.

ii MIC - Telecom Emergency Assistance Members (MIC-TEAM)

MIC launched a team named "MIC - Telecom Emergency Assistance Members (MIC-TEAM)" in June 2020 to provide supports to secure communication means in disasters. In times or in danger of a large-scale disaster, the team is dispatched to the local government of the afflicted area to assess the damage to information communication services and conduct liaison and coordination with relevant administrative organs, business opera-

[4] The results of studies by the committee from 2017 to 2020 were submitted by the Information and Communication Council as the 1st report in September 2018, the 2nd report in May 2019, the 3rd report in March 2020 and the 4th report in November 2020.

[5] Partial Report (September 28, 2021) on "technical requirements for telecommunications facilities in response to the spread of IoT" by the Information and Communications Council. https://www.soumu.go.jp/menu_news/s-news/01kiban05_02000230.html

tors and others. The team also provides local governments with technical advice and lends mobile power supply vehicles. At the time of heavy rain that started on July 1, 2021, the team was dispatched to Kagoshima, Kumamoto and Shizuoka Prefectures and Atami City.

In order to address challenges regarding cooperation for power supply, fuel supply and handling of fallen trees based on the experience of 2019 Boso Peninsula Typhoon and other disasters, MIC with Sapporo City (Hokkaido), Tanabe City (Wakayama) and Yatsushiro City (Kumamoto) implemented cooperation drills for initial response by relevant organizations including carriers and power/fuel-related businesses in fiscal 2021.

(3) Analysis and verification of telecommunication accidents

For prevention of telecommunication accidents, it is necessary to take appropriate measures at the time and after the accident in addition to prior measures. In order to verify accident reports for effective utilization for various initiatives to prevent recurrence, MIC has been holding a "telecommunications accident verification meeting" since 2015. The meeting analyzes and verifies reports with focus on "serious accidents" as provided in the Telecommunications Business Act and reports falling under "accidents subject to quarterly report" provided in the Telecommunications Business Reporting Regulations. The meeting compiled the verification results of telecommunication accidents that occurred in fiscal 2020 and released the "2020 Verification Report on Telecommunications Accidents and its Outline" in September 2021.

5. Developing Safe and Secure Environments for Use of Telecommunications Services

(1) Ensuring governance of telecommunications businesses

Telecommunications business is indispensable for innovations in various sectors. In order to promote provision of innovative services by introducing digital technologies and to accelerate digital transformation of the whole society, it is necessary to ensure secure and highly reliable telecommunication services for users.

Toward securing of safe, secure and reliable communication service networks in the digital age, MIC set up "the Study Group on the Telecommunications Business Governance" in May 2021 to examine approaches to governance of cyber security measures and data management by telecommunications carriers and to discuss future measures. The study group compiled the examination result in a report in February 2022. The report recommends three specific measures: (1) measures against risks of information leak/improper management pertaining to telecommunications business; (2) measures against risks of telecommunication service suspension considering diversification of communication networks; and (3) provision of information to users regarding proper management of information and provision of telecommunication services.

Based on the recommendations, with the aim of promoting proper management of user information mostly by telecom carriers who acquire and handle a mass of information, while ensuring consistency with regulations in other countries, a bill for partial amendment of the Telecommunications Business Act was submitted to the Diet in March 2022 and enacted in June of the same year. The bill includes: mandatory formulation and notification of information management rules and other new disciplines; and development of rules for cyber-attack countermeasures in coordination among businesses, accident reporting system and other measures for smooth provision of telecommunication services. MIC plans to study details toward its smooth enforcement.

(2) Developing consumer protection rules

i Summary

While advancement and diversification of telecommunications services have improved convenience and increased choices for many users, there are problems caused by information gaps between users and carriers, or inappropriate solicitation by business. In order to prevent these problems and help consumers enjoy the benefits of advancement and diversification of telecommunications services, MIC has developed rules for consumer protection pertaining to telecommunication services, and appropriately enforces and reviews the rules as needed.

ii Ensuring effectiveness of consumer protection rules

(i) Accepting complaints, providing consultation, cooperating with parties involved and implementing administrative guidance

MIC set up the Telecommunications Consumer Consultation Centers[6] to receive information from consumers. In addition, the MIC has held the Liaison Meeting for Telecommunications Consumer Support[7] for information sharing and opinion exchange among parties concerned in different regions across the country two times every year. Based on the information obtained through these initiatives, MIC is working to ensure effectiveness of consumer protection rules pertaining to telecommunications services through administrative guidance and responses in cooperation with the Consumer Affairs Agency as needed.

In addition, MIC promotes voluntary initiatives by concerned bodies for observance of the consumer protection rules.

(ii) Implementing monitoring

MIC formulated "basic policy for supervising the user protection discipline of telecommunications businesses." Under the policy, MIC has been monitoring the im-

[6] The centers received 18,331 complaints and requests for consultation by phone or Web in fiscal 2021.
[7] This liaison meeting consisting of consumer centers, telecommunication carrier groups and other members is organized by MIC to exchange opinions on consumer support regarding telecommunications services.

plementation status of consumer protection rules and held "periodic meetings for monitoring the implementation status of consumer protection rules"[8] participated in by experts and relevant trade associations to share and assess trends two times a year.

This meeting shares and assesses not only overall trends of complaints and consultations in the telecommunications sector, but also the analysis results of trends by service types including MNO, MVNO and FTTH. The sharing/assessment also covers the results of analysis and field surveys (mystery shopping) under individual themes[9] , results of occasional surveys of individual cases, analysis results of complaints/requests for consultations accepted by trade associations,[10] and follow-up of improvement initiatives by businesses.

Based on the assessment at the meeting, MIC gives guidance on points to be improved to telecommunication carriers subject to the field survey and requests trade associations and others for industry-wide efforts and dissemination to members. Analysis results and assessment at the meeting are used for consideration of review of consumer protection rules and for promotion of voluntary efforts by businesses.

iii Review of consumer protection rules

Considering the changes in the telecommunications market and the state of consumer claims, MIC has successively reviewed and expanded the consumer protection rules. In June 2020, "Study Group on Consumer Protection Rules" started vigorous discussions on review of the system and compiled the "2021 Report of the Study Group on Consumer Protection Rules" in September 2021. Based on the report, MIC has expanded the consumer protection rules as follows and continues to enhance consumer protection through monitoring and other measures.

① Amendment of the Ordinance for Enforcement of the Telecommunications Business Act
In February 2022, the Ordinance for Enforcement of the Telecommunications Business Act was amended to provide: (1) mandatory explanation of service conditions by using written explanation when doing telemarketing; (2) mandatory measures for cancellation by users without delay, and; (3) restriction on the amount billed due to cancellation (enforced on July 1).

② Amendment of Guidelines
In the "Guidelines for Consumer Protection Rules for the Telecommunications Business Act," it is provided with specific examples that consignment contracts between mobile operators and their distributers may be subject to order for business improvement, if the contract might encourage violation to the consumer protection rules, and the description of actions desirable for consumer protection was expanded.

③ Study on complaint processing systems
In October 2021, the "Task Force on Complaint Processing System" was set up and it started to study systems for effective solving of consumer complaints that cannot be smoothly solved with individual businesses. The task force plans to reach a conclusion by summer of 2022.

(3) Protecting privacy of communications and user information

i Summary

Various people, things and organizations are connected to the internet through smartphones and IoT, which leads to rapid progress in generation and accumulation of a mass of digital data. At the same time, there is an orientation toward Society 5.0 where data analysis by AI and other results are fed back to the real world to solve various social issues.

In this context, platform operators who provide various free services have been increasing their presence and acquiring and accumulating user information more than before. In addition, as services necessary for daily life are provided by platform operators via smartphone, etc., their importance in daily life has been increasing and they have been acquiring and accumulating more confidential information.

In order to balance users' convenience and secrecy/privacy protection and to ensure full functioning of platforms, it is important to ensure proper management of user information so that platform operators increase attraction of their services and users can use services with a sense of security.

ii Study at the Working Group on the Handling of User Information for Platform Services

The "Study Group on Platform Services" held by MIC set up the "Working Group on the Handling of User Information for Platform Services" to discuss the matter. The "Interim Report" (September 2021) compiling the result of the discussions presented the following direction:

Regarding the content and scope of the disciplines under the Telecommunications Business Act, etc. it is appropriate to consider development of a specific system for handling of user information including cookie and location information, while considering the discussions on e-privacy rules (draft), and

It is desirable to compile the Guidelines for Protection of Personal Information in Telecommunications Business (MIC Public Notice No. 152 of 2017) as a document for unified reference for telecommunication carriers to ensure proper handling of secrecy of communication, personal information and privacy pertaining to user information.

Regarding "Issue 10: Concerns about acquisition/use

[8] Periodic meetings for monitoring the implementation status of consumer protection rules: https://www.soumu.go.jp/main_sosiki/kenkyu/shouhisha_hogorule/index.html
[9] The 12th meeting held in February 2022 examined complaints/consultation: (1) regarding transmission speed; (2) from the elderly citizens; (3) regarding corporate contracts, and;(4) related to COVID-19.
[10] Telecommunications Carriers Association and the National Association of Mobile-phone Distributors

of personal data" in the "Evaluation of Competition in the Digital Advertising Market - Final Report" released by the Digital Market Competition Council in April 2021, the interim report recommends review of the Guidelines for Protection of Personal Information in Telecommunications Business.

iii Establishing rules on transmitting user information to an external party

Based on the direction of the interim report, a bill for partial amendment of the Telecommunications Business Act was submitted to the Diet in March 2022 and enacted in June of the same year. The bill includes mandatory provision of an opportunity for confirmation (through notification, disclosure, etc.) by the user when a telecommunication carrier transmits a program that orders transmission of information on a user to an external party during provision of a telecommunication service. MIC plans to study details toward its smooth enforcement.

iv Review of the Guidelines for Protection of Personal Information in Telecommunications Business

Based on the interim report, etc. MIC amended the Guidelines for Protection of Personal Information in Telecommunications Business in line with the review of the guidelines of the Personal Information Protection Commission in March 2022 in time with the enforcement of the 2020/2021 acts to amend the Act on the protection of Personal Information.[11] At the same time, an additional amendment for proper securing of user information was made. In accordance with the amended guidelines, MIC plans to conduct regular monitoring of the status of handling by platform service providers and continue studies to ensure proper handling of user information.

(4) Dealing with illegal/harmful information

i Summary

Distribution of illegal/harmful information on the internet continues to be serious. MIC in cooperation with concerned parties has been continuously taking measures against a variety of illegal/harmful information including slander, pirated editions, fake news and false information.

ii Dealing with slander on the internet

Considering the increasingly serious problem of slander on the internet, especially on social networking services (SNS) and other platform services, MIC formulated and released a "policy package for dealing with slander on the internet" in September 2020. Based on the package, MIC in collaboration with concerned bodies is taking the following measures:

① Enlightenment activities for users to improve information ethics and ICT literacy
② Support for voluntary activities by platform operators and improvement of their transparency/accountability (through their continuous monitoring)
③ Measures for sender information disclosure (enactment of related governmental and ministerial ordinances toward enforcement of the amended Provider Liability Limitation Act and preparation for its smooth operation)
④ Enhancement of the consultation counter functions (strengthening the system of the Illegal/Harmful Information Hotline, strengthening of collaboration among consultation centers and dissemination of the information on multiple consultation centers).

In particular, as part of ①, MIC has been implementing educational activities through various media including government publicity. For example, MIC jointly with Social Media Association of Japan and Safer Internet Association opened a special website under the slogan of "#NoHeartNoSNS" to provide useful information including consulting services for people distressed by interaction on social network. Another special site was created in tie-up with the popular character of "Secret Society Eagle Talon."

Under this policy package, the "Study Group on Platform Service" conducted hearing and other survey of platform operators. Based on the result, the study group compiled and released an "interim report" in September 2021. The report proposes the future direction of dealing with illegal/harmful information and stresses the importance of voluntary elimination, etc. by platform operators and ensuring of transparency and accountability in Japan. The study group conducted hearing of platform operators again in March 2022 and continues discussions.

iii Countermeasures against pirated editions on the Internet

MIC formulated "MIC's Policy Menu of Anti-piracy Measures on the Internet" in December 2021. Based on the policy menu, in addition to the amendment of the law pertaining to sender information disclosure, MIC has conducted enlightenment activities for users to improve information ethics and ICT literacy, promoted introduction of security software to inhibit access to pirated copies, and strengthened international coordination through discussions at ICANN and other international forums.

Since November 2021, the Study Group on Inhibiting Access to Pirated Websites on the Internet has been held to confirm the progress of the measures based on the policy menu and to discuss additional issues to be addressed and the direction of countermeasures.

iv Measures against fake news and disinformation

MIC at the Study Group on Platform Services has discussed fake news and disinformation that have become a problem in recent years. In February 2020, the study group compiled and released desirable specific measures including assessment of the actual situation in Ja-

[11] The parts on the amendment of the Act on the Protection of Personal Information, etc. of the Amendment Act of the Act on the Protection of Personal Information, etc. (Act No.44 of 2020) and Article 50 of the Act on the Arrangement of Related Laws for the Formation of a Digital Society (Act No. 37 of 2021)

pan, construction of cooperative relationships by diverse stakeholders, appropriate handling by platform operators and ensuring of transparency/accountability. Starting from the release of the survey on distorted or misleading information (false rumor, fake news) regarding COVID-19 in June of the same year, the study group has continuously surveyed people's contact with, reception and spread of fake news/disinformation and their attitude to information circulation.

The "Study Group on Platform Services" conducted hearing of platform operators in September 2021 and released an interim report that includes the desirable direction for dealing with disinformation and advises disinformation countermeasures based on voluntary efforts by platform operators and other parties in the private sector. The study group conducted hearing of platform operators again in March 2022 and continues discussions.

(5) Development of a secure internet usage environment for young people

i Summary

For safe and secure internet usage by youth today when the internet has become indispensable in the daily life of the people, MIC has been taking measures with a focus on promotion of use of filtering in mobile phone terminals and on educational activities. In addition, MIC holds the Taskforce on Safe and Secure Internet Use Environment for Youth[12] to share information on the current status of the measures among people involved and to discuss further efforts.

ii Promotion of filtering

With the spread of internet connection via smartphones, applications/public wireless LAN, there is a significant decrease in filtering utilization rate. To address this situation, the Act Partially Amending the Act on Establishment of Enhanced Environment for Youth's Safe and Secure Internet Use (Act No.75 of 2017) which includes mandatory setting (activating) of filtering function by mobile operators and their distributers when they sell a mobile phone terminal was enforced in February 2018. In response, MIC is promoting filtering activation by mobile operators and their distributers.

iii Promotion of educational activities

(i) Compiling and releasing "Case Study of the Internet Troubles"

In order to ensure safe and secure internet use by youth, not only youth but their guardians, teachers, etc. need to have sufficient media and information literacy. Every year since fiscal 2009, MIC has released updated version of "Case Study of the Internet Troubles" compiling means for preventing troubles relating to the Internet.

The 2022 updated version contains topics such as filtering and time management functions of smartphones and environments for using the Internet that are appropriate to users' ages in addition to copyright issues, slander on the internet and other cases of trouble.

(ii) Production and release of educational videos

As an effective approach to youth and their guardians, MIC produces videos using popular characters and uses the videos for educational activities with cooperation of relevant business operators. For example, MIC produced an educational video on filtering and other topics in cooperation with a popular comic, "My Hero Academia." The video is posted on websites of relevant government offices and business operators, and also used at mobile phone shops and mobile retailers across the country as well as youth education sites.

(iii) Lecture on demand in schools

For the purpose of popularization and enlightenment for safe internet use by youth, since fiscal 2006, MIC in cooperation with the Ministry of Education, Culture, Sports, Science and Technology, the Foundation for MultiMedia Communications, common carriers and other partners has provided free lectures on demand, "e-net Caravan," for students, guardians, school personnel and others in various places including schools.

Since autumn 2020, in response to the spread of COVID-19, the program has provided remote lectures in addition to the existing group lessons.

(iv) Period for concentrated efforts

Many young people acquire smartphones for the first time after their new enrollment or graduation in spring. With particular emphasis on this period, since 2014 MIC has been implementing "Spring Safety Net Campaign with Chain of Moves" in cooperation with related government agencies and businesses to intensively conduct awareness-raising activities for young people, guardians and school personnel to promote safe and secure use of smartphones and social media.

In 2022, the campaign focused on promotion of parental control and on educational activities contributing to improvement of youth's skills to use the internet appropriately.

iv Initiatives assuming internet use by youth

In recent years, while increasingly younger people use the internet, the COVID-19 pandemic triggered rapid progress of society-wide digitalization including progress in use of ICT terminals in school under the GIGA School Concept. In response to these environmental changes, the Taskforce on Safe and Secure Internet Use Environment for Youth compiled "New Issues and Measures to Establish Safe and Secure Internet Use Environment for Youth[13]" as future priorities.

[12] In order to establish environments for youth's safe and secure internet use, the task force was set up in April 2016 to conduct educational activities for appropriate utilization of the internet and to study filtering services that were effective means for protection of youth while considering respective roles of stakeholders including mobile carriers and other internet-related business operators and guardians. https://www.soumu.go.jp/main_sosiki/kenkyu/ict_anshin/index_12.html

[13] Taskforce on Safe and Secure Internet Use Environment for Youth, "New Issues and Measures to Establish Safe and Secure Internet Use Environment for Youth": https://www.soumu.go.jp/menu_news/s-news/01kiban08_03000356.html

Based on the above, MIC in public-private cooperation takes measures to prevent troubles triggered by youth's "sending" information and other measures assuming internet use by young people in addition to the existing measures that have principal objectives to prevent youth from being in contact with illegal/harmful information.

6. Mediation and arbitration by the Telecommunications Dispute Settlement Commission

(1) Functions of the Telecommunications Dispute Resolution Commission

The Telecommunications Dispute Resolution Commission (hereinafter "Commission") is a specialized organization set up for prompt and fair processing of disputes that are increasingly diverse in the telecommunications sector where technological innovation and competition are rapidly progressing. Currently five members and eight extraordinary members who were appointed by the Minister of Internal Affairs and Communications are processing disputes.

The Commission has three functions: (1) mediation and arbitration, (2) examination and report in response to request for consultation from the Minister of Internal Affairs and Communications, and (3) recommendations to the Minister of Internal Affairs and Communications.

Consulting service is provided at the Commission's secretariat to accept inquires and request for consultation regarding disputes between businesses.

Related data
Outline of the functions of the Telecommunications Dispute Resolution commission
URL https://www.soumu.go.jp/main_sosiki/hunso/outline/about.html

i Mediation and arbitration

Mediation is a procedure that is made when there is a dispute between telecommunication carriers or broadcasters. Mediation members are appointed by the commission from among its members and extraordinary members to encourage compromise from the parties to solve the dispute promptly and fairly. Mediation members present mediation proposals, but the proposals are not forced because this is a procedure based on the agreement of the both parties.

Arbitration is a procedure where the commission appoints three "arbitration members" from among its members and extraordinary members in principle, based on the agreement of both parties. The procedure is made after the parties agree to follow the arbitral award. Arbitral award has the same effect as that of final judgment between the parties.

ii Examination and report in response to request for consultation from the Minister of Internal Affairs and Communications

When telecommunication carriers or broadcasters fail to reach an agreement, either party may file for an order for consultation or apply for ruling to the Minister of Internal Affairs and Communications based on the provisions of the Telecommunications Business Act or the Broadcasting Act.

When issuing an order for consultation or ruling, the minister must consult the commission. When receiving a request for consultation, the commission discusses the case and submits a report.

iii Recommendations to the Minister of Internal Affairs and Communications

Regarding improvements in competition rules and other matters that emerged through mediation, arbitration or discussions/reporting in response to a request for consultation, the commission may made recommendations to the minister. When receiving such a recommendation, the minister publishes the content.

(2) Status of the commission activities

In fiscal 2021, there was no application for mediation/arbitration, but consultation was provided to seven cases at the secretariat.

From November 2001 when the commission was established to the end of March 2022, the commission processed 69 mediation cases and three arbitration cases, made 11 reports in response to requests for consultation from the minister and submitted 3 recommendations to the minister.

Related data
Mediation processing status
URL https://www.soumu.go.jp/main_sosiki/hunso/case/number.html

Section 3 Radio Policy Trends

1. Summary

(1) Initiatives so far

Radio waves are limited and scarce resources and common property of the people widely used for services that are indispensable for people's lives including mobile phones, police and firefighting. For this reason, it is necessary to ensure fair and efficient use of radio waves. Specifically, because use of the same frequency in the same area causes interference, radio waves should not be used randomly and require a system to ensure proper use. In addition, because how radio waves propagate and the transmittable quantity of information vary depending on the spectrum, it is necessary to use them for the purposes appropriate for each spectrum. Furthermore, due to their nature to propagate across borders, use of radio waves requires international rules and coordination including treaties.

The old Radiotelegraphy Act that stated "radiotelegraphy and wireless telephones shall be administered by the Government" was replaced by the Radio Act, the purpose of which is "to promote the public welfare by ensuring the fair and efficient utilization of radio waves" (Article 1) in 1950. Since its enactment, Japan has promoted the private sector use of radio waves that are common property of the public. Today, radio waves have become indispensable for people's daily lives.

MIC has allocated frequencies under international cooperation and licensed radio stations, and has been making efforts that include: radio wave supervision for good radio use in an environment that is free of interference/jamming; R&D to expand radio resources; and technical examination work for effective radio use.

(2) Future challenges and direction

Information communication networks are core infrastructure for every socio-economic activity. Wireless communications, in particular, are essential for environments for easy use of information and communication services anytime and anywhere. The role of radio waves for improvement of people's lives is further expanding.

The trend of increasing the number of land mobile radio stations including mobile phones is expected to continue in the future, and traffic will increase accordingly. Traffic is also expected to increase due to the spread of new services such as subscription. In order to maintain the comfortable radio wave use environment for mobile phones, etc., it is necessary to promote further effective use of the frequencies currently in use, to share the frequencies used for other purposes and to develop terahertz and other unused frequencies

It is also important to maintain an appropriate radio use environment while handling changes in the circumstances of radio use. To this purpose, it is necessary to further advance radio wave monitoring, radio equipment trial purchase and other measures, while responding to new radio use and changes in radio equipment distribution.

2. Consideration of Promotion of Effective Radio Utilization in the Age of Digital Transformation

(1) Progress of digital transformation across society

In Japan it is expected that the COVID-19 pandemic and other factors will trigger further progress of digital transformation across society, which is necessary for establishment of "new normal" and maintenance/ development of economic activities. In this context, it is necessary to effectively use radio waves that are limited and scarce resources shared by the people, while at the same time spreading their benefits broadly among the people, which will revitalize the economy and society of the country.

(2) Consideration at the Round-table Conference on Radio Policy in the Age of Digital Transformation

Since November 2020, MIC has held the "Round-table Conference on Radio Policy in the Age of Digital Transformation." The report compiled by the conference in August 2021 sets the goal to increase spectrums for four radio wave systems: mobile phone network system including 5G/Beyond 5G that especially need spectrums; satellite communication/HAPS system; IoT/wireless LAN system, and; the next-generation mobility system. The goal is about 16GHz increase by the end of fiscal 2025 and about 102GHz increase by the 2030s compared with the end of fiscal 2020. For effective use of radio waves in the age of digital transformation, the report recommends: "introduction and spread of radio systems necessary for the age of digital transformation"; "validation of effective use of frequencies and allocation measures"; "measures for effective use of frequencies for public use"; "regulation and supervision of radio waves in the age of digital transformation"; and "review of the spectrum user fee system."

(3) Partial amendment of the Radio Act

In order to promote fair and efficient use of radio waves based on the recommendations of the report of the Conference, a bill for partial amendment of the Radio Act and the Broadcasting Act was submitted to the Diet in February 2022 and enacted in June of the same year. The bill includes strengthening of the functions of the Radio Regulatory Council, establishment of a system for frequency reallocation for mobile phones, and review of the spectrum user fee system. MIC plans

to make preparations for its smooth enforcement.

- Strengthening of the functions of the Radio Regulatory Council
  Evaluation of the level of effective radio use (hereinafter "effective use evaluation") has been made by the Minister of Internal Affairs and Communications based on the result of radio usage survey. However, in order to ensure appropriate evaluation in response to technology progress, the evaluation will be made by the Radio Regulatory Council consisting of members with extensive experience and knowledge.
- Establishment of a system for frequency reallocation for mobile phones
  Reallocation may be made, when the result of the effective use evaluation by the Radio Regulatory Council regarding the frequencies used by base stations of a telecommunication business including mobile phones does not satisfy a certain level, or the minister found that reallocation examination is necessary considering overlapping applications. The amendment created responsibility of attested establishers to establish the specified base stations in places other than in the places included in the approved plan, and added matters relating to ensuring fair radio use to the matters to be stated in establishment guidelines.
- Review of the spectrum user fee system
  The amount of spectrum user fees will be revised considering the expected total expenses for spectrum users and the prospect of radio station establishment for the three years from fiscal 2022 to fiscal 2024, while allowing the use of spectrum user fees for granting subsidies to R&D toward Beyond 5G.

(4) Initiatives for effective use of frequencies for public use

The report of the conference confirmed the direction of "measures for effective use of frequencies for public use," which are "abolishment," "frequency migration," "frequency sharing" or "digitalization" of the radio stations for public services operated by the state (relevant government agencies) and found it necessary to follow up the progress of the measures every year for the time being. In response, the working group on frequencies for public use conducted follow-up including hearing of relevant government agencies from March to June 2022 and plans to compile the result around the summer of 2022.

(5) Consideration of allocation method of new mobile phone frequencies

In Japan, needs for frequencies for mobile phones is rapidly increasing due to 5G introduction, technological innovation and other reasons. In order to further promote and ensure effective and fair radio use, there is an increasing need to consider new allocation methods of mobile phone frequencies.

In this context, MIC has held the "Study Group on New Allocation Methods for Mobile Phone Frequencies" since October 2021 to conduct a broad range of surveys and analysis of frequency allocation methods of other countries and to discuss allocation methods of mobile phone frequencies for Japan based on the result, while considering the advantages of the methods of other countries. The Study Group compiled the result of the surveys and analysis of mobile phone frequency allocation methods of other countries in its 1st report in March 2022 and plans to compile the 2nd report around summer of 2022.

3. Spread/development of 5G/B5G

(1) Spread/development of 5G based on the Infrastructure Development Plan for a Digital Garden City Nation

i Formulation of Master Plan 2.0 on the Regional Development of ICT Infrastructure

5G enables not only "ultra-high speed" communication extending 4G but also "ultra-low delay" for smooth operation of robots in a remote location and "multiple simultaneous connection" of a large number of devices to the network. Because of these advantages, there are great expectations for 5G as infrastructure indispensable for an IoT society where everything is connected to the Internet. Actually, specific initiatives using 5G are in progress in various regions and sectors including automated driving of tractors, product inspection through image analysis using AI and remote control of construction machines.

Recognizing that 5G will become global common infrastructure for economy and society, MIC has been actively contributing to 5G international standardization activities at the International Telecommunication Union (ITU), while at the same time making efforts to strengthen international cooperation with European, American and Asian countries. In order to develop ICT infrastructure across Japan as early as possible through integrated and effective use of the measures to support 5G and other ICT infrastructure development and the measures to promote 5G utilization, MIC formulated the "Master Plan on the Regional Development of ICT Infrastructure" for the period up to the end of fiscal 2023 in June 2019 (amended in July and December 2020).

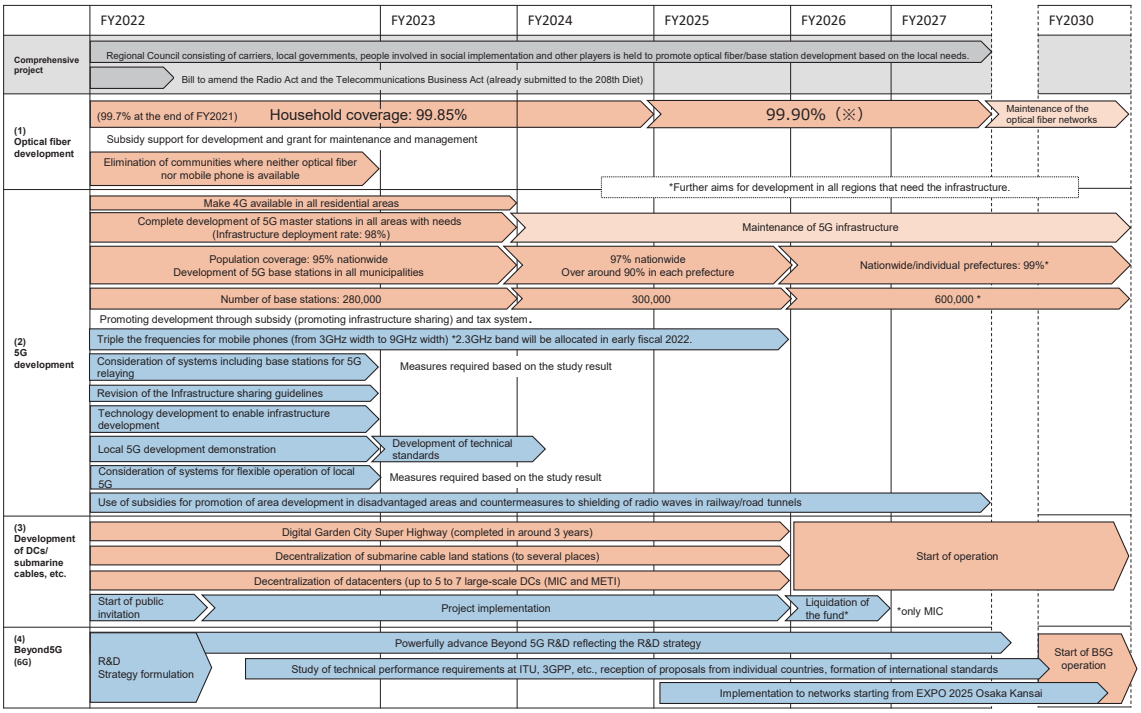
ii Formulation of the Infrastructure Development Plan for a Digital Garden City Nation

In December 2021, Prime Minister Kishida announced raising of the 5G population coverage to 90% by fiscal 2023 toward realization of the Vision for the Digital Garden City Nation. In response, at the end of the same month MIC asked mobile operators for more active development of 5G base stations and formulation and submission of a plan including the number of 5G base stations and population coverage up to 2025. Based on the plans submitted by the mobile operators, MIC formulated and released "Infrastructure Development Plan for a Digital Garden City Nation" on March

29, 2022, to succeed the "Master Plan 2.0 on the Regional Development of ICT Infrastructure."

The Infrastructure Development Plan aims to realize the world's top level 5G environment in a two-step strategy consisting of the 1st phase: nationwide development of 5G infrastructure (4G/5G master stations) and the 2nd phase: development of slave stations in rural areas to expand area coverage. Specifically, in the 1st phase, the plan aims to make 4G available in all residential areas, while developing 5G master stations that are the basis of 5G deployment in almost all areas with needs across the country. In the second phase, the goals of population coverage of 5G are: 95% nationwide by the end of fiscal 2023 (from over 30% at the end of fiscal 2020) with development of 5G base stations in all municipalities; 97% nationwide and around 90% in each prefecture by the end of fiscal 2025. Specific measures to achieve the goals include: allocation of new frequencies for 5G; amendment of the Radio Act to stipulate the responsibility to establish base stations; encouragement by subsidy and tax measures; and promotion of infrastructure sharing **(Figure 4-3-3-4)**.

Figure 4-3-3-4 Infrastructure Development Toward a Digital Garden City Nation (road map)



(2) Beyond 5G

Beyond 5G, following 5G, is expected to further advance the characteristic functions of 5G to: (1) 10-fold faster communication, (2) one tenth of delay, and (3) 10-fold multiple simultaneous connection. In addition, for creation of new values, it must realize (4) "ultra-low power consumption" (one hundredth of the existing system), (5) "ultra-safe and reliable" including instant recovery from failure, (6) "autonomy" to build optimal network instantaneously, and (7) "extensibility" for communication everywhere on land, sea, air and outer space. Beyond 5G is expected to be introduced around 2030. Because this is indispensable for development of Society 5.0 and is resilient and secure core ICT infrastructure in the future to support the "new normal" with and post COVID-19, it is important for Japan to be involved in its technology development and international standardization processes by maximizing the strength of the country.

Since January 2020, MIC has held the "Beyond 5G Promotion Strategy Roundtable" to discuss formulation of comprehensive strategy considering the needs and technological progress expected around the time of introduction of Beyond 5G. In June 2020, MIC released "Beyond 5G Promotion Strategy—Roadmap towards 6G" consisting of the following three strategies. Various projects are in progress for realization of Beyond 5G based on the Promotion Strategy.

① "R&D strategy" to create the world's top level R&D environment through intensive investments in advanced technologies and bold open spectrum policy toward implementation of advanced technologies with competitive advantage

② "Intellectual property and standardization strategy" to establish a network for cooperation with strategic partners at an early stage and work to gain the world's top level share of patents necessary for Beyond 5G toward creation of opportunities to enter new markets

③ "Rolling out strategy" to create Beyond-5G-ready environments by establishing environments and systems necessary for development and expansion of use cases that will contribute to rolling out of 5G/optical fiber networks across society and to problem solving

Examples of vigorous activities include: establishment of the "Beyond 5G Promotion Consortium" in December 2020 to promote the strategy in industry-government-academia collaboration; release of the "Beyond 5G White Paper" compiling future visions and technologies of Beyond 5G as envisioned by Japan in March 2022; and holding of the "Beyond 5G International Conference" aimed at strengthening of partnership among parties concerned at home and abroad in November 2021. In December 2020, the "Beyond 5G New Business Strategy Center" was established and has been working vigorously, which includes dissemination of information through new business strategy seminars as described in Chapter 4 Section 7.

4. Promotion of advanced radio use systems

(1) Intelligent Transport System

Intelligent Transport Systems (ITS), which connect people, roads and vehicles by using information and communications technologies, contribute to safe and comfortable mobility of people and things through reduction in traffic accidents and solving of traffic congestion. Because it is expected that ITS and automated driving will require transfer and exchange of a large quantity of real-time data, development of information and communications infrastructure is essential. In addition, in order to meet the need of automated driving and connected cars, it is necessary not only to use existing ITS but also to upgrade the information and communications infrastructure including 5G. For this purpose, research and demonstration toward automated driving systems using LTE and 5G are conducted in many countries.

"Public-Private ITS Initiative/Roadmaps. Past initiatives and the basic concept of the future ITS Initiative"[14] formulated by the IT Strategic Headquarters in June 2021 identified the following three priority initiatives: "Creation of a digital platform for realizing a new mobility society," "Further advancement of automated driving, etc." and "Dissemination and use of diverse mobility" to promote specific measures from five perspectives including "technological development" and "traffic infrastructure development and implementation of connected cars." The "Strategic Innovation Promotion Program Phase 2: Automated Driving for Universal Services" led by the Council for Science, Technology and Innovation (CSTI), Cabinet Office, aims to build a safe and comfortable automated-driving society through vehicle-infrastructure cooperation technology using signal information from transport infrastructure installed on general roads and information to support merging to highways.

While allocating frequencies for the Vehicle Information and Communication System (VICS), Electronic Toll Collection System (ETC), 76/79GHz-spectrum on-vehicle radar system, and 700MHz-spectrum intelligent transport system and developing their technical standards, MIC has promoted these systems.

Based on the "Public-Private ITS Initiative/Roadmaps. Past initiatives and the basic concept of the future ITS Initiative," MIC has been taking actions to spread 5G. The ministry is also working for realization of an automated-driving society by conducting technical study on frequency sharing that is necessary for introduction of a new V2X[15] system to 5.9GHz-spectrum that is considered for V2X globally, for example. Other activities in this field include: technical study of the required conditions for communications in use cases where automated driving needs communications; study for formulation of a draft information communication technology roadmap based on the realization timing of the communications and diffusion rate of self-driving cars; and R&D on technologies to recognize dynamic information from diverse sources continuously and correctly, collect and integrate necessary information in real-time according to the target area (narrow or medium) and distribute the result to vehicles to create panoramic views of the peripheral traffic situation toward safe and secure automated driving.

(2) Public safety LTE

Because major public institutions of Japan separately develop and operate their radio systems specialized in their operations, intercommunication across the institutions is not easy. Furthermore, these systems are mostly based on voice due to the restrictions of available frequencies and development costs.

In the US, the UK and other countries, fire defense, police and other institutions for public safety introduce joint-use mobile communication networks that enable high-speed transmission of image/video data in addition to voice by using Long Term Evolution (LTE), which is a communication technology used for mobile phones. These networks for public safety using LTE are called "Public Safety LTE (PS-LTE)." PS-LTE is expected to secure intercommunication between public safety institutions in the event of terrorist attack or major disaster and thereby contribute to smoother rescue activities. Furthermore, use of the globally standardized technologies is expected to lower equipment costs.

Toward realization of PS-LTE in Japan, MIC constructed a demonstration system for basic functions of PS-LTE in fiscal 2020, implemented functional verification in the actual field in cooperation with bodies concerned and examined operational challenges for social implementation as well as response measures. Since fiscal 2021, MIC has continued demonstrations while ensuring safety, reliability and security toward full-scale operation in fiscal 2022.

[14] Public-Private ITS Initiative/Roadmaps. Past initiatives and the basic concept of the future ITS Initiative: https://cio.go.jp/sites/default/files/uploads/documents/its_roadmap_20210615.pdf

[15] V2X stands for "vehicle to everything". This is a general term for communications between vehicles and various things, which include vehicle to vehicle communication (V2V) and vehicle to network (V2N) communication.

(3) Satellite constellation

Thanks to smaller and lighter equipment used for satellites and reduction in satellite launching costs, practical application of small satellites has become relatively easier. As a result, it is possible to construct "satellite constellation," which refers to integral operation of a large number of small non-geostationary satellites launched into medium/low orbits. Because satellite constellation uses non-geostationary satellites following medium/low orbits with short communication delay, it is possible to provide diverse services including high-speed/large capacity communication globally on land, sea and airplane, both in emergency and at normal times. For this reason, various satellite constellation systems are planned around the world.

In November 2020, MIC established a system necessary for introduction of a system to upgrade the existing systems using L-band based on satellite constellation and its service started in 2022. In August 2021, MIC established a system necessary for introduction of a Ku-band non-geostationary satellite communication system based on satellite constellation that uses 500km high orbit. Its service is expected to start within 2022. In addition, MIC received a report of the Radio Regulatory Council regarding establishment of a system necessary for introduction of a Ku-band non-geostationary satellite communication system based on satellite constellation that uses 1,200km-high polar orbit. MIC plans to establish the system shortly.

(4) Space-transmission-type wireless electric power transmission system

A space-transmission-type wireless electric power transmission system transfers power through several-meter distance by radio wave transmission without wire connection. Its use is expected for power supply to sensors in factory. Through supply of low electric power without cable connection or charging battery, the system will improve comvenience and enable flexible installation of sensors. It is expected to contribute to Society 5.0 through IoT.

Toward practical application of the system, MIC has been studying shared use of frequencies with other radio systems, radio wave safety, technical conditions, structure of smooth operation coordination and other related matters. Based on the studies, the ministry established a system for its indoor use meeting certain requirements as premise radio station of 920MHz, 2.4GHz and 5.7GHz bands in May 2022.

5. Promoting Overseas Deployment of Radio Wave Systems

The role of radio wave monitoring systems and other technologies and systems to ensure safe and secure radio use is growing. The importance is recognized also in other countries including Southeast Asian countries where radio use is rapidly expanding. In this context, it has become an important task to make contribution to international society through overseas deployment of radio wave systems where Japan has excellent technologies, while at the same time fostering our radio infrastructure services into a promising business with global competitiveness toward further growth of the domestic economy.

To this end, public and private sectors are cooperating to promote strategic initiatives for global deployment of the radio systems where the country has strength with focus on Asian countries. Specifically, the "program to promote internationally harmonized use of frequencies" is implemented to globally spread technologies with high utilization efficiency of frequencies suitable to the circumstances in Japan so that the technologies will be established as international standard based on global superiority. The program includes survey on technology trends at home and abroad, overseas demonstration experiments, dispatch of public-private missions and exchange among technology users. Considering global rise in demand for safe, secure and reliable ICT infrastructure, MIC plans intensive overseas deployment of 5G network solutions by Japanese enterprises using open RAN and vRAN for the next three years. Taking advantage of the results of domestic 5G deployment including local 5G, MIC is promoting 5G open architecture including proposal of 5G models according to the need.

6. Establishment of Radio Usage Environments

(1) Promoting measures for the electromagnetic environment of living organisms

MIC is promoting initiatives to develop environments for safe and secure radio use.

Regarding danger of radio waves to public health, laws and regulations have established safety standards on radio wave strength, etc. according to the radio-wave protection guidelines.[16] The standards are equivalent with international guidelines and reflect the results of surveys on radio safety over many years.[17] Existing surveys and research have found no causal relationship between radio waves below the level of the safety standards and health impact. MIC conducts educational campaigns for the public on the safety of radio waves used by mobile phones including 5G through telephone consultations, briefing sessions and leaflets.[18]

[16] Radio-wave protection guidelines: radio-wave protection guidelines https://www.tele.soumu.go.jp/j/sys/ele/medical/protect/
[17] Study on radio safety at MIC: https://www.tele.soumu.go.jp/j/sys/ele/seitai/index.htm
[18] Radio use website (survey and evaluation technology of radio wave safety): https://www.tele.soumu.go.jp/j/sys/ele/index.htm

A survey on the influence of radio waves to medical appliances[19] is conducted every year. In fiscal 2021, MIC measured the influence of radio waves from 5G mobile phone terminals (3.7GHz, 4.5GHz and 28GHz bands) on implanted cardiac peacemakers and home medical care apparatus. To ensure safe and secure radio use when radio usage in medical institutions is progressing, MIC is disseminating points to be noted about medical telemeters, mobile phones, wireless LAN, etc. and desirable radio wave regulations by holding briefing sessions for medical workers in various places. Since fiscal 2017, medical facilities have been subject to radio wave barrier measures using "subsidy for operating cost of projects to support spread of radio systems" in order to develop an environment for safe and secure use of mobile phones in medical facilities.

(2) Promoting countermeasures against electromagnetic interference

With the spread of various electric/electronic appliances, measures to protect radio use against unnecessary radio waves emitted from various appliances/equipment have become important. For this purpose, The Radio Wave Utilization Environment Committee[20] set up under the Department of Information and Communications Technology of the Information and Communications Council conducts surveys and studies on electromagnetic interference countermeasures and contributes to deliberation on international standards at the Comité International Spécial des Perturbations Radioélectriques (CISPR). In response to the report by the Information and Communications Council, MIC takes measures to eliminate interference by unnecessary radio waves on radio equipment and prevent interference with electric/electronic appliances through standardization in Japan.

Internationally, the discussions on international standards regarding wireless power transmission systems used for electric vehicles, multimedia equipment and home appliances are becoming serious at CISPR. Here, Japan is leading the vigorous discussions on technologies to prevent interference with existing radio stations by radio waves leaked from wireless power transmission systems for electric vehicles.

Domestically, study was conducted on domestic standardization related to the revisions of CISPR standards. MIC received partial report on "Technical requirements of radio-frequency interference and immunity measuring devices: auxiliary device-conducted interference," "Technical requirements of radio-frequency interference and immunity measuring method: measurement method of conducted interference" and "Technical requirements of radio-frequency interference and immunity measuring method: measurement method of radiated interference" from the Information and Communications Council in February 2022.

(3) Preventing radio wave interference/jamming

In recent years, interference/jamming with important radio communications by three types of illegal radio stations (illegal citizen's band, illegal personal radio and illegal amateur radio) that was once a social issue has decreased as a result of rapid spread of mobile phones and strengthened radio wave monitoring. However, jamming/interference with radio communications caused by radio equipment that is easily available through online shopping but not conforming to technical standards of the Radio Act has become a big challenge.

In order to exclude jamming/interference and maintain good radio wave use environments when spectrum use is expanding, MIC is strengthening measures pertaining to the distribution of radio equipment that may cause jamming/interference in addition to radio wave monitoring and elimination of jamming/interference.[21] Specific measures include: educational campaigns to prevent general consumers from purchasing and using radio equipment not conforming to the technical standard and violating the Radio Act (illegal establishment of a radio station) or causing jamming/interference with other radio stations; "Trial purchase test of radio equipment"[22] to purchase radio equipment in the market, measure the strength of its radio waves to determine whether the equipment conforms to the standard specified in the Radio Act, and publish the result every year to provide information for protection of general consumers (since fiscal 2013). Since fiscal 2021, the test includes measurement to determine conformance with the technical standard of Chapter 3 of the Radio Act. Furthermore, MIC calls on manufacturers, distributers and importers of the equipment to handle only conforming radio equipment and refrain from selling non-conforming equipment. In addition, in order to prevent distribution of radio equipment not conforming to the technical standard, MIC formulated guidelines specifying actions required from radio equipment manufacturers, etc. as obligation to make effort, and voluntary actions by internet shopping mall operators to promote actions to prevent distribution of non-conforming equipment.

[19] Research study on the influence of radio waves on implanted medical appliances: https://www.tele.soumu.go.jp/j/sys/ele/seitai/chis/index.htm
[20] The Radio Wave Utilization Environment Committee: https://www.soumu.go.jp/main_sosiki/joho_tsusin/policyreports/joho_tsusin/denpa_kankyou/index.html
[21] MIC radio use website: Outline of radio wave monitoring https://www.tele.soumu.go.jp/j/adm/monitoring/index.htm
[22] Results of radio equipment trial purchase test: https://www.tele.soumu.go.jp/j/adm/monitoring/illegal/result/

Section 4 Trends in Broadcasting Policy

1. Summary

(1) Initiatives so far

Broadcasting is a basis of democracy. It has fulfilled the role of social capital to share disaster information, community information and other basic information of society.

Television broadcasting, which had been based on an analog method, was fully digitalized at the end of March 2012. Since then, broadcasting services have been upgraded with hi-vision images and data broadcasting. In order to promote 4K/8K broadcast services with higher-definition and picture quality even compared with high vision, MIC, in cooperation with broadcasters, home appliance manufacturers and others, implemented necessary projects for many people across the country to enjoy the 2021 Tokyo Olympic and Paralympic games through lively and powerful 4K/8K pictures.

Overseas deployment of broadcasting content promises great positive spill-over effects including expansion of export of agricultural, forestry, fisheries and other local products/services and increase in foreign tourists. MIC has promoted the overseas deployment of broadcasting contents in cooperation with relevant government agencies.

Furthermore, with focus on radio broadcasting, the usefulness of which was recognized when earthquakes occurred, MIC has promoted initiatives that contribute to the resilience of broadcasting networks, which includes countermeasures against poor reception of radio broadcasting and protection of transmitting equipment from disasters so that broadcasting can continue to appropriately provide people with disaster information and other information. In order to equalize information access opportunities through broadcasting, MIC has promoted the spread of broadcasting for people who are visually challenged or have hearing impairments by formulating "guidelines for information accessibility in broadcasting" and other measures. The guidelines establish: subsidies for private broadcasters that have production costs for programs with subtitles, commentary programs and sign-language programs; subsidies for the equipment needed to add subtitles to live programs; and target values for broadcasters to increase programs with subtitles.

(2) Future challenges and directions

The environment surrounding broadcasting is rapidly changing, which includes spread of video streaming via the internet and a loss of interest in television. In response to these changes, it is necessary to tackle tasks including strengthening of the foundation of broadcasting businesses, promotion of the distribution of broadcast content, strengthening of the resilience of broadcasting networks and their disaster resistance, while at the same time studying a future vision for broadcasting and a desirable state for the broadcasting system from a medium- to long-term perspective.

2. Desirable state of public broadcasting

Amid changes in the environment surrounding public broadcasting, MIC set up the "Subcommittee to Study the Public Broadcasting System" in April 2020 and studied: (1) follow-up of the three-part reform of NHK operation, fee for receiving NHK broadcasting and its governance; and (2) the desirable state of the system of the fee for receiving broadcasts, from various viewpoints.

Regarding follow up of the three-part reform, the subcommittee compiled "Efforts expected from NHK for promotion of the three-part reform" in June 2020. Since its 4th meeting on June 26 of the same year, the subcommittee discussed the desirable state of the broadcast receiving fee system considering the requests regarding the system reform, which were presented through hearing of NHK and other concerned bodies. The result was compiled in the "Report on the desirable state of public broadcasting and broadcast receiving fee system" in January 2021. The report recommends future directions including: (1) "reserved fund" to return the receiving fee to viewers; (2) extra charge to ensure fair burden; (3) obligation of NHK and commercial broadcasters to make efforts for cooperation; and (4) introduction of an intermediate holding company system.

Based on the recommendations, a bill for partial amendment of the Radio Act and the Broadcasting Act was submitted to the Diet in February 2022 and enacted in June of the same year. The bill includes establishment of a system regarding reserve funds to return profits for proper and fair burden of the fee for receiving NHK broadcasting, and establishment of a provision of obligation to make effort pertaining NHK's cooperation with other broadcasters in performing their responsibilities. MIC plans to make preparations for its smooth enforcement.

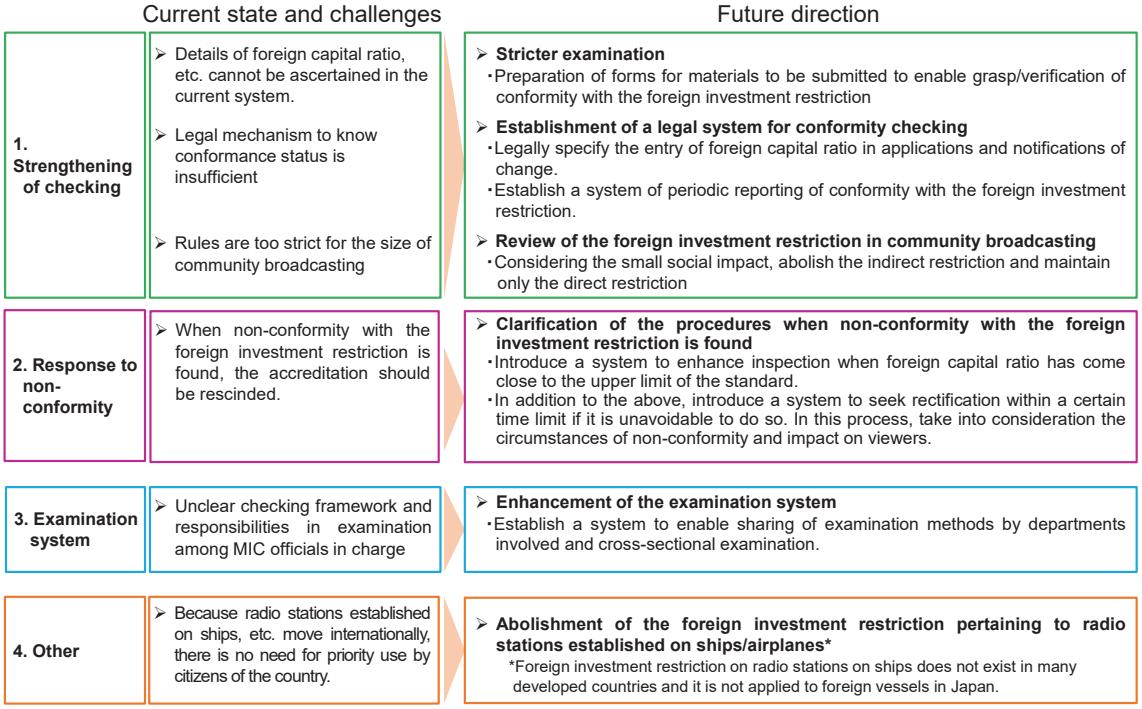
Related data
Summary of the report on the desirable state of public broadcasting and broadcast receiving fee system
URL https://www.soumu.go.jp/main_content/000728676.pdf

3. Desirable state of restrictions on foreign investment

MIC set up a "Study Group on Foreign Investment Restrictions in the Information and Communications Field" in June 2021 to study the ideal state of foreign investment restrictions in the information and communications field. The group compiled the "Report on the Ideal State of Foreign Investment Restrictions in the Information and Communications Field" (January 2022) recommending the following future direction: (1) strengthening of the checking function of foreign investment restriction; (2) clarification of the procedures for cases not conforming to the foreign investment restriction; (3) strengthening of the examination system at MIC; and (4) abolishment of foreign investment restriction pertaining to radio stations established on ships/airplanes and other matters **(Figure 4-4-3-1)**.

Based on the recommendation, a bill for partial amendment of the Radio Act and the Broadcasting Act was submitted to the Diet in February 2022 and enacted in June of the same year. The bill includes review of foreign investment restriction in the information and communication field. MIC plans to make preparations for its smooth enforcement.

Figure 4-4-3-1 Summary of the Report on the Ideal State of Foreign Investment Restrictions in the Information and Communications Field



4. Strengthening the Foundation of Broadcasting Businesses

(1) Study on desirable state of the broadcasting system from a medium- to long-term perspective

Today, with the progress of broadband infrastructure development, spread of smartphones and diversification of terminals including devices enabling use of video streaming services through the internet without using a television tuner, people can access a variety of information without limitation in a place or time. As a result, the environment surrounding broadcasting is rapidly changing, which includes the spread of video viewing via the internet and decline in television viewing. When the sales of broadcasters are decreasing, local stations that have contributed to maintaining and developing the communities' culture by broadcasting information rooted in the communities face a big challenge to strengthen the foundation of their broadcasting business so that they can continue stable broadcasting. The measures may include adaptation to the new competitive environment and securing of new revenue sources through overseas deployment of broadcasting content. It has become necessary to study the future of broadcasting and desirable state of broadcasting system by adapting to changes in the times, without being constrained by the existing frameworks and to increase management options from medium- and long-term perspectives. In this context, MIC has held a "Study Group on the Ideal Broadcasting System in the Digital Age" since November 2021. The study group discusses: significance and role of broadcasting in the digital age; future visions of broadcasting network infrastructure; the ideal Internet distribution of broadcasting content; and the ideal broadcasting system in the digital age.

(2) Initiatives regarding AM radio broadcasting

The "Subcommittee to Study Strengthening of the Foundation of Broadcasting Businesses" that was set up

under the "Study Group on Issues Surrounding Broadcasting" compiled a "Report on Strengthening the Foundation of Broadcasting Businesses" in July 2020. The report makes recommendations with focus on: (1) the current state and future outlook of business conditions of broadcasters; (2) business governance of broadcasters; (3) state of AM radio, and; (4) promotion of business expansion and diversification of local stations.

(3) above was recommended in response to the request made by the Japan Commercial Broadcasters Association to MIC in March 2019. The request includes: considering the decrease in operating income of AM radio broadcasting and aging of transmitting antennas, review the existing supplementary FM relay station system to enable change from AM to FM broadcasting or operation of both AM and FM based on the business judgment of the commercial AM radio broadcasters by the time of the license renewal in 2028 at latest, and take institutional measures to allow prior end of AM broadcasting around the time of the license renewal in 2023. Specifically, the report recommends MIC, the Japan Commercial Broadcasters Association and individual commercial radio broadcasters to address the future challenges (coverage area, adaptable receivers, public relations, efficient use of frequencies, etc.) by the time of the demonstration experiment in 2023 (by the time of the license renewal in 2028 at latest).

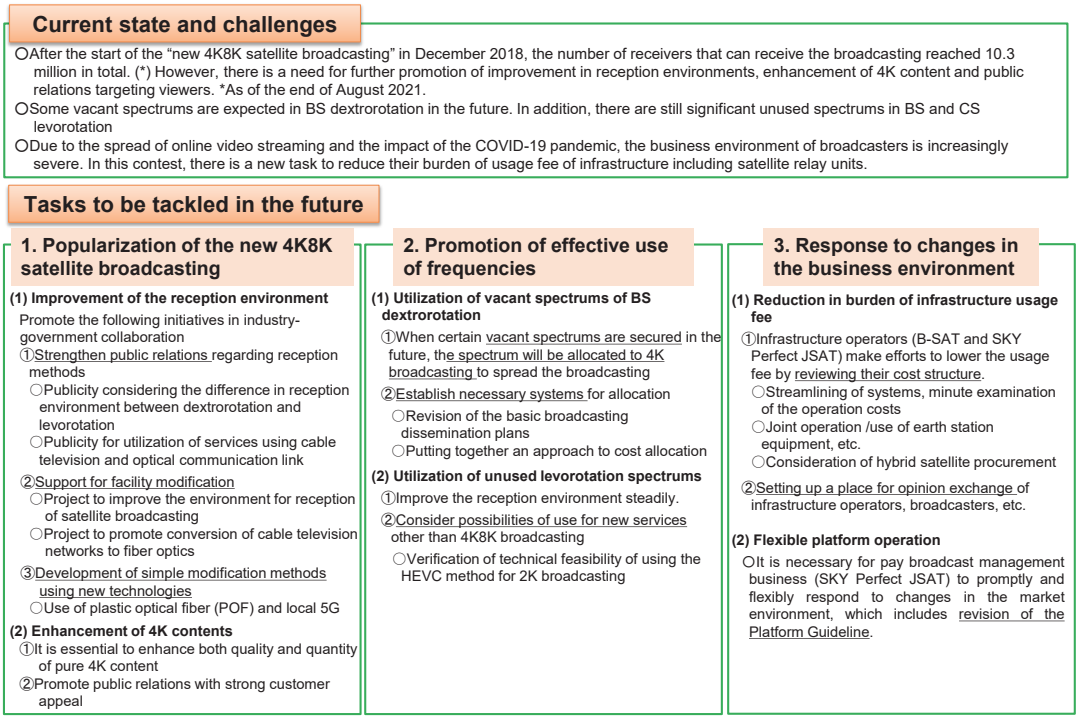
Based on the recommendation, MIC compiled "Approach to 'demonstration experiment' regarding switching from AM to FM broadcasting by commercial radio broadcasters" and released the approach in December 2020. MIC will revise the system to allow changing from AM to FM broadcasting or operation of both AM and FM by the commercial AM radio broadcasters within 2022, invite public participation in the 1st demonstration experiment around January 2023 and start the 2nd demonstration experiment in November of the same year.

(3) Strengthening the efforts to spread the new 4K8K satellite broadcasting

The "Working Group on the Future Image of Satellite Broadcasting" set up under the "Study Group on Issues Surrounding Broadcasting" conducted studies considering the big changes in the situation surrounding the satellite broadcasting, which include the start of the new 4K8K satellite broadcasting in December 2018, further growth in online video streaming services and the impact of the COVID-19 pandemic. The results were released as a report in October 2021 (**Figure 4-4-4-1**). As issues to tackle in the future, the report proposes: (1) improvement of the reception environment to spread the new 4K8K satellite broadcasting and enhancement of 4K content; (2) utilization of vacant spectrums of BS dextrorotation and unused spectrums of BS levorotation; and (3) reduction in the infrastructure usage fee and flexible platform operation in response to changes in the business environment.

Based on the recommendation, MIC in collaboration with broadcasters and manufacturers is advancing strengthened initiatives including public relations regarding the receiving method and a wide array of 4K8K content toward spread of the new 4K8K satellite broadcasting. Because it was decided to allocate the vacant spectrums of BS dextrorotation to 4K broadcasting when such spectrums are secured in the future, MIC plans to develop necessary systems for the allocation, which include revision of the basic broadcasting dissemination plan.

Figure 4-4-4-1 Summary of the report by the Working Group on the Future Image of Satellite Broadcasting



5. Promoting Broadcast Content Circulation

(1) Promoting production and circulation of broadcast content

i Initiatives for effective webcast of broadcast content, etc.

In recent years, the environment of information dissemination has been greatly changing with the spread of video streaming services through the internet, and acceleration of loss of interest in television especially among young people, for example. When video-sharing sites and video streaming platforms are filled with content, we are facing the social problems of "filter bubble" and "echo chamber." In particular, community information that was naturally distributed and shared through local broadcasting, etc. increasingly fails to attract sufficient attention (view counts) in the Internet world, and lies buried and overwhelmed.

In this context, the necessity increases to build a framework to prevent highly reliable information including basic information of society from being buried in a mass of content and to effectively deliver it to viewers in public-private cooperation. To this end, MIC is promoting public-private collaboration initiatives including: demonstration projects regarding effective webcast of broadcast content using TVer in fiscal 2021 to facilitate access for the local viewers to the broadcast content of the community on nationwide video streaming platforms; and securing of highly skilled personnel with technical/legal knowhow for effective webcast of such content in the communities. By deepening and expanding these projects, MIC aims to further promote webcast of highly reliable content on safe and secure nationwide video streaming platforms.

ii Utilization of viewing data in the broadcasting field and the ideal state of privacy protection

By collecting and analyzing viewing history, etc. of broadcast programs from television receivers connected to the internet, we can use the results for production of programs and provision of disaster information tailored to the detailed needs of each region. However, there is a problem in that it is technically possible to derive sensitive personal information including political beliefs and medical history of individual viewers.

Considering the public nature of broadcasting, MIC has established rules specific to the broadcasting sector, which should be observed by every person handling personal information of broadcast recipients, etc. in the "Guidelines on Personal Information Protection of Broadcast Recipients etc." in addition to the minimum rules under the Act on the Protection of Personal Information. Furthermore, MIC has held a "Study Group on the Utilization of Viewing Data in the Broadcasting Field and the Ideal State of Privacy Protection" since April 2021. For the development of rule balancing data utilization and privacy protection, the study group has been discussing the ideal state of rules for handling of webcast history of broadcast content, in addition to the ideal state of rules on handling of viewing data collected in the process of broadcasting.

iii Smoother rights processing pertaining to simultaneous distribution of live broadcast programs

In response to changes in the viewer environment due to the spread of smart devices, broadcasters are advancing online simultaneous distribution of broadcast programs (refers to simultaneous distribution, repeat broadcasts and time-limited repeat broadcasts. The same applies hereinafter.) and similar initiatives. These initiatives expand opportunities to view high-quality contents and are important for improvement of viewers' convenience, promotion of the contents industry and securing of their international competitiveness. However, there is a challenge of rights processing because a mass of diverse works is used in broadcast programs and failure in processing copyrights and other rights in simultaneous distribution, etc. may cause "masking" of the programs. For this reason, it was necessary to create an environment for more speedy and smoother use of works, etc. when promoting simultaneous broadcasting, etc.

MIC worked out broadcasters' requests regarding smoother processing of rights pertaining to simultaneous broadcasting, etc. and submitted the result to the Agency for Cultural Affairs (ACA) holding jurisdiction over the Copyright Act (Act No. 48 of 1970). Later, MIC together with ACA heard the opinions of concerned parties and studied the direction of the system amendment. As a result, the Act Partially Amending the Copyright Act (Act No. 52 of 2021) was enacted at the 2021 ordinary session of the diet and measures were taken for smoother rights processing pertaining to simultaneous distribution. These measures were enforced on January 1, 2022. MIC prepared the system for the enforcement, which includes formulation of the "Guidelines for Interpretation and Operation of Presumption Rules of Permission for Simultaneous Broadcasting on Transmission of the Internet."

iv Promoting regulation on production and trade of broadcast content

In order to improve the production environment and enhance motivation of producers in the broadcast content sector, MIC held the "Study Group on Verification and Review on Promotion of Production and Trade of Broadcast Content" consisting of experts and other members. Based on the discussions of the group, MIC formulated the "Guidelines for Regulation on Production and Trade of Broadcast Content Developed" (seventh edition) (Hereinafter the "Guidelines") and is urging broadcasters and program production companies to regulate production and trade of broadcast content.

Specific measures include: regular follow-up survey regarding the Guidelines to assess the state of production and trade of broadcast content; assessment of the actual situation of compliance with the Guidelines through hearing of broadcasters and program production companies; regarding discovered problems, giving guidance based on the Article 4 of the Act on the Promotion of Subcontracting Small and Medium-sized Enter-

prises (Act No.145 of 1970); holding online courses for dissemination of the Guidelines; and setting up a "legal consultation hotline for produced broadcast content" to provide free consultation by a lawyer on specific individual issues.

(2) Overseas deployment of broadcast content

Overseas deployment of broadcast contents increases interest in agricultural, forestry, fishery and other local products and culture of each region of Japan and is expected to produce economic effects including sales expansion. It is extremely important also from a diplomatic point of view because it contributes to a better image of Japan and strengthening of its soft power.

MIC, in cooperation with the Broadcast Program Export Association of Japan (BEAJ), which is promoting overseas deployment of broadcast content and relevant government agencies, is continuously supporting initiatives of Japanese broadcasters and others to produce broadcast contents conveying the appeal of various regions in Japan jointly with overseas businesses and disseminate the contents to the world. In addition, MIC conducted PR activities in public-private cooperation for overseas deployment of Japanese content by taking the opportunity of the international content fair at TIFFCOM (Tokyo) in November 2021 and ATF (Singapore) in December of the same year.

MIC will continue to promote overseas deployment of broadcast content toward the goal of 1.5-fold increase of overseas sales (compared with fiscal 2020) by fiscal 2025.

6. Promoting the spread of broadcasting for the visually challenged and those with hearing impairments

In the broadcasting sector, MIC formulated the "Guidelines on Information Accessibility in the Broadcasting Sector" in February 2018 and is encouraging voluntary efforts by broadcasters so that the visually challenged and those with hearing impairments can smoothly obtain information through television broadcasting.

In addition, based on the Act on Advancement of Facilitation Program for Disabled Persons' Use of Telecommunications and Broadcasting Services, with a View to Enhance Convenience of Disabled Persons (Act No. 54 of 1993), MIC provides subsidy for production costs of subtitled broadcasts, explanatory broadcasts, and sign language broadcasts. Since fiscal 2020, the subsidy is provided also for the equipment needed to add subtitles to live programs.

These measures increased subtitled broadcasts nationwide, but adding subtitles to live programs involves many hands and costs, and requires human resources with special skill. To address this issue, since fiscal 2018 MIC has been implementing a demonstration project to develop a series of systems to automatically generate subtitles from speech of broadcast programs with little manual intervention and to display subtitles on televisions and smartphones via a communication network by using ICT including speech recognition and machine learning.

7. Improving the Resilience of Broadcast Networks and Enhancing Their Disaster Resistance

(1) Conversion of cable networks to fiber optics

In order to enhance the disaster resistance of cable networks, which are the information and communication infrastructure of communities, through their conversion to fiber optics, MIC implements the "Project to enhance the disaster resistance through conversion of cable televisions to fiber optics toward establishment of 'New Normal'," which provides subsidy for a part of the costs necessary for conversion of cable networks to fiber optics in communities by using the fiscal 2021 supplementary budget and the fiscal 2022 initial budget **(Figure 4-4-7-1)**.

Figure 4-4-7-1 Project to enhance the disaster resistance through conversion of cable televisions to fiber optics toward establishment of 'New Normal'

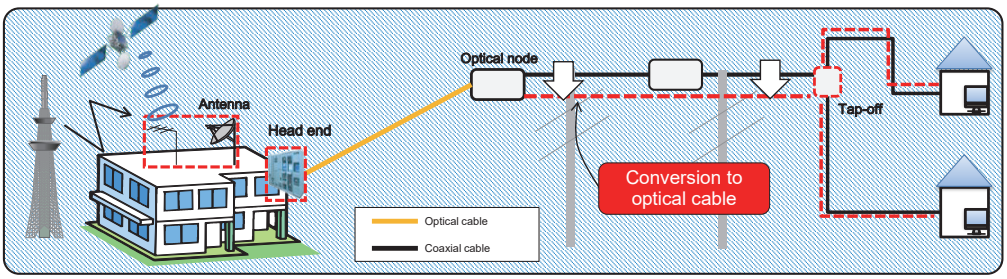
Project illustration

○Project operator
Municipalities, municipality collaboration entities or a third sector (including entities that continue to fulfill the role pertaining to the provision of cable television services through transfer of the relevant facilities from these entities (Succeeding business operators))

○Target regions
Regions satisfying all of (1) to (3) below:
(1) Municipalities where cable television is positioned in their regional disaster prevention plan
(2) Regions with unfavorable conditions
(3) Municipalities with financial index 0.5 or lower and other regions where the subsidy is found particularly necessary

○Subsidy rate
(1) Municipalities or municipality collaboration entities (Succeeding business operators): 1/2
(2) Third sector (Succeeding business operators): 1/3

○Subsidized costs (shown in red in the figure below)
Optical fiber cable, transmitting/receiving facilities, antennas, etc.



(2) Supporting initiatives by broadcasters

In order to support initiatives by broadcasters, local governments and others to improve resilience of broadcast networks, MIC implements "projects to support broadcast network development (the project to develop basic terrestrial broadcasting networks, the project to develop regional cable television networks and the project to support improvement of resilience of communal reception facility networks)" **(Figure 4-4-7-2)**, "project to support resolution of poor reception of commercial radio broadcasting" and "project to support improvement of disaster resistance of basic terrestrial broadcasting, etc." using the fiscal 2022 initial budget.

Figure 4-4-7-2 Projects to support broadcast network development

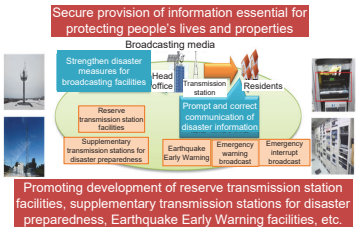
- Projects to support broadcast network development improve the resilience of the broadcast networks, which are important information transmission means in communities in the event of a disaster, by subsidizing a part of the following development costs in order to securely provide disaster information, evacuation information and other information essential for protecting people's lives and properties.
  ① Reserve transmission station facilities pertaining to new radio/television development, supplementary transmission station facilities, Earthquake Early Warning facilities, etc.
  ② Double routing, etc. of cable television trunk lines
  ③ Improvement of disaster resistance of communal reception facilities

Subsidy rate

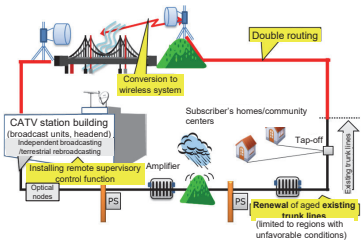
- Local governments: 1/2
- Third sector, commercial broadcasters, etc.: 1/3

Project name/image

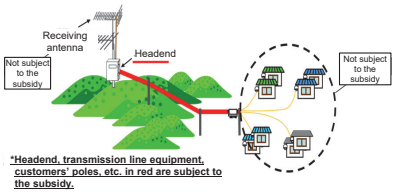
①Project to develop basic terrestrial broadcasting networks



②Project to develop regional cable television networks



③Project to support improvement of resilience of communal reception facilities networks



Section 5 Trends in Cybersecurity Policy

1. Summary

(1) Initiatives so far

Under intensifying threats to cybersecurity on a worldwide scale, the Basic Act on Cybersecurity (Act No. 104 of 2014) stipulating basic principles of national cybersecurity policy was enacted in 2014. Based on the act, the Cybersecurity Strategic Headquarters was established under the Cabinet in 2015 to lead cybersecurity measures of the government. Since then, a Cybersecurity Strategy has been formulated every three years setting goals and policies of measures considering changes in economic society and the increase in threats against cybersecurity. In September 2021, a new "Cybersecurity Strategy"[23] was decided by the Cabinet and cybersecurity policies have been promoted based on the strategy.

"The 4th Action Plan on Information Security of Critical Infrastructure"[24] (decided by the Cybersecurity Strategic Headquarters in April 2017) establishing basic framework for protection of critical infrastructure designates the information and communication sector (telecommunication, broadcasting and cable television) as one of the 14 critical infrastructure sectors, suspension or unavailability of which would heavily affect people's lives and socioeconomic activities. The next action plan is scheduled to include clarification of the responsibilities of related entities and enhancement of the troubleshooting system. Holding jurisdiction over critical infrastructure, MIC needs to take measures to secure safety and reliability of the information and communication networks.

MIC has held a Cyber Security Task Force consisting of security experts since 2017. The task force has successively compiled a list of challenges and measures to be tackled by MIC with consideration to various changes in the situation, including Tokyo Olympic and Paralympic games and the COVID-19 pandemic. In July 2021, the task force formulated the "Comprehensive ICT Cybersecurity Measures 2021"[25], which includes measures regarding ICT infrastructure/services. Based on the above, MIC has been implementing measures to promote cybersecurity in the ICT sector.

(2) Future challenges and direction

When movement of persons is restricted to prevent the spread of COVID-19 and use of telework is progressing, promotion of digitalization of overall socioeconomic activities by the people, or promotion of digital transformation across society is recognized as an increasingly important policy issue.

ICT infrastructure and services including IoT and 5G provide the basis for digital transformation. In order to promote digital reform and transformation across society, it is a critical prerequisite to ensure cybersecurity so that each citizen can use ICT safely.

As described in Chapter 3 Section 7, a large number of cyber-attack-related communications are still observed. Because the ratio of the attacks targeting IoT equipment remains the highest, it is necessary to continue to strengthen security measures for IoT equipment.

For introduction of telework and wireless LAN which are necessary for digitalization across society, ensuring security and dealing with anxiety concerning security remain the largest and urgent issues.

Domestic security business models are mostly based on introduction and operation of overseas security products. As a result, domestic security companies cannot collect domestic cyberattack information, etc., and conduct R&D based on real data to develop domestic security technologies, which leads to the failure of such domestic technologies to spread. In order to avoid or grow out of the excessive dependence on security technologies provided by overseas players, and to enhance the ability to independently handle cyber-attacks including development of the cybersecurity human resources, it is necessary to create an ecosystem that will accelerate domestic generation of cybersecurity information and human resource development.

2. Securing safety and reliability of information and communications networks

(1) Initiatives pertaining to IoT

While IoT is progressing as social infrastructure, IoT devices are often exposed to cyber-attacks because it is difficult to manage them completely, and appropriate security measures cannot be taken due to their limited performance and other reasons. The need to strengthen the countermeasures has been pointed out. Cyber-attacks abusing IoT devices are actually made and the ratio of the attacks targeting IoT equipment is the highest among the cyber-attack-related communications observed in 2021 by the Network Incident Analysis Center for Tactical Emergency Response (NICTER) operated by NICT.

Under these circumstances, in order to strengthen cybersecurity measures for IoT devices, the Act on the National Institute of Information and Communications Technology, Independent Administrative Agency[26] was partially amended in 2018. Based on the amendment, MIC and NICT in collaboration with internet service providers (ISPs) have been implementing an initiative named "National Operation Towards IoT Clean Environ-

[23] Cybersecurity Strategy: https://www.nisc.go.jp/active/kihon/pdf/cs-senryaku2021.pdf
[24] The 4th Action Plan on Information Security of Critical Infrastructure (revised): https://www.nisc.go.jp/active/infra/pdf/infra_rt4_r2.pdf
[25] Comprehensive ICT Cybersecurity Measures 2021: https://www.soumu.go.jp/main_content/000761893.pdf
[26] Act on the National Institute of Information and Communications Technology, Independent Administrative Agency (Act No. 162 of 1999)

ment (NOTICE)" since February 2019. NOTICE is a series of projects: (1) NICT identifies devices on the internet, which can be abused for cyber-attacks by entering a password that can be easily derived such as "password" or "123456"; (2) NICT notifies the information of the identified devices to the relevant ISP, and (3) the notified ISP identifies the users of the devices and alerts them.

Concurrently with NOTICE, MIC, NICT, ICT-ISAC and ISPs cooperate to implement a project where ISPs alert the users of IoT device already infected with malware. In this project, devices performing communications caused by malware infection are detected based on the information obtained through NICTER above, and the ISPs identify the users of the devices.

(2) Initiatives related to active measures taken by telecommunications carriers

With the progress of 5G, it is expected that use of IoT devices will further expand in various industries. In order to improve the effectiveness of security measures for IoT devices, it seems necessary to improve the environment for more flexible responses on the network side where traffic is passing in addition to the existing measures on the terminal side.[27]

In this context, in November 2021 MIC at "the Study Group for Proper Dealing with Telecommunications Business Cyber-attacks" found that it is possible for telecommunication carriers to detect C&C servers (servers giving directions to terminals infected with malware) by collecting, accumulating and analyzing flow of information at normal times and share the information on the detected C&C servers under certain conditions considering secrecy of communication.[28] The study group plans to start validity verification of the technology to detect C&C servers by telecommunication carriers through analyzing flow of information and a demonstration project to sort out operational challenges for sharing among carriers in fiscal 2022.

Certified Association against Cyber Attacks on Telecommunications Facilities[29] is a third party organization to conduct operations including sharing, survey and research of senders' information of DDoS and other cyber-attacks. In the past, information sharing and analysis at the association was limited to cases where the senders are identified after attacks. In order to allow information sharing and analysis before attack, a bill for partial amendment of the Telecommunications Business Act was submitted to the Diet in March 2022 and enacted in June of the same year, as an effort to promote collaboration among telecommunication carriers in handling DDoS and other cyber-attacks.

3. Initiatives related to Telework Security

Security was the biggest challenge in a questionnaire survey of enterprises introducing telework.[30] In order to dispel anxiety about security so that enterprises can implement telework with security, MIC has formulated a "telework security guideline"[31] since 2004. The COVID-19 pandemic triggered drastic changes in the environment surrounding telework and there are also changes in security trends, which include progress in use of the cloud and sophistication of cyber-attacks. In response, MIC made a total revision of the security measures to be implemented, specific trouble cases and other matters in May 2021.

Some SMEs may not have dedicated security staff, or their persons in charge may not understand technical schemes. In response, MIC formulated "Telework Security Guide for SMEs (Checklists)" focusing on reliable securing of minimum security and revised the guide along with the guidelines in May 2021.

4. Initiatives related to Trust Services

In Society5.0, integration of real space and cyberspace will further progress and every activity in the real space will be placed in cyberspace. In this process, construction of infrastructure for data distribution with confidence is essential, and trust services (**Figure 4-5-4-1**) that are a system to prevent data falsification and sender masquerade are increasingly important.

(1) Study by the Working Group on Trust Services

MIC set up "Working Group on Trust Services" under the "Study Group on Platform Services" in January 2019. The working group studied the ideal state of trust services in Japan and presented the following directions for time-stamp and e-seal initiatives in its final report in February 2020.

Regarding time-stamps certifying that electric data existed at a certain time and has not been altered after that time, a private authorization system has been operated. However, without state support for its reliability, there is a concern about international applicability. Therefore, it is appropriate for the state to establish a system to authorize reliable time-stamp services and business operators.

Regarding e-seal that enables simple confirmation of

[27] "Comprehensive ICT Cybersecurity Measures 2021" formulated in 2021 states: "it is necessary to consider measures to realize advanced and flexible responses in information and communication networks managed by ISP on the internet" in the section of "Active measures by telecommunication carriers against cyber-attacks" (https://www.soumu.go.jp/menu_news/s-news/02cyber01_04000001_00192.html)
[28] The Fourth Report of the Study Group for Proper Dealing with Telecommunications Business Cyber-attacks: https://www.soumu.go.jp/main_content/000779208.pdf
[29] Based on Article 116-2 (1) of the Telecommunications Business Act, ICT-ISAC was certified as a Certified Association against Cyber Attacks on Telecommunications Facilities in January 2019.
[30] Survey on actual conditions of telework security (2nd survey in fiscal 2020): https://www.soumu.go.jp/main_sosiki/cybersecurity/telework/
[31] Ensuring security in telework: https://www.soumu.go.jp/main_sosiki/cybersecurity/telework/

the organization sending electronic data, this is a new service and its content and technologies for its provision have not been established. Therefore, it is appropriate to formulate technical and operational guidelines for reliable services and business operators with involvement of the state, and establish a private authorization system based on the guidelines.

(2) Establishment of time-stamp authorization system by the state

Based on the recommendations of the working group, the "Study Group on the Time Stamp Certification System" conducted further study, and MIC established a state certification system by instituting the Provisions Concerning Approval of Time-stamp Authentication Operations (Ministry of Internal Affairs and Communications Notice No. 146 of 2021) in April 2021. Further through the tax reform in fiscal 2022, time-stamps based on a private certification system (Japan Data Communications Association) are replaced by time-stamps based on the state certification system in scanner archiving of taxation-related documents and other systems.[32] In the future, MIC will operate the state certification system appropriately and reliably, while taking necessary measures for further expansion of the use of time-stamps.

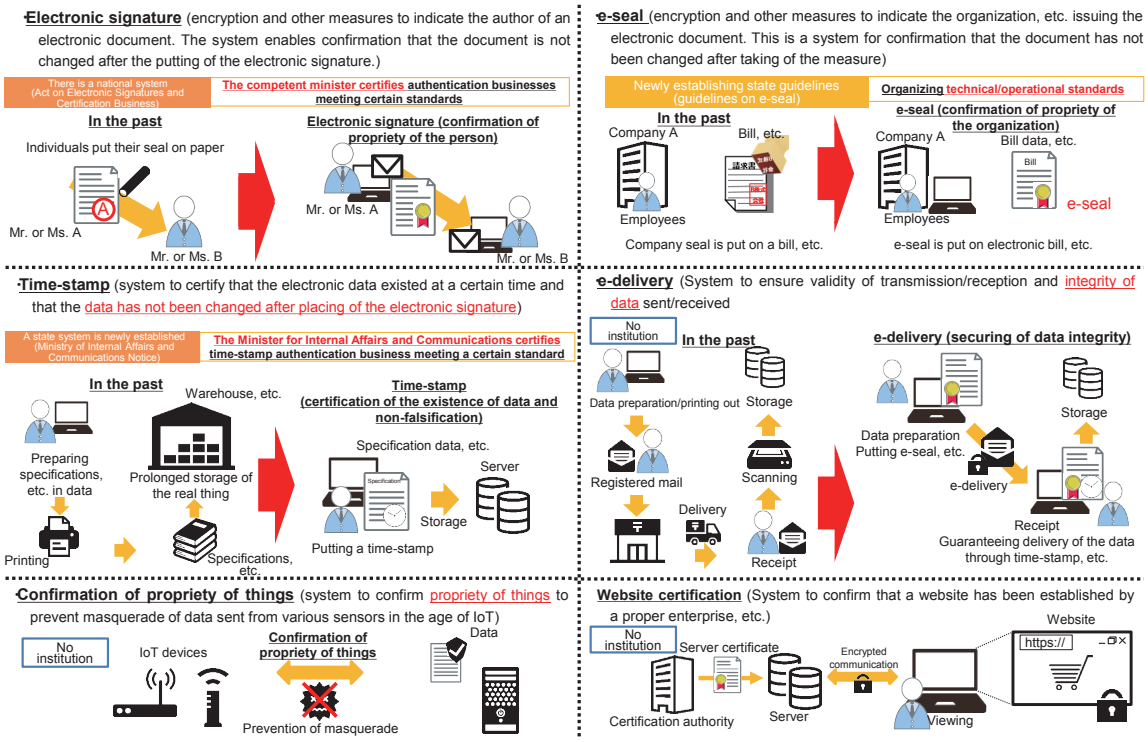
(3) Formulation of the guidelines on e-seals

Based on the recommendations of the working group, the "Study Meeting on a System for Ensuring the Reliability of Data Issued by Organizations" set up in April 2020 studied the ideal e-seals in Japan. Later in June 2021, MIC released a report of the study meeting and formulated "Guidelines on e-seal"[33] compiling technical/operational standards required from reliable e-seal services/business operators in Japan.

(4) Study at the Digital Agency

It was found effective that the Digital Agency would handle dissemination of electronic signatures and system planning integrally based on the Act on Electronic Signatures and Certification Business (Act No. 102 of 2000[34]). As a result, affairs regarding this Act were relegated from MIC and METI to the Digital Agency[35], and the Agency is leading efforts to expand use of electronic signature and improvement of its convenience. At the whole government level, under the Data Strategy Promotion Working Group based on the Digital Society Promotion Council Order (Cabinet Order No.193 of 2021), the Sub-working Group for Trust-Assured Digital Transformation was established to study digitalization needs and the necessary assurance level of various procedures and transactions in the public and private sectors in November 2021. The sub working group discusses the framework of trust services based on the MIC's initiatives regarding time-stamps and e-seal.

Figure 4-5-4-1 Image of trust service



[32] For the period from April 1, 2022 to July 29, 2023, a transitional measure is taken to allow use of time-stamps pertaining to operations authorized by Japan Data Communications Association as before.
[33] Guidelines on e-seal (https://www.soumu.go.jp/main_content/000756907.pdf)
[34] Report of the Working Group on Digital Reform Related Bills Task Force: (https://www.kantei.go.jp/jp/singi/it2/dgov/houan_wg/dai4/siryou2.pdf)
[35] Provisions regarding legal effects of electronic signature (e.g., presumption of authentic establishment of private documents) remain under the jurisdiction of the Ministry of Justice.

5. Initiatives related to wireless LAN security

Wireless LAN is widely used in homes, workplaces and while on the go through a public wireless LAN service, for example. However, without an appropriate security measure, there is a danger of cyber attacks and information theft through wireless LAN devices. To address this issue, MIC has formulated guidelines on wireless LAN security measures separately for users and providers and released revised versions of them both adapted to new technologies and the latest security trends in May 2020.[36]

"Simplified manual for Wi-Fi users" for wireless LAN users presents three points of security measures: (1) carefully check the access point to connect; (2) check whether right URL is used for HTTPS communication; and (3) check the setting of the device installed in the home, which are followed by commentary on each point.

"Guide on security measures for Wi-Fi providers" for wireless LAN providers is compiled to help a broad range of people including restaurants and retail stores providing wireless LAN service to check what security risks are involved in the provision and what security measures to take.

6. Initiatives related to ensuring safety of cloud services

(1) Assessment of safety of cloud services for government information systems

Under "Principle of the Cloud-by-Default", the government at the "Study Group on Safety Evaluation of Cloud Services" studied safety assessment of cloud services. As a result, (1) the basic framework for a system, (2) the approach to cloud usage in each government ministry and agency, and (3) jurisdiction and operation of the system have been determined as per "The Basic Framework for the Security Evaluation System of Cloud Services in the Government Information System" (established by the Cyber Security Strategy Headquarters, January 30, 2020).

In response, based on the rules decided by the ISMAP Management Committee consisting of experts and competent authorities (National center of Incident readiness and Strategy for Cybersecurity, Digital Agency, MIC and METI), the Information system Security Management and Assessment Program (ISMAP) system was established in June 2020. Registration of cloud services that are confirmed to be implementing security measures specified in the system started in March 2021. As of June 1, 2022, 34 services are open to the public in the ISMAP Cloud Service List[37].

(2) Formulation of guidelines on information security measures in cloud service provision

In order to promote safe and secure use of cloud services, MIC formulates "guidelines on information security measures in cloud service provision" compiling information security measures to be taken by cloud service providers. In September 2021, MIC released a revised edition (the 3rd edition) based on the actual state of cloud service provision and use.[38] Recently, there are cases where failure of cloud service users to use the service appropriately resulted in risk of information leak. To address this issue, a broad range of entities including providers and users are studying means for promotion of appropriate use of cloud services and plan to formulate and release guidelines for appropriate settings for cloud service provision and use.

7. Initiatives for development of security human resources

While cyber-attacks are increasingly sophisticated and complicated, Japan is short of cyber-security human resources both in quality and quantity. To address this issue, MIC with the National Cyber Training Center of NICT is actively promoting training of cybersecurity human resources (CYDER and SecHack365).

(1) Cyber Defense Exercise with Recurrence (CYDER)

CYDER is a practical cyber defense exercise for persons in charge of information systems at various organizations including state organs, local governments, independent administrative agencies and critical infrastructure operators. Teams of trainees participate in the exercise and experience actual machine operation for a series of actions from detection of incidents caused by cyber-attacks, response, reporting and restoration in a large-scale virtual LAN environment simulating the network environment of their organization. Since fiscal 2017, 13,867 trainees in total have taken the course. Since fiscal 2021, in addition to the existing basic and intermediate-level exercise courses, CYDER includes: upper-intermediate courses to learn more advanced security skills taking advantage of the knowledge of Cyber Colosseo[39] and an online exercise course for people who cannot take CYDER due to geographical/time constraints or other reasons to learn minimum handling.

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[36] For safe use of wireless LAN: https://www.soumu.go.jp/main_sosiki/cybersecurity/wi-fi/
[37] ISMAP Cloud Service List: https://www.ismap.go.jp/csm?id=cloud_service_list
[38] Guidelines on information security measures in cloud service provision (the 3rd edition): https://www.soumu.go.jp/main_content/000771515.pdf
[39] Cyber Colosseo: practical cyber exercise program that was held prior to the Tokyo Olympic and Paralympic Games for persons in charge of security at organizations related to the games. Colosseo consisted of: Colosseo Exercise to learn methods to deal with attacks through offence and defense exercise using real machines, where cyber-attacks were simulated in a virtual network environment faithfully reproducing the systems involved in the games, and: Colosseo College to learn security knowledge and skills through lectures and seminars. Colosseo was held in close cooperation with The Tokyo Organizing Committee of the Olympic and Paralympic Games for the period from fiscal 2017 to 2020. 571 enrollees were trained through the Exercise and 1,717 enrollees in College in total.

(2) Program for cultivating young security innovators (SecHack365)

SecHack365 is a program for ICT talents age 25 or younger and living in Japan to become cutting-edge security innovators who can create new security technologies. Front-line researchers and engineers teach research and development of security technologies by using NICT's actual cyber-attack-related data continuously and at full scale for one year. 41 enrollees completed the course in fiscal 2021, 212 in total since fiscal 2017.

8. Constructing the integrated cybersecurity knowledge/human resource development foundation (CYNEX)

Because domestic security business models are mostly based on introduction and operation of overseas security products, security measures in Japan heavily depend on overseas products and information, which leads to insufficient collection and analysis of cyberattack information, etc. in Japan. In addition, through use of overseas security products, domestic data flows to overseas businesses, the security-related information of Japan is analyzed overseas, and domestic businesses purchase threat information based on the analytical results from foreign businesses.

As a result, domestic security businesses cannot accumulate core knowhow and knowledge, and it is difficult for them to contribute to global information sharing or to train engineers who can work internationally. User companies also have a shortage of personnel who can appropriately handle security products and information. In order to enhance Japan's independent skills to cope with cyber-attacks, which include training of cyber-security talents, it is necessary to build an ecosystem that accelerates domestic generation of cybersecurity information and human resource development in Japan.

In collaboration with NICT implementing Japan's top-level R&D on cybersecurity, MIC has built a cutting-edge "integrated cybersecurity knowledge/human resource development platform (popularly named CYNEX)," a huge industry-academia-government node regarding cybersecurity around the technologies/knowhow of NICT, since 2021 and started trial operation in 2022.

This cutting-edge platform enables collection and analysis of a broad range of cyber security information in Japan, and further promotes development of domestic security products taking advantage of such information, while at the same time training highly skilled security personnel and supporting human resource development in private and educational institutions. Through this project, MIC aims to further reinforce cybersecurity measures in Japan.

9. Promoting formulation of security communities rooted in the area (regional SECUNITY)

In order to ensure safety and reliability of information and communication services/networks in Japan, it is an important issue to secure cybersecurity not only at business operators providing national or metropolitan-area services but also at business operators providing information communication services in local areas. However, local enterprises and governments have challenges including: information gap compared with enterprises running business in Tokyo metropolitan area or nationwide; difficulty of taking sufficient security measures independently due to lack of management resources, or failure to recognize the need for security measures.

MIC established regional SECUNITY - communities that have built "mutual help" relationships regarding security among involved parties - in 11 regions (mostly districts of Regional Bureaus of Communications) by fiscal 2021. In fiscal 2022, MIC continues support by holding events and other initiatives in addition to seminars to deploy activities across regions and expand awareness-raising activities to a wide range of people.

10. Initiatives related to international cooperation

Because cyberspace spreads globally, collaboration with other countries is essential for establishment of cybersecurity. For this purpose, MIC actively engages in discussions, disseminating and collecting information at various international conferences and cyber consultations with the aim of contributing to building international consensus on cybersecurity.

Furthermore, in order to promote information sharing on international cybersecurity among private entities including information communication operators, MIC holds workshops with participation of ISP of ASEAN countries as well as Japan-US and Japan-EU opinion exchange sessions at the Information Sharing and Analysis Center (ISAC).

In ASEAN region, the ASEAN Japan Cybersecurity Capacity Building Center (AJCCBC) is leading initiatives to improve cybersecurity skills in the region.[40] At the same time, MIC regularly holds ASEAN-Japan Cyber Security Workshop for ISP businesses of ASEAN countries in order to promote information sharing and to build and enhance collaboration systems.

[40] See Chapter 4 Section 8

Section 6 Promoting ICT Usage

1. Summary

(1) Initiatives so far

Since the establishment of the Information Technology Strategic Headquarters and the enactment of the Basic Act on the Formation of an Advanced Information and Telecommunications Network Society (Act No. 144 of 2000)[41] in 2000, Japan has promoted the use of ICT under various national strategies including e-Japan Strategy. Based on these strategies, MIC has promoted the use of ICT in various sectors such as medical care/health and regional revitalization in order to deal with Japan's social/economic challenges including the declining birthrate and aging society and their associated labor shortages, increases in medical/care expenses, and intensified natural disasters.

(2) Future challenges and direction

Since before the COVID-19 pandemic, Japan has been facing serious social issues including aging population with fewer children, and it has been said that it is essential to make the most use of digital technologies to improve productivity and recover the economy. Under the prolonged impact of the COVID-19 pandemic, promotion of ICT usage across society is further increasing in importance.

It is expected that the use of ICT will improve the productivity of corporate activities though replacement of simple works and routine works by machine and creation of higher value added services. In particular, it is thought to help growth of SMEs and other enterprises facing difficulties to secure sufficient labor force.

ICT usage by enterprises can create new business models, such as Personal Data Trust Bank, and both enterprises and citizens can obtain the benefits from the progress of cashless payments and cloud services. In this way, it is expected that ICT usage will contribute to the revitalization of Japan's economy. Because the use of AI by enterprises is expected to bring great benefits broadly to Japan's economy and society, it is required to implement safe, secure and trusted AI in society.

As described in Chapter 3, Section 8, overall, the use of ICT has been progressing, but there are some gaps in Internet usage rate depending on age, geographical and other conditions. In order to realize digitalization that "leaves no one behind," it is necessary to narrow the digital divide caused by age/geographical and other conditions by eliminating anxiety/resistance to digitalization among the public including the elderly, and by advancing initiatives to improve people's ability to use digital technologies, for example.

With the rapid spread of smartphones in recent years, many young people have come to use social media including SNS and online games. It has become essential to improve the "media and information literacy"[42] of the whole of society, including kids, their guardians and teachers, so that young people can safely and securely use smartphones and social media by understanding the risks associated with the use and countermeasures against such risks.

2. Promoting ICT usage that will contribute to solving social/economic problems

(1) Promoting local 5G

i Overview of local 5G

Unlike nationwide 5G services provided by mobile operators, local 5G is a 5G system that can be flexibly constructed by various entities including local enterprises and governments in their building or premise based on individual needs of the community or industry. The use of local 5G is expected in various fields, usage forms and environments to deal with various challenges and create new values.

ii Development demonstrations for realizing local 5G services to solve issues

In order to spread local 5G, since fiscal 2020, MIC has tackled "development demonstrations for realizing local 5G services to solve issues" to implement technical studies on radio wave propagation under a variety of use environments assuming actual use scenes, while at the same time creating solutions using local 5G.

Furthermore, for the purpose of promoting local 5G introduction to various fields including factories, farm land, transportation, medical practice, construction sites and disaster sites, the "Public-private Liaison Conference to Spread Local 5G" consisting of the government offices responsible for the respective fields, groups representing the respective business fields, organizations and other members to promote local 5G was established in January 2021. The Conference functions as a hub connecting entities introducing local 5G to relevant government agencies, common carriers, venders and other members.

iii Promoting 5G development through tax system

With the aim of promoting introduction of safe and reliable 5G and solving various social issues in the communities by using 5G, while at the same time strengthening international competitiveness of Japan's economy, a

[41] This act was abolished by the Basic Act on the Formation of a Digital Society (Act No.35 of 2021).

[42] This is a concept combining media literacy and information literacy, as advocated by UNESCO. The concept includes other various related literacies such as news literacy and digital literacy. This refers to a set of competencies for citizens to share, create, access, search for, understand, evaluate and use information and media contents in every format in critical, ethical and effective ways and by using various tools, with the aim of participating and engaging in personal, professional and social activities.

tax system to promote introduction of 5G was established in fiscal 2020. In the fiscal 2022 tax reform, toward realization of the "Vision for a Digital Garden City Nation," the application time limit of the tax benefits was extended after the review to promote base station development in rural areas. Specifically, the time limit of application of the special measure to allow tax credit or special depreciation for some facilities of national 5G base stations and local 5G was extended to the end of fiscal 2024, after the revision of target equipment and introduction of gradual reduction in tax credit rate from maximum 15% to ensure concentrated development in rural areas in the next 3 years. The special measure to halve the basis of fixed property tax of certain facilities of local 5G for three years after the acquisition was extended to the end of fiscal 2023 after an appropriate review.

(2) Promoting telework

i Overview of telework

Telework is a flexible working style to use time and place effectively taking advantage of ICT. It can realize diverse work styles according to the life stage and lifestyle of each person including families with small children, senior citizens, and persons with disabilities and is also effective for ensuring business continuity in times of disaster or pandemic. Because people can work in the place where they wish to live while maintaining income, telework can create flow of people from urban areas to rural areas.

With the spread of COVID-19 since 2020, telework has been widely used to reduce commuting mostly in urban areas. However, telework implementation rate remains low in SMEs and rural areas. Furthermore, because many enterprises introduced telework to prevent infection, the telework implementation rate tends to decrease when declaration of a state of emergency is cancelled.

ii Implementing "Telework Days"

With the aim of easing traffic congestion in the city centers and establishing telework, since 2017, MIC together with relevant government offices has implemented "Telework Days" in summer to call on enterprises and others to implement telework all over Japan. In 2021 when Tokyo Olympic Paralympic Games was held and movement of athletes and people involved was expected, MIC designated the period from July 19 to September 5, which include the period of the games, as "Telework Days" for concentrated implementation of telework.

iii Supporting the spread of telework

In order to increase the incentive for enterprises to introduce telework through selection and publication of advanced cases and collect examples for reference by enterprises considering telework, since 2015 MIC has selected "Top Hundred Telework Pioneers" to publicly recognize enterprises with sufficient record of using telework. Among them, enterprises implementing especially excellent initiatives of telework in terms of management performance, ICT usage and contribution to regional revitalization are awarded with the MIC Minister Award.

With the aim of supporting introduction of telework in SMEs and rural areas where the telework implementation rate remains low, MIC in collaboration with the local chambers of commerce and industry and associations of labor and social security attorneys has established telework support networks across Japan and implements public relation activities in collaboration with regional bureaus of telecommunications and others. In addition, MIC is working to spread better telework by providing free individual consultation by experts (telework managers) for enterprises, etc. considering introduction or improvement of telework. Since fiscal 2022, these supports have been provided integrally with labor-related telework consultation by the Ministry of Health, Labour and Welfare as "one-stop telework support projects."

Furthermore, in order to address information security concerns that are often cited as challenges for telework introduction, MIC formulated "Telework Security Guidelines" and "Telework Security Guide for SMEs (Checklists)" for reference by enterprises, etc. when implementing telework. In fiscal 2021, MIC released their revised editions.

(3) Promoting Smart City vision

Expanding the Projects Related to ICT Town Development initiated in fiscal 2012, MIC has implemented "data-linkage-type smart city promotion projects" since fiscal 2017. The projects promote introduction of data collaboration infrastructure securing interoperability, extensibility and security to enable cross-sectional collaboration with the aim of solving various problems facing cities.

In fiscal 2021, the Cabinet Office and relevant authorities set up the "Joint Review Committee for Projects Related to Smart Cities" to promote Smart Cities in close cooperation with the relevant authorities, and MIC supported the Smart City projects in nine municipalities/groups.

(4) Promoting ICT use in education

In order to further promote the use of ICT in education, MIC in cooperation with MEXT implemented "Smart School Platform Demonstration Project" using data from the "school affairs system" used by teachers and "lesson/learning system" used also by students to examine safe, effective and efficient data linkage methods of the systems from fiscal 2017 to 2019. In fiscal 2020, MIC released "Smart School Platform Technical Specifications" that are the outcome of the project on its website and worked for its adoption. Since fiscal 2021, toward realization of a "digital education platform" that is the basis of information sharing between digital learning systems held by business operators outside of school, MIC has been studying necessary technical specifications (reference models).

In fiscal 2020, MIC constructed the model of a local 5G usage in education. Specifically, MIC built a 5G use environment in schools by installing local 5G base stations and implemented demonstrations taking advan-

tage of ultra-high speed and other 5G features to disseminate use cases.

(5) Promoting ICT usage in the medical field

Japan has plunged into an ultra-aging society. In order to solve problems including increasing medical/care expenses and uneven distribution of medical resources and to enhance medical products/services, it is imperative to promote networking and pioneering ICT usage in the fields of medicine, nursing and health.

To this end, MIC has implemented research projects by Japan Agency for Medical Research and Development (AMED), which include: research on networks necessary for advanced telemedicine and development of data infrastructure using AI/IoT since fiscal 2020; research on networks necessary for advanced telemedicine for two years from fiscal 2020; and research toward practical application of advanced telemedicine networks since fiscal 2022.

Furthermore, in order to promote use of PHR[43] by private business operators, MIC together with MHLW and METI studied the requirements to be observed by private PHR business operators, and compiled and released "Basic Guidelines for the Management of Health and Other Personal Data by Private-sector PHR Business Operators" in April 2021 (partially amended in April 2022).

(6) Developing disaster prevention information systems

Japan is one of the world's top nations in terms of natural disasters and has sustained severe social/economic damage each time it was hit by a large-scale natural disaster. As large-scale natural disasters including Nankai Trough earthquakes are anticipated in the future, it is important to alleviate human and physical damages from disasters by efficiently using ICT.

i Developing disaster resistant communication networks for firefighting and disaster prevention

Collection and communication of information pertaining to damage situations requires a communication network that can secure communication in times of disaster. For this purpose, communication networks connecting the state, the Fire and Disaster Management Agency (FDMA), local governments, residents and others have been constructed. The networks consist of: (1) Central Disaster Management Radio Communications Network collecting and conveying information within the government, (2) Fire Defense Disaster Prevention Radio Network connecting FDMA and prefectures, (3) Prefectural disaster management radio communications system connecting the prefecture and municipalities, (4) municipal disaster management radio communications system connecting the municipality and residents, and (5) satellite communication network connecting the state and local governments, and local governments to local governments. Regarding the satellite communication network, MIC is promoting measures to introduce high-performance and inexpensive next-generation systems.

ii Deploying mobile communication devices for disaster management

In order to secure communications in afflicted areas when communication by mobile phone, etc. is shut down, MIC lends mobile communication devices for disaster management to local governments and others. As of April 2022, 317 satellite cell phones, 280 MCA radios and 1065 simplicity radios are deployed in Regional Bureaus of Telecommunications, etc., across the country. Use of these devices is expected to complement communications of information essential for a series of activities from collection and circulation of disaster information during the initial response to prompt and smooth operation of emergency restoration activities.

iii Securing means of emergency communication at times of disaster

In preparation for situations where it is difficult to use telecommunication services through a public telecommunication network at times of disaster, ICT units (attaché case type) developed by MIC have been deployed in Regional Bureaus of Telecommunications nationwide since fiscal 2016. A system has been established to help securing of necessary means of communication by lending the units at the request of local governments and other disaster prevention organizations.

iv Stable operation of Nationwide Instantaneous Alert System (J-Alert)

FDMA has established J-Alert, a system to instantaneously transmit information on situations requiring immediate response, which include ballistic missile information, earthquake early warning and tsunami warning from the government to residents through emergency alert mails to mobile phones and the municipal emergency radio system. In order to transmit emergency information promptly and surely through J-Alert, MIC improves its operations by fixing bugs, and enhances its functions, which include multiplexing of information transmission means linked to J-Alert.

v Promoting use of L-Alert

MIC is promoting the use of L-Alert, which is a common platform for unified transmission of disaster information including evacuation orders issued by local governments to diverse media including a large number of broadcast stations and internet business operators. Fukuoka prefecture started to use L-Alert in April 2019 completing the use in all 47 prefectures in Japan. It has spread across the country to play a part as disaster information infrastructure.

For further promotion of spread and use of L-Alert, MIC tackled demonstration to map disaster information provided through L-Alert to help visitors and other people who are not familiar with the region to understand the area subject to the evacuation order, etc. easily. In addition, MIC has provided training on L-Alert for local

[43] Abbreviation for Personal Health Record and generally refers to lifelong personal health/medical information (e.g., health examination results, vaccination/medication history, inspection results, vital signs checked by the person). Its accurate grasp as electronic record and use for health promotion by the person is expected.

government officers and other users.

(7) Promoting the use of personal number card/public personal authentication services

In the process of coping with the COVID-19 pandemic, various challenges of digitalization have become apparent, which has increased the need to enhance the convenience of the individual number cards essential in a digital society. In the "Toward Drastic improvement of the individual number system and national/local digital infrastructure (national/local digitalization guidelines)" of the Digital Government Action Plan (Cabinet Decision on December 25, 2020), it was decided to consider mounting of an individual card function (digital certificate) on smartphones.

In response, MIC started to hold "The Study Group on Smartphones with Individual Number Card Functionality" consisting of external experts and other members in November 2020. The study group compiled the second report on the direction of future initiatives for smartphones with individual number card functionality in April 2022. Specific studies and construction will be carried out by the Digital Agency.

3. Promoting data distribution/use and new businesses

(1) Social implementation of the Personal Data Trust Bank

In order to promote appropriate use of personal data including private information, MIC and METI compiled the "Guidelines on Accreditation of Information Trust Function version 1.0" regarding voluntary certification of personal data trust bank by private organizations, etc. in June 2018. The guidelines focus on use of data originating from individual users and consist of (1) accreditation criteria, (2) entries of model agreement, and (3) accreditation scheme. Based on the guidelines, the Information Technology Federation of Japan that is an accreditation organization decided the first "data trust bank" accreditation in June 2018. "Data trust bank" accreditation was made for seven companies in total by February 2022.

Later, the guidelines were reviewed. In August 2021, revision was made regarding the issues that came to surface in the process of operation of the scheme, which include handling of health/medical information and selection of third party recipients. The result was released as the "Guidelines on Accreditation Scheme of Information Trust Functions version 2.1." In April 2022, MIC released "Draft Guidelines on Certification of Information Trust Functions version 2.2" and "Draft Summary of Discussion on Handling of Data Profiling by Personal Data Trust Banks" based on the 2020 and 2021 Act on Protection of Personal Information and discussions on the ideal state of profiling rules at personal data trust banks.

(2) Promoting cashless payment

The "Follow-up on Growth Strategy" (Cabinet Decision in June 2019) decided to promote cashless payment toward the goal of doubling the percentage of cashless payment to about 40% by June 2025.

Among cashless payment means, code payment has a challenge of troublesome operation for shops introducing multiple services among many services. To address this issue, Payments Japan established as an organization to promote cashless payment by concerned bodies and business operators (its observers include MIC and METI) formulated "the Guideline for Unified Technical Specification of Code Payment" in March 2019 and the unified code based on the guideline was named JPQR. Since then, code payment has been promoted with focus on restaurants, retail stores, barber shops/beauty salons, taxis and other industries highly compatible with JPQR, and municipality counters handling fees for issuing various documents including resident cards. By the end of fiscal 2021, about 13,000 shops in total had introduced JPQR.

In fiscal 2021, MIC implemented a demonstration project for shops in communities to independently use cashless payment/purchase data and conducted studies toward formulation of guidelines.

(3) Promoting introduction of cloud services

With the spread of cloud services including ASP, SaaS, PaaS and IaaS, it has become necessary to create an environment for users to obtain sufficient information for comparison, assessment and selection of cloud services. To this end, MIC formulated and released "Information Disclosure Guidelines for Safety and Reliability of Cloud Services" in 2011 (partially revised in 2022). An example of using the guidelines in the private sector is the establishment by the Japan Cloud Industry Association (ASPIC) of a certification system by sector for information disclosure by cloud service providers.

In addition, MIC is working for dissemination of good practices of cloud service in collaboration with industry groups.

(4) Discovery/fostering of ICT ventures

Since the majority of the world's top 10 enterprises in market capitalization are start-up ICT companies, it is imperative for Japan to create and foster ICT venture companies that are sources of innovations. Toward discovery and fostering of ICT ventures, MIC and NICT in collaboration with universities, technical colleges, local governments, chambers of commerce and industry and other partners, are working to discover young talents and enterprises nationwide, provide mentoring to them and hold "Entrepreneurs' Koshien" and "Entrepreneurs' EXPO" where business plans are presented by students and venture companies who won local district primaries.

(5) Promoting the spread of AI

It is expected that linking of AI with other AI, information systems, etc. via the internet (AI networking) will drastically increase both benefits and risks, while broad-

ly spreading them without being limited by space.

"Conference toward AI Network Society" launched by MIC in October 2016 studies social, economic, ethical and legal issues for promotion of AI networking. The conference compiled and released "Draft AI R&D GUIDELINES for International Discussions"[44] summarizing the matters to be noted in AI development in July 2017 and "AI Utilization Guidelines"[45] summarizing the matters to be noted in AI utilization in August 2019. Later, the conference released reports compiling ambitious initiatives regarding AI by enterprises in 2020 and 2021[46] and continues to work toward promotion of "social implementation of safe, secure and trusted AI."

In addition, MIC has actively participated in international discussions on AI at G7, OECD and other international conferences. In particular, Japan will chair the next Global Partnership on AI (GPAI) scheduled around the end of 2022. GPAI is an international initiative established in June 2020 to guide the responsible and "human-centric" development and use of AI. MIC continues to disseminate information at various opportunities and actively contribute to international discussions.

4. Creating Environments Where Everyone Can Enjoy the Convenience of ICT

In order to realize digitalization that "leaves no one behind" by bridging the digital divide due to disabilities or age, MIC is actively promoting various measures for barrier-free information, while at the same time working to improve the information literacy of youth.

(1) Supporting R&D for barrier-free information

With the aim of bridging the digital divide due to disabilities or age, MIC provides subsidies to promote barrier-free information in the communication and broadcasting sectors. Specifically, "R&D on technologies to bridge the digital divide" program provides necessary funds to enterprises conducting R&D on technologies regarding communication/broadcasting services for people with disabilities and the elderly. The subsidy was granted to 4 entities in fiscal 2021.

Furthermore, based on the Act on Advancement of Facilitation Program for Disabled Persons' Use of Telecommunications and Broadcasting Services, with a View to Enhance Convenience of Disabled Persons (Act No. 54 of 1993) MIC through NICT provides "subsidies for promotion of provision/development of barrier-free information communication/broadcasting" to enterprises providing or developing communication/broadcasting services for disabled persons. The subsidy was provided to five entities in fiscal 2021.

(2) Providing phone relay service as public infrastructure

"Telephone relay service" refers to a service where sign language interpreters mediate in communications between persons with hearing impairment (persons having difficulty communicating due to a disability of hearing, language functions, phonetic functions) and persons without hearing impairment by interpreting sign language/letters of persons with hearing impairment and making phone calls accordingly.

In order to ensure proper provision of "phone relay service," the Act on Facilitation of the Use of Telephones for the Persons with Hearing Impairments, etc. (Act No,53 of 2020) was enforced in December 2020, and the service as public infrastructure was started in July 2021 by The Nippon Foundation Telecommunication Relay Service that is designated as a telephone relay service providing body.

(3) Improving accessibility of the websites of public organizations

In order to facilitate the use of public institution websites by everyone, including the elderly and persons with disabilities, MIC formulated "Guidelines for operation of public websites for everyone (2016 edition)" in April 2016 to support accessibility improvement of websites of the national and local governments and other public organizations. In fiscal 2021, MIC implemented a questionnaire survey on the current status of website accessibility at public organizations and a survey on JIS correspondence status of their websites.

(4) Supporting digital use by the elderly and other people

In order to bridge the digital divide and create an environment where everyone can obtain the benefits of digitalization with the advancement of digitalization across society, MIC is tackling "Project on Digital Utilization Support for Users." The project supports the elderly and other people having concerns about using digital technology through advice and consultation on online administrative procedures using smartphone, etc. in workshops. In fiscal 2021, a workshop was held at more than 2,000 locations, many of which are mobile phone shops. (See Column 3 for detail.)

(5) Improving media and information literacy among youth

i Dissemination and awareness raising activities

MIC cooperates with "ICT Conference for High School Students" that aims to help improvement of the internet environment for youth by providing high school students with opportunities to think about the desirable ways of ICT utilization, listen to opinions of other people, discuss, form and present their opinions. MIC also implements "e-net Caravan," which is a lecture on demand for dissemination and awareness raising for safe internet use by youth, and develops "Case Study of the Internet Trouble."

In the broadcasting sector, MIC is working to improve media literacy of youth by: dissemination and awareness raising by lending the learning materials for elementary,

[44] Draft AI R&D GUIDELINES for International Discussions https://www.soumu.go.jp/main_content/000499625.pdf
[45] AI Utilization Guidelines https://www.soumu.go.jp/main_content/000809595.pdf
[46] "Report 2020" https://www.soumu.go.jp/menu_news/s-news/01iicp01_02000091.html
"Report 2021" https://www.soumu.go.jp/menu_news/s-news/01iicp01_02000097.html

junior-high and high school students, which MIC has developed, and opening a website "media literacy in the broadcasting sector" to develop and post online teaching materials and lesson packages for teachers (guidance plan, lesson report, worksheet, etc.).

ii Implementing tests to evaluate internet literacy of youth

MIC developed the Internet Literacy Assessment indicator for Students (ILAS) to evaluate online literacy of youth in fiscal 2011. Every year since fiscal 2012, MIC has implemented the ILAS test for high school first years and equivalents nationwide to assess online literacy of youth, along with a questionnaire survey on actual use of smartphones and other information and communication equipment.

iii Promoting spread of Community ICT Clubs

MIC is working to spread "Community ICT Clubs" that provide children with opportunities to learn programming and other ICT skills in the community, while at the same time contributing to the development of human resources of the community by taking up local challenges as a theme. Specifically, MIC posted information on the activities conducted by Community ICT Clubs in various places across the country under the past demonstration projects (fiscal 2018 and 2019), and built a national network consisting of "Community ICT Clubs" implementing bodies.

Column 3 Promoting support for digital usage by the elderly

1. Current state of digital divide among the elderly

The "Priority Policy Program toward the Realization of a Digital Society" that was decided by the Cabinet on December 24, 2021, states that Japan aims to realize a digital society that "leaves no one behind." However, the opinion poll of the Cabinet Office released in January 2021 shows that 25.7% of people in their 60s and 57.8% of people in their 70s are unable to use ICT equipment including smartphones; the ratio rises as age rises.[47]

2. "Project on Digital Utilization Support for Users"

MIC is working on a "Project on Digital Utilization Support for Users" ("project" hereafter) to help every person to live a better life actively by using digital technologies. Under the project, workshops on use of smartphones for online administrative procedures are held across the country to help the elderly and other people who have worries about use of digital technologies. The project has been implemented since June 2021 in collaboration with private enterprises and local governments.

The workshops are provided by lecturers who completed the training designated by MIC. There is no age limit or fee for participation and anyone can participate any number of times. Two types of groups hold the workshops: nationwide groups, typically mobile phone shops, and; community-based groups cooperating with the local government, which include local ICT enterprises, councils of social welfare, and Silver Human Resource Centers. In fiscal 2021, 2,143 nationwide groups and 198 community-based groups were adopted. The numbers are far greater than MIC's expectation and show nationwide keen interest in this project. The workshop menus that can be implemented vary depending on the type. The community-based type can implement: the "basic course" including smartphone operations such as how to turn on power and use the internet, and the more in-depth "applied course" including application for individual number card and online administrative procedures. On the other hand, nationwide type can implement only the "applied course." The portal site of the project provides teaching materials and videos that can be used for participants to review what they have learned at the workshop. MIC hopes to help participants to establish smartphone use through repeated operations taking the opportunity of the workshop.

3. Future prospects of "Project on Digital Utilization Support for Users"

MIC plans to intensively implement this project for five years from fiscal 2021 to 2025, but thinks it is necessary to develop the initiatives of the project based on the needs by expanding both its quantity and quality in order to bridge the digital divide that continues to widen. To this end, MIC plans to greatly increase the workshop locations to about 3,000 in fiscal 2022. Considering that 750 municipalities do not have any mobile phone shops[48], MIC plans to start a new initiative to dispatch lecturers to support people in these areas.

[47] https://survey.gov-online.go.jp/hutai/tindex-r02.html
[48] Tabulated on November 10, 2021.

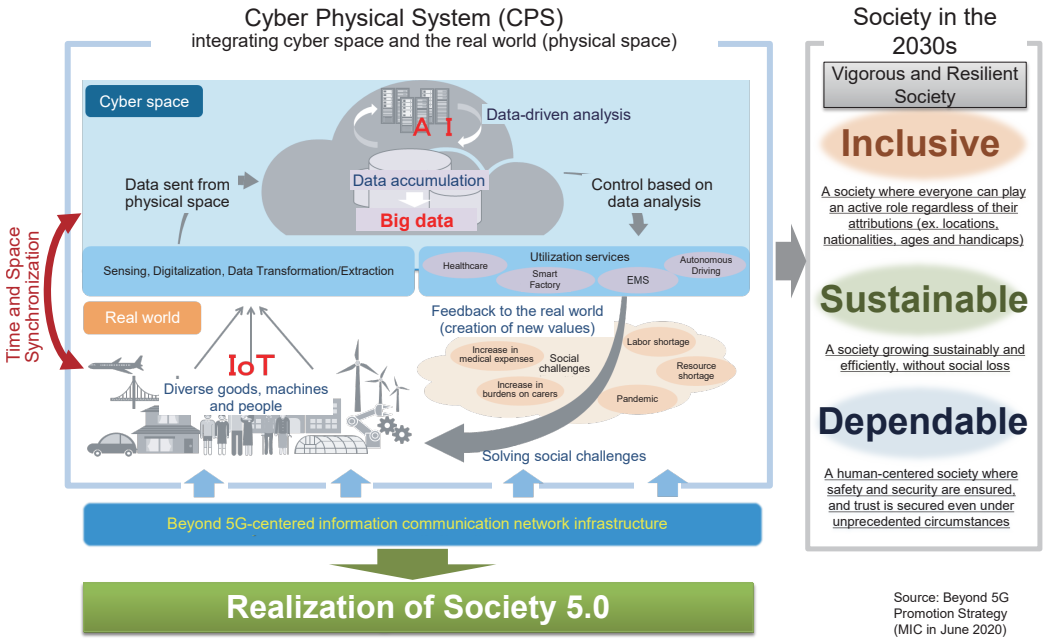
Section 7 ICT Technology Policies

1. Summary

(1) Initiatives so far

The "Beyond 5G Promotion Strategy" formulated by MIC in June 2020 aims to realize a "vigorous and resilient society" where people's lives and economic activities are smoothly maintained through a Cyber Physical System integrating cyber and physical spaces as a society in the 2030s when realization of Beyond 5G is expected (**Figure 4-7-1-1**). While pursuing Beyond 5G R&D strategies and IP/international standardization based on the strategy, MIC has promoted R&D and international standardization of cutting-edge technologies in the ICT field based on the Growth Strategy, the Science, Technology and Innovation Basic Plan, the Integrated Innovation Strategy (AI Strategy and Quantum Technology Innovation Strategy), the Intellectual Property Strategic Program, and the Basic Plan on Space Policy, etc. of the entire government.

Figure 4-7-1-1 Society expected in the 2030s



Source: Beyond 5G Promotion Strategy (MIC in June 2020)

Related data
Science, Technology, and Innovation Basic Plan (Cabinet Decision in March 2021) for the entire government
Source: Prepared by MIC from materials of the Cabinet Office
URL: https://www.soumu.go.jp/johotsusintokei/whitepaper/eng/WP2022/data_collection.pdf#4-7-2 (Data Collection)

(2) Future challenges and direction

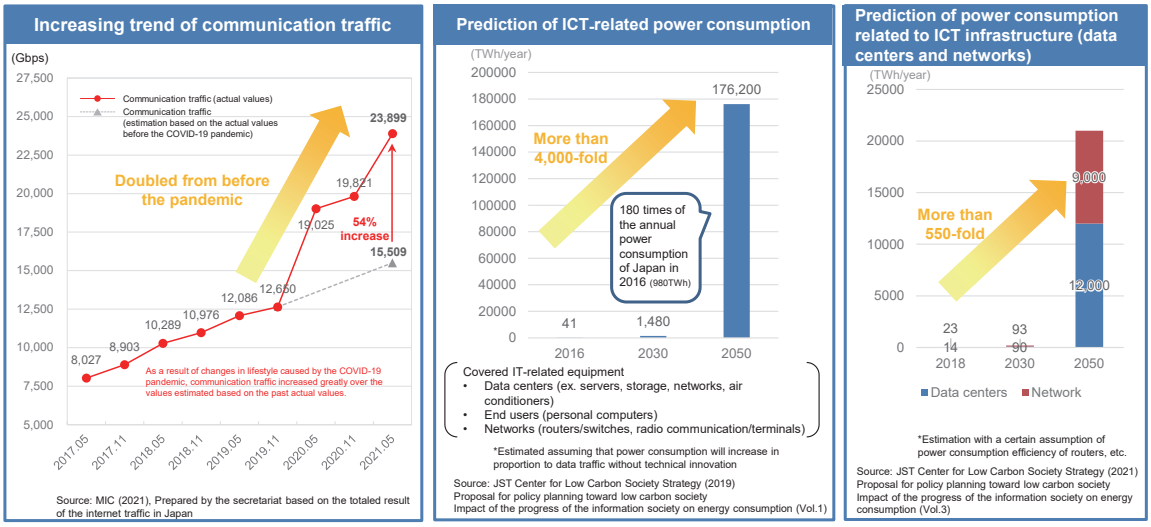
As global R&D competition toward Beyond 5G has been intensifying every year, beyond 5G studies and activities are progressing at home and abroad. In this context, it is necessary to realize the social implementation of development results and market gain, strengthen Japan's international competitiveness and ensure its economic security by further crystallizing the existing strategies of R&D, IP and international standardization in close industry-academia -government coordination and promoting such crystallized strategies. Considering the role of Beyond 5G connected to the infrastructure of all industries and social activities, this process should be based on the government-wide policies including post-coronavirus society, Vision of Digital Garden City Nation, environment/energy, disaster prevention/mitigation and security policies. To this end, the Act on Promotion of Ensuring of Security by Taking Economic Measures in an Integrated Manner (Act No.43 of 2022) was enacted in 2022.

In addition, after tackling the challenge of economic growth and the solution of social issues after the COVID-19 pandemic, and with consideration of future technology trends in the ICT sector and the innovation policy of the entire government, it is necessary to strategically promote development of cutting-edge technologies, IP and international standardization, while at the same time advancing the study/formulation of ICT technology strategies toward a resilient and vigorous society in the 2030s.

Furthermore, communication traffic in Japan has increased exceeding the past estimation due to changes in lifestyle caused by the COVID-19 pandemic and other factors, and power consumption of the ICT sector is increasing as a result. In addition, there is concern over significant increase in power consumption in the ICT

sector as a result of the future development of technologies and services (**Figure 4-7-1-2**). In this context, Japan declared that it aims to achieve carbon neutrality by 2050 as an international commitment. As the realization of green digital society and carbon neutrality of the ICT industry by 2040 are positioned in the policies of the entire government, MIC needs to promote initiatives toward greening and digitalization in the ICT sector.

Figure 4-7-1-2 Trends of communication traffic and energy consumption in the ICT sector



(Source) MIC, the Department of Information and Communications Technology of the Information and Communications Council, materials of the 27th technology strategy committee

2. Beyond 5G

(1) International trends surrounding Beyond 5G

Other countries have started to consider or implement Beyond 5G-related R&D investments by governments for the purpose of securing international competitiveness and economic security. For example, the United States in the Japan-US joint declaration announced investments in the next generation mobile communication network, etc., while Next G Alliance formulated "6G Roadmap." In Europe, there is progress in various initiatives including decision on investments in 6G R&D by Horizon Europe and the launch of Hexa-X that is a 6G R&D project. It is expected that the countries will continue to actively promote Beyond 5G R&D in the future (**Figure 4-7-2-1**).

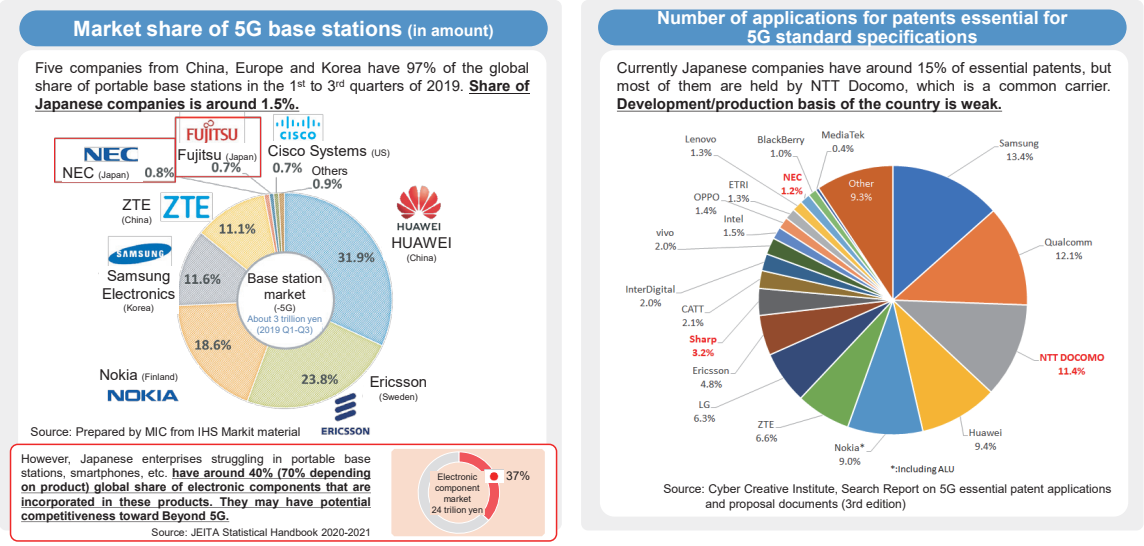
Figure 4-7-2-1 Beyond 5G R&D by the governments of other countries

The United States	● **Next G Alliance that is an industry group to promote 6G set up a Roadmap WG and a Green G WG** and started studies to clarify the elements necessary for promotion of 6G and other new technologies and realization of a sustainable ecosystem through new technologies. (March 2021) ● The government expressed **2.5 billion dollar** (4.5 billion dollar in total from Japan and the U.S.) **investment** in the next generation mobile communication network, etc. in the **U.S.-Japan Joint Leaders' Statement** (April 2021) ● **Next G Alliance formulated 6G Roadmap** and recommended government support in three areas: "consistent policy framework for success of 6G", "support for 6G research and development" and "policies to incentivize private investment in 6G" (February 2022) ● Federal Communications Commission (FCC) reorganized the Technological Advisory Commission (TAC) with 6G as a new focus (February 2022). ● National Science Foundation (NSF) announced projects adopted for RINGS that is 6G R&D support partnership (April 2022)
Europe	**EU, Germany and Finland governments invest 1.85 billion Euro (about 240 billion yen) in total in 6G R&D** (as of March 2022)
EU	● 6G R&D project Hexa-X started, funded by Horizon 2020 (from January 2021 to June 2023) ● EU decided **900 million Euro investment in 6G R&D** in the next R&D program **Horizon Europe (2021-2027)** (March 2021) Combined with 1.1 billion Euro from the private sector, SNS JU secured 2 billion Euro (260 billion yen) in total (March 2022) and already made 240 million Euro (31 billion yen) contributions to Work Program (2021 to 2022) (December 2021)
Germany	● Decided to **invest 700 million Euro** in total in 6G technology R&D (2021 to 2025) (April 2021). 250 million Euro (about 33 billion yen) of the amount is invested in construction of 6G R&D hub (June 2021)
Finland	● Started **6Genesis Flagship Program** and budgeted **250 million Euro (about 33 billion yen) in eight years from 2019 to 2026** (May 2018) ● Held the 1st **6G Wireless Summit** (March 2019)
China	● Established a 6G promotion organization 2IMT-2030(6G)" and started 6G R&D (June 2019) ● Released a digital economy plan to enhance 6G R&D as part of the 14th five-year plan (January 2022) ● Tsinghua University announced a success of 1TB/sec transmission experiment at a Beijing Olympic venue (February 2022)
Korea	● Ministry of Science and ICT (MSIT) announced a 6G R&D action plan, including **220 billion won (about 21 billion yen) investment by 2025** (June 2021). ● Started to formulate "the Next-Generation Network Development Strategy" that includes 6G (January 2022) ● Discussed cooperation in ICT including 6G with the United States, Finland and Indonesia (March 2022)

(2) Potential competitiveness toward Beyond 5G

Major overseas enterprises have a high share in the global communication infrastructure market (portable base station), hold many related patents and are expected to maintain high competitiveness also in the future. Japanese enterprises are less competitive and could be left in the dust in the field of 5G if the situation remains the same. Whereas Japanese enterprises are struggling in portable base stations and smartphones, they have a certain global share in the electronic components incorporated in these products. For this reason, they may have potential competitiveness in Beyond 5G (**Figure 4-7-2-2**).

Figure 4-7-2-2 International competitiveness of Japan in the communication infrastructure market



(Source) MIC, the Department of Information and Communications Technology of the Information and Communications Council, materials of the 34th technology strategy committee

(3) Policy trends

i Formulation of Beyond 5G strategy

Toward realization of "Beyond 5G," which is the next-generation information and communication infrastructure in the 2030s, Japan has accelerated industry-academia-government activities by formulating the "Beyond 5G Promotion Strategy," and setting up "Beyond 5G Promotion Consortium" and "Beyond 5G New Business Strategy Center." Specifically, focusing on the seven functionalities to be upgraded and expanded from 5G (ultra-fast & large capacity, ultra-low latency, ultra-numerous connectivity, autonomy, scalability, ultra-security and resiliency and ultra-low power consumption), industry, academia and the government cooperate to study visions and technical challenges. MIC has started R&D on core technologies.

In September 2021, MIC sent an inquiry to the Information and Communications Council on "information and communications technology strategy for beyond 5G." The council gave shape to technology strategy toward Beyond 5G, including priority R&D tasks and measures to promote them, and compiled an interim report on June 30, 2022.

Related data
Functions required for Beyond 5G
URL: https://www.soumu.go.jp/johotsusintokei/whitepaper/eng/WP2022/data_collection.pdf#4-7-6 (Data Collection)

ii Promoting R&D on Beyond 5G

In order to support R&D on cutting-edge elemental technologies necessary for Beyond 5G, MIC established a Funding Program for World-Leading Innovative R&D on information and communication technologies at NICT by using the 3rd supplementary budget of fiscal 2020, while at the same time developing test beds and other common facilities/equipment to promote Beyond 5G R&D by gathering knowledge of the public and private sectors. In the "Beyond 5G R&D Promotion Project," MIC implements core technology R&D based on open application with focus on the seven functionalities required from Beyond 5G (ultra-fast & large capacity, ultra-low latency, ultra-numerous connectivity, ultra-low power consumption, ultra-security and resiliency, autonomy and scalability) under the following programs:

① Beyond 5G Function Realization Program
R&D of core technologies to realize the functionalities required from Beyond 5G

② Beyond 5G International Joint R&D Program
R&D on cutting-edge technologies in international collaboration with strategic partners

③ Beyond 5G Seeds Creation Program
R&D projects to generate innovation by creating seeds for technology

Related data
Schema of the Beyond 5G R&D Promotion Project (Fund)
URL: https://www.soumu.go.jp/johotsusintokei/whitepaper/eng/WP2022/data_collection.pdf#4-7-7 (Data Collection)

"Beyond 5G R&D Promotion Project" in fiscal 2022 and after plans to promote Beyond 5G R&D reflecting the technology strategy mentioned in (i) and aims to implement the development results in society gradually starting from EXPO 2025 Osaka, Kansai.

iii Promoting acquisition of IP and international standardization for Beyond 5G

With the aim of strategically accelerating acquisition of Intellectual Property and global standardization under industry-academia-government cooperation, MIC established the "Beyond 5G New Business Strategy Center" in December 2020. The center disseminates information through New Business Strategy Seminars and promotes human resource development through workshops for candidate-executives of enterprises and Hackathon events for university and technical college students. Furthermore, MIC is working on development of information infrastructure for study on future standardization, which includes construction of IP landscape to analyze IP acquisition status.

In order to promote international standardization activities from the initial stage of R&D, MIC conducts international joint research that promises synergy effects with research institutes of countries/regions that are reliable strategic partners. Specifically, MIC in collaboration with the European Commission has implemented Japan-EU joint research that provides R&D funds to joint proposals from universities, private enterprises and other research institutes in Japan and the EU. In fiscal 2022, research on eHealth adopted through the 5th public invitation is underway. Since fiscal 2016, MIC has implemented joint research with the U.S. research institutes, started research on 5G upgrading adopted through the new public invitation in fiscal 2021 and plans public invitation for new Japan-U.S joint research and Japan-Germany joint research in fiscal 2022.

3. Quantum technology

(1) Trends of the quantum security network policy

Quantum technology is an innovative technology that will dramatically and discontinuously develop future society and economy. It is also crucially important for economic security. Other countries, especially the United States, European countries and China are significantly increasing R&D investments in this technology and making strategic efforts including development of R&D sites and human resources.

Based on the "Quantum Technology Innovation Strategy" (decision made by the Integrated Innovation Strategy Promotion Council in January 2020) and "Vision for the Quantum Future Society – a vision for future society to create using quantum technology and strategies toward its realization" (decision made by the Integrated Innovation Strategy Promotion Council in April 2022), the Government of Japan supports enhancement of R&D and activities for commercialization in each technology field (quantum computers, quantum software, quantum security networks, quantum metrology/sensing and quantum materials). In addition, the government plans to promote formation of sites for comprehensive initiatives from basic research to technology demonstration and human resource development in industry-academia-government partnership, and other infrastructural initiatives to generate innovations.

(2) R&D on quantum cryptographic communication technologies

In the age of quantum computing where there is a concern of security failure of the current cryptography, we need quantum cryptography, decryption of which is impossible by any computer in principle. MIC in collaboration with NICT is promoting R&D on quantum cryptographic communication (quantum key distribution) technologies, while at the same time establishing a "Quantum Security Hub" for the field of quantum security network technologies at NICT based on the Quantum Technology Innovation Strategy in fiscal 2021 and tackling a broad range of activities including social implementation through construction and use of test beds and human resource development.

i R&D on distance extension and networking of quantum encryption communication

For social implementation of quantum encryption communication, extension of its communication distance is one of the big challenges. With the aim of tackling the challenge of distance extension and realizing a global quantum encryption communication, MIC has been working on R&D of long distance linking and relaying of terrestrial quantum encryption communication since fiscal 2020. In addition, toward safe satellite communication networks, MIC has been working on R&D to use quantum encryption communication for microsatellites since fiscal 2018 and started R&D to construct a global quantum encryption communication network integrating terrestrial and satellite networks in fiscal 2021.

ii Developing testbeds for quantum encryption communication and promoting its social implementation

In Japan, NICT has been working on R&D of elemental technologies of quantum encryption communication from an early stage. NICT constructed the "Tokyo QKD Network" that is a testbed for quantum encryption communication in 2010 with the aim of verifying principles of quantum encryption communication, and has operated it for a long period of time. The basic specifications of quantum encryption communication equipment devel-

oped based on the long-term operation of Tokyo QKD Network were adopted as international standard (ITU-T Y.3800 series) in 2020, which shows its high international competitiveness.

Because quantum encryption communication is expected to be used in financial, medical and other commercial services in addition to use in public institutions handling confidential information, there are strong demands for its early practical application. In response, with the aim of accelerating social implementation through verification of use in actual environments, since fiscal 2021 MIC has been working to develop broad-area testbeds for quantum encryption communication, which are capable of demonstration of network architectures including routing control with architecture connecting multiple sites.

Related data
Image of global quantum cryptography network
URL: https://www.soumu.go.jp/johotsusintokei/whitepaper/eng/WP2022/data_collection.pdf#4-7-8 (Data Collection)

4. AI technologies

In recent years AI has been evolving at an accelerated pace as represented by machine learning based on deep learning. Its application is progressing around the world with significant impacts on a wide range of industries and social infrastructure, making AI an essential technology to maintain fundamental functions of society.

Based on the "AI Strategy 2022" (decision made by the Integrated Innovation Strategy Promotion Council in April 2022), MIC, in collaboration with NICT that has AI-related core centers, is working on a wide range of R&D and social implementation of natural language processing, multi-lingual translation/speech processing and brain cognitive model construction.

For example, MIC together with NICT is working on R&D of multi-lingual translation to eliminate language barriers in the world to realize global and free exchange. Multilingual translation technology developed by NICT achieved a practical level accuracy for 12 languages assuming response to foreigners visiting or staying in Japan. MIC and NICT are also promoting social implementation of multilingual translation technology. NICT provides VoiceTra as a research application targeting independent travelers. More than 30 private-sector services are developed[49] through technology transfer and used in a variety of fields including disaster management, transportation and medical care in addition to government offices.

Related data
Multilingual translation technology
URL: https://www.soumu.go.jp/johotsusintokei/whitepaper/eng/WP2022/data_collection.pdf#4-7-9 (Data Collection)

With a view to EXPO Osaka, Kansai in 2025, MIC formulated "Global Communication Plan 2025" in March 2020, in order to further advance the multilingual translation technology of NICT. Based on the plan, MIC creates a computer environment for the world's cutting-edge and top-level AI R&D at NICT, while at the same time implementing R&D to upgrade the technology of serial translation of short sentences to "simultaneous interpretation" that can handle discussions at business and international conferences since fiscal 2020.

Related data
Efforts to further advance the multilingual translation technology
URL: https://www.soumu.go.jp/johotsusintokei/whitepaper/eng/WP2022/data_collection.pdf#4-7-10 (Data Collection)

Furthermore, MIC plans to add eight languages with foreigners visiting/living in Japan and diplomacy in mind, while conducting R&D on multilingual simultaneous interpretation.

5. Remote sensing technologies

With the aim of contributing to early detection of sudden atmospheric phenomena represented by "guerrilla rainstorms" and tornadoes, and elucidation of their development mechanism, NICT implements R&D of remote sensing technologies to observe precipitation, vapor, wind, etc. with high time/space resolution.

Regarding Dual Polarization Multi-Parameter Phased Array Weather Radar (MP-PAWR) capable of high-speed and high-accuracy 3D observation of rain clouds, for example, NICT implements large-scale events using the metropolitan area heavy rain forecasting system in collaboration with other institutions, and demonstration experiments together with local governments. NICT is also promoting R&D on: technology to estimate water vapor content in the atmosphere by using propagation delay of terrestrial digital broadcast waves; wind profiler

[49] Global Communication Development Promotion Council, examples of products/services of private enterprises using the multilingual translation technology of the National Institute of Information and Communications Technology (NICT): https://gcp.nict.go.jp/news/products_and_services_GCP.pdf

technology to measure wind speed up in the air; on-ground water vapor/wind lidar using eye-safe infrared pulse lasers capable of simultaneous observation of water vapor and wind up in the air, for example.

Related data
Improvement of resolution and technology demonstration of synthetic-aperture radar for observation of the ground surface from aircraft
URL: https://www.nict.go.jp/press/2022/01/25-1.html

6. Space ICT

According to the Basic Space Plan based on the Basic Space Act (Act No. 43 of 2008) and its schedule, MIC is promoting the following R&D for space development and use:

① R&D of radio-optical hybrid communication technology toward small satellites constellation in order to realize ultrawide-band satellite optical communication system through effective use of frequency resources
② R&D to establish core technologies of quantum cryptography in satellite communication and realize a global network of quantum encryption communications through satellite networks, etc.
③ R&D of technology to explore water energy resources on the lunar surface to contribute to the international space exploration (Artemis Program) proposed by the United States
④ R&D of satellite communication systems for the engineering test satellite No.9 and optical communication technology that will enable ground-satellite optical data transmission at 10Gbps level
⑤ R&D of space environment monitoring sensors that will observe and analyze ionosphere, magnetosphere and solar activities, to be used for space weather forecast under 24-hour, 365-day human-crewed operation and to be mounted on the successor of the geostationary meteorological satellite Himawari.

Importance of space weather forecasting is increasing among enterprises responsible for the stable operation of social infrastructure, especially electric power, communications, broadcasting and aviation. Considering the forecast that solar activities will increase in the future, MIC, by holding a "Study Group on the Advancement of Space Weather Forecasting" encourages the industry, academia and the public sector to take their respective measures, while at the same time ensuring space weather forecasting (a report was compiled in June 2022).

Related data
Influence of solar flares on the earth
Source: MIC, Material of the Study Group on the Advancement of Space Weather Forecasting (the 1st session)
URL: https://www.soumu.go.jp/johotsusintokei/whitepaper/eng/WP2022/data_collection.pdf#4-7-11 (Data Collection)

Section 8 Promoting International Strategies for ICT

1. Summary

(1) Initiatives so far

Based on the "Infrastructure System Overseas Promotion Strategy 2025" (Decision by the Infrastructure Strategy Economic Cooperation Meeting on December 10, 2020), which is an overseas infrastructure promotion strategy of the entire government and the "MIC World Development Action Plan 2020" (formulated by MIC on April 30, 2020), MIC has energetically worked for the overseas development of ICT infrastructure systems through total support for enterprises, which includes human resource development, maintenance and finance in accordance with the development stage (project identification, proposal and formation).

MIC has also contributed to the formation of international frameworks through active participation in discussions on digital economy and the establishment of international rules in the ICT field, by taking opportunities of bilateral policy dialogues with the United States and other countries, and multilateral talks including the G7 and the G20.

While digital infrastructure, including optical submarine cables and 5G networks, has become essential for various social and economic activities, concerns about economic security have been increasing. To address these concerns, MIC has also been working to secure economic security through international cooperation, for example.

(2) Future challenges and direction

In the big trend of digitalization, competitions in developing digital technologies are further intensifying and competition in spreading such technologies to countries needing them is also rising. In these circumstances, it is important for Japan's economic growth to create an environment for the advancement and spread of digital technologies of Japan, improve our international competitiveness and show its presence to the world through bilateral and multilateral collaboration. Deploying high-quality infrastructure also contributes to solving social challenges in the world and leads to achievement of SDGs.

In this context, with the aim of strengthening the international competitiveness of Japan's digital technologies and solving global social challenges, MIC is working for overseas development in digital and other fields and for establishment of international frameworks through international cooperation. For overseas development, in particular, as part of the MIC World Development Action Plan 2020, it is necessary to contribute to the world's economic development and solution of social challenges by using Japan's technologies and experience through application of ICT solutions in the medical and agricultural sector including telemedicine in addition to 5G/optical submarine cables and other ICT infrastructure systems. Furthermore, in order to lead establishment of international rules in the digital field, it is necessary to actively participate in international discussions taking opportunities of international conferences, etc.

2. Overseas deployment of digital infrastructure, etc.

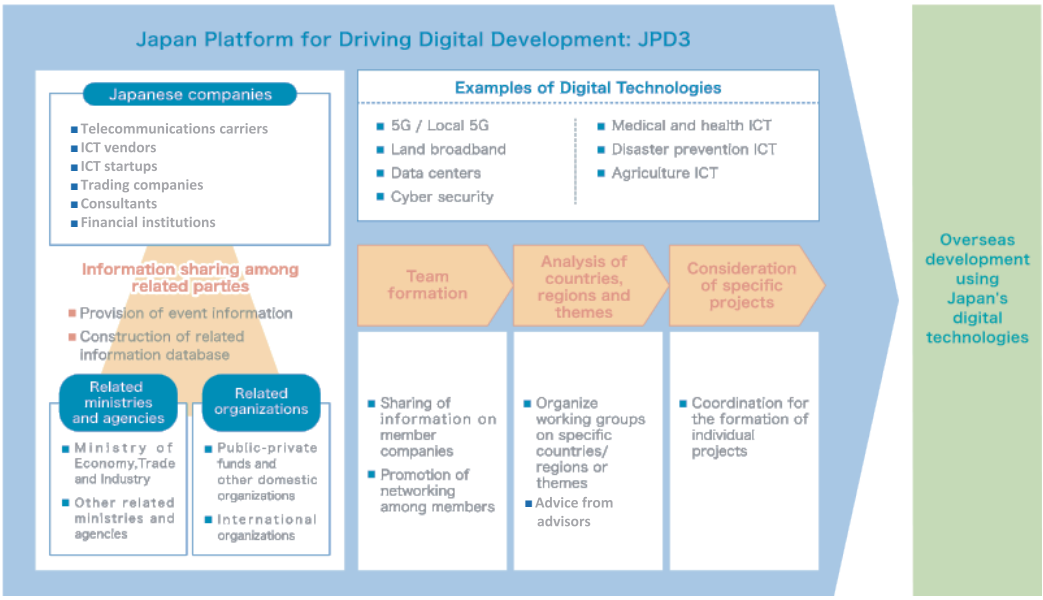
Considering the global increase in the demand for communication infrastructure services as a result of the progress of digitalization of society and economy, MIC is promoting support for overseas deployment of digital infrastructure with the aim of strengthening the international competitiveness of Japan's digital industry and solving global challenges by using digital technologies.

(1) Overseas deployment support tools at MIC

MIC supports overseas deployment of high-quality digital infrastructure of Japan in accordance with the phases from basic survey to demonstration projects depending on the situation and challenges of the respective countries.

In February 2021, MIC established the "Japan Platform for Driving Digital Development" that is a public-private partnership framework to support overseas ICT deployment of Japan with MIC's initiative. As of January 2022, over 100 members including ICT-related companies and relevant government agencies/organizations participated in the framework to share information on countries and regions (51 countries and one organization) in databases, hold workshops, form teams and discuss specific projects.

Figure 4-8-2-1 Japan Platform for Driving Digital Development



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

The Fund Corporation for the Overseas Development of Japan's ICT and Postal Services (JICT), which is a public-private fund under MIC's jurisdiction, supports investments and hands-on projects by entities providing overseas communication, broadcasting or postal services and those supporting them. As of the end of March 2022, funds and loans of 78.8 billion yen in total have been allocated for the support.

Considering the ICT development and needs, and policy trends of other countries in recent years, MIC decided to add medical ICT, cybersecurity and other ICT services that do not involve hard infrastructure development to JICT targets, while at the same time advancing LP investments in the fund.[50] Its support standards were amended in February 2022 (Ministry of Internal Affairs and Communications Notice No. 34 of 2022).

(3) Initiatives toward overseas deployment for each field

i Core communications infrastructure

Mobile communication networks: The government of Ethiopia approved licensing of mobile phone service in the country to an international consortium including a Japanese enterprise in 2021. The service will be launched in 2022. MIC takes this opportunity to promote digital solution deployment in the country and African region.

Optical submarine cables: MIC through JIST has been supporting projects with a focus on Southeast Asia (decided to provide funds/loans up to 78 million dollars included in the total project costs of 400 million dollars). In addition, since September of 2021, Japanese companies have participated in a project to lay optical submarine cables in the Indian Ocean, which was announced by Prime Minister Modi of India in August 2020. Moreover, MIC in collaboration with willing countries and relevant government agencies/organizations is working on improvement of the relatively less-developed communication environments of Pacific island nations.

5G/Local 5G: As the importance of safe and secure 5G network is discussed in the international arena, MIC is working for its overseas deployment using Open RAN that attracts attention as a technology to realize open and secure networks. For example, since fiscal 2021, MIC and a local communication carrier have jointly examined the possibility of overseas deployment through construction of a Local 5G network using 5G radio facilities based on Open RAN and demonstration experiments of Local 5G applications.

Japanese digital terrestrial TV broadcasting system: 20 countries including Japan (many of them are in Latin America) have adopted this system. MIC continues to support smooth transition to digital broadcasting.

ii Digital technology use models

Use in the medical field: Japanese companies have received orders for a telemedicine system using smartphone mostly from Latin America. Since fiscal 2021, MIC has conducted studies through demonstrations at local hospitals toward spread of endoscopes using high-definition video technology and AI diagnosis support systems to ASEAN countries.

Radio system: In Thailand, MIC is preparing for demonstration experiments of the Ground-Based Augmentation System (GBAS), which is an aircraft approach/landing system using positioning satellite including GPS. Through this and similar initiatives, MIC shares under-

[50] According to the results of the review of the enforcement status based on the provision of Article 4, Supplementary Provisions of the Act on the Fund Corporation for the Overseas Development of Japan's ICT and Postal Services (Act No. 35 of 2015)

standing of Japan's technological advantages with other countries to promote international use of Japan's radio technologies with high frequency use efficiency and international cooperation in frequency use.

iii Broadcasting contents

MIC has continuously supported initiatives of Japanese broadcasters to produce broadcast contents conveying the appeal of Japan jointly with overseas broadcasters and to disseminate the contents to the world from fiscal 2014 to 2022 with a focus on Asia. As a result, exports of broadcasting contents more than tripled in the seven years from 13.78 billion yen in fiscal 2013 to 57.11 billion yen in fiscal 2020. In addition, overseas deployment of broadcasting contents has produced various effects including economic ripple effects such as development of the market for regional products and spread of the appeal of Japan.

iv Other

(i) Fire defense

MIC signed a memorandum of cooperation in fire defense with Vietnam in October 2018 and made arrangement for training on standards/conformity assessment system of fire equipment. In addition, MIC has disseminated information of quality and standards/conformity assessment system of fire equipment of Japan by obtaining authentication registration of Japan Fire Equipment Inspection Institute and the Fire Equipment and Safety Center of Japan in the United Arab Emirates.

(ii) Postal service

In multiple countries mostly in Southeast Asia, MIC is promoting international cooperation and overseas deployment in public-private cooperation by identifying opportunities and challenges in efficiency improvement and modernization of postal services and sharing Japan's knowledge and experience contributing to their solution, for example. The efforts realized consultation for streamlining of operations and ordering of sorting machines for Vietnam Post. In addition, MIC is promoting new initiatives to expand business opportunities of postal business entities through ICT use.

(iii) Administrative counseling/statistics

In the field of administrative counseling, MIC cooperates with public ombudsman of individual countries and signed a memorandum of cooperation pertaining to redress of administrative grievances with Vietnam, Uzbekistan, Turkey and Thailand. Based on the agreement, MIC accepted 270 trainees in total in the last eight years from Vietnam, for example.

In the field of statistics, MIC supports government digitalization by taking advantage of knowledge on construction of highly reliable e-government and statistic systems. For example, MIC supported construction of an information sharing system between the central and local departments of Vietnam.

3. Contribution to establishment of international rules on the digital economy

(1) Data Free Flow with Trust (DFFT)

G7 Roadmap for cooperation regarding DFFT (Data Free Flow with Trust) was formulated at the Meeting of G7 Digital Ministers in April 2021 and approved by the G7 Summit in June of the same year. The Meeting of G20 Digital Ministers in August 2021 and the G20 Summit in October of the same year reaffirmed the importance and challenges of DFFT.

Based on the above, MIC actively participates in international discussions toward rule formation to promote DFFT in the concrete at occasions including G7, G20, OECD and bilateral discussions.

(2) Response to discussions on international rules of cyber space

i Making international rules of cyberspace

Regarding international rules of cyberspace, MIC emphasizes two points: (1) give maximum consideration to free flow of information, which not only supports democracy but also is a source of innovations to drive economic growth; and (2) ensure participation of all stakeholders including private enterprises, academia and civil society who are actually using the internet and managing networks (multi-stakeholder framework), in order to secure cyber security. Based on the two points, MIC took up related subjects in bilateral talks including the U.S.-Japan Policy Cooperation Dialogue on the Internet Economy (IED) and Japan-EU ICT Strategy Workshop to strengthen cooperation with like-minded countries. In addition, MIC actively participates in discussions at multilateral meetings by issuing a "Declaration for the Future of the Internet" together with other core members (the United States, Australia, Canada, EU and the United Kingdom) and interested countries in April 2022, for example.

ii Bilateral and multilateral talks on cybersecurity

Bilateral talks for discussing cybersecurity were held in 2021 including "the Japan-US Cyber Dialogue" director-level meeting in May, "the 6th Japan-UK Cyber Talk" in June, "the 2nd Japan-Germany Cyber Talk" in May, and "the 4th Japan-Estonia Cyber Talk" in December. Through these talks on recognition of the situation, initiatives in the respective countries, cooperation in the international arena, support for capacity building, etc., Japan strengthens collaboration with these countries.

As for multilateral discussions on cybersecurity, opinion/information on the current status in the respective countries and capacity building support for ASEAN region are exchanged at ASEAN-Japan Cybersecurity Policy Meeting and other occasions. In addition, Japan, the United States, Australia and India agreed to cooperate for cybersecurity under the framework of QUAD. The entire government engages in discussions toward strengthening of cooperation with like-minded countries.

(3) Promotion of trade liberalization in the ICT field

In order to complement a multilateral free trade system built around the World Trade Organization (WTO) and promote bilateral economic partnerships, Japan is actively working to conclude Economic Partnership Agreements (EPAs) and Free Trade Agreements (FTAs).

Specifically, since 2018, MIC participated in discussions on the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (TPP11), Japan-EU Economic Partnership Agreement (EPA), The US-Japan Digital Free Trade Agreement, the Japan-UK Comprehensive Economic Partnership Agreement (EPA) and the Regional Comprehensive Economic Partnership Agreement (RCEP), which were signed and came into effect. Currently negotiations on Japan-China-Korea FTA and other agreements continue. In each EPA negotiation, MIC demands relaxation/abolishment of restriction on foreign investments in the telecommunication sector, negotiates development of the rules for promoting competition including interconnection and discusses cooperation between contracting parties in order to obtain commitment to liberalization above the WTO level.

(4) Promotion of strategic international standardization

International standardization in the ICT sector is an important policy issue that can lead to creation of a global market through common standards. Because strategic initiative in development of international standards is critically important for strengthening international competitiveness, MIC has been strategically promoting international standardization activities.

Specifically, MIC implements trend research and standards establishment regarding forum standards[51] in addition to de jure standards[52], training of human resources engaged in international standardization, initiatives to deepen understanding of the importance of standardization activities. MIC also implements joint research aimed at international standardization with EU, the United States and Germany, R&D and demonstration experiments in promising fields for social implementation (ex. wireless factories).

4. Securing economic security in the digital field

Considering the importance of the communication sector including 5G in socioeconomic activities, MIC is working to secure and enhance economic security in the digital field through collaboration with the United States and other like-minded countries. One example of the efforts is establishment of the Global Digital Connectivity Partnership (GDCP) through the Japan-US summit in April 2021.

In the part of "Ensuring safety and reliability of core infrastructure," which is one of the four pillars of the Act on Promotion of Ensuring of Security by Taking Economic Measures in an Integrated Manner (Act No.43 of 2022) enacted in 2022, telecommunication, broadcasting and postal services are designated as one of the businesses related to key infrastructures. Preparation works are scheduled toward its enforcement. In addition, the government is strengthening the review system for inward direct investment based on the Foreign Exchange and Foreign Trade Act (Act No. 228 of 1949). In this way, enhancement of systems has been promoted also in the digital field.

5. International cooperation in multilateral frameworks

At policy consultations in multilateral frameworks including G7/G20, APEC, APT, ASEAN, ITU, UN, WTO and OECD, MIC actively leads international collaboration initiatives in the ICT field, which include promotion of free information distribution, safe and secure cyberspace, development of high-quality ICT infrastructure and contribution to the Sustainable Development Goals (SDGs).

(1) G7/G20

As a result of globalization and digitalization of socioeconomic activities, cross-border data flow, businesses and services are progressing. In this context, the G7 ICT Ministers' Meeting in Takamatsu, Kagawa, that was chaired by Japan in April 2016 triggered vigorous discussions in the framework of G7 toward development of the digital economy.

Discussions on the digital economy have been continuously made also in the framework of G20 that includes China and India. Specifically, MIC, the Ministry of Foreign Affairs and METI held the G20 Ibaraki-Tsukuba Ministerial Meeting on Trade and Digital Economy in June 2019. The ministers agreed on AI principles with "human-centric" approach for the first time in G20, which was followed by the top-level agreement at G20 Osaka Summit. The idea of Data Free Flow with Trust (DFFT) was also supported at the top level and its importance was reaffirmed at the 2020 G20 Digital Economy Ministers Meeting (Saudi Arabia).

In addition, the G7 Digital and Technology Ministerial Meeting (UK) held in April 2021 declared their opposition to measures which may undermine democratic values, such as internet shutdowns and network restrictions by governments. The meeting formulated a roadmap for cooperation among G7 countries in specific promotion of DFFT and proposed actions in four areas for cooperation of the roadmap: (1) Data localization; (2) Regulatory cooperation; (3) Government Access to

[51] Standards formulated based on the agreement of multiple enterprises, universities and other forum members.
[52] Standards formulated by the International Telecommunication Union (ITU) or other public international standardization body.

Data, and (4) Approaches to data sharing in priority sectors. The roadmap was approved in the G7 Summit in June of the same year.

Japan, which will chair the 2023 G7, continues to contribute to international discussions on rulemaking concerning the digital economy, which includes promotion of DFFT.

(2) Asia Pacific Economic Cooperation (APEC)

Asia Pacific Economic Cooperation (APEC) is an international conference of major countries and regions in the Asia Pacific region for sustainable development of the region. In APEC, discussions on the telecommunication field are led by the Telecommunications and Information Working Group (TEL) and the Ministerial Meeting on Telecommunications and Information Industry (TELMIN).

As a result of the adoption of the Aotearoa Plan of Action at the APEC Summit in 2021, TEL is advancing studies for promotion of "innovation and digitalization" listed as one of the three economic drivers in the plan.

MIC actively contributes to TEL operation through participation in discussions and promotion of projects regarding digital government at TEL held twice a year and dissemination of ICT policies in Japan.

(3) Asia-Pacific Telecommunity (APT)

Asia-Pacific Telecommunity (APT) is an international organization in the information and communication sector of the Asia Pacific region established in 1979 with the aim of balanced development of telecommunication and information infrastructure in the region. Its activities include human resource development through training and seminars, and regional policy coordination in standardization and radio communication. Currently Mr. KONDO Masanori (former MIC senior official) from Japan is its secretary general.

Through contributions to APT, MIC supports activities including acceptance of trainees and exchange of ICT engineers and researchers in broadband and wireless communication and other ICT fields where Japan has strength. In fiscal 2021, MIC supported eight online training courses, four international joint research projects and two pilot projects.

(4) Association of Southeast Asian Nations (ASEAN)

The Association of Southeast Asian Nations (ASEAN) is a regional cooperative organization consisting of 10 Southeast Asian countries. Its major purposes are promotion of economic growth and social/cultural development, political/economic stability and cooperations regarding challenges in the region. ASEAN Digital Ministers' Meeting (ADGMIN) discusses policies in the digital field.

i Contributing to achievement of the goals of ASEAN Digital Masterplan 2025

Japan cooperates for achievement of the goals of the ASEAN Digital Masterplan 2025 formulated in January 2021. Specifically, Japan and ASEAN countries implement joint projects using ASEAN ICT Fund established with contributions from Japan and other funds. In fiscal 2021, workshops in the field of Vehicle to X (V2X) and initiatives to formulate a best practice guide for development of 5G ecosystem were implemented.

ii Strengthening cooperation system in the field of cybersecurity

Currently, MIC implements cybersecurity exercises including Cyber Defense Exercise with Recurrence (CYDER) for cybersecurity personnel of government agencies and critical infrastructure operators in ASEAN countries online or at the ASEAN Japan Cybersecurity Capacity Building Centre (AJCCBC)[53] on a continual basis. In addition, considering the recent spread of COVID-19, since fiscal 2020 AJCCBC has provided online self-learning materials and expands exercise content through provision of teaching materials from third parties other than Japan or ASEAN.

Furthermore, MIC promotes information sharing and strengthens cooperation systems among related parties by regularly holding Japan-ASEAN Information Security Workshop for ISP services in ASEAN countries. Since fiscal 2020, MIC has developed an online information sharing system pertaining to cybersecurity between Japan and ASEAN.

(5) International Telecommunication Union (ITU)

The International Telecommunication Union (ITU: headquartered in Geneva, Switzerland, with 193 member countries) is a specialized agency of the United Nations (UN). Its purpose is to extend international cooperation for improvement and rational use of telecommunication, and to promote development and efficient operation of technical means for efficiency improvement, increase in use and spread of telecommunication services. ITU consists of the following three sectors conducting allocation of frequencies, standardization of telecommunication technologies, telecommunication development support in developing countries and other activities.

① ITU-R: ITU Radiocommunication Sector
② ITU-T: ITU Telecommunication Standardization Sector
③ ITU-D: ITU Telecommunication Development Sector

Election of the next Director of the Telecommunication Standardization Sector is scheduled in September 2022 and Japan supports Mr. ONOE Seizo, currently serving as the CSSO (Chief Standardization Strategy Officer) of Nippon Telegraph and Telephone Corporation.

i Initiatives at ITU-R

In order to ensure rational, efficient, economical and fair use of the radio frequency spectrum by all radio communication services, ITU-R conducts research on use of frequencies and formulates standards related to radio communications. Radiocommunication Assembly

[53] AJCCBC: https://www.ajccbc.org/index.html

(RA) that approves recommendations submitted by Study Groups and discusses issues and systems of the next SG period, and the World Radiocommunication Conferences (WRC) aimed at amendment of the radio regulations providing international frequency allocation and other matters are the largest ITU-R meetings held once every three to four years. MIC has actively contributed to the discussions.

ii Initiatives at ITU-T

ITU-T studies international standards of communication network technologies and operation methods, and conducts technical studies necessary for formulation of the standards.

The World Telecommunication Standardization Assembly (WTSA), which is the supreme decision-making meeting of ITU-T held once every four years, was held in March 2022. The assembly discussed appointment of chairs and vice-chairs of study groups and approval of resolutions. As a result, Japan obtained two chairs and 7 vice-chairs, and the assembly agreed on new resolutions on the review of reorganization of ITU-TSG and new telephone numbers common across Africa, and on revision of 36 resolutions.

As regards the Focus Groups in which non-ITU members can participate, the Focus Group on "Artificial Intelligence and Internet of Things for Digital Agriculture" (FG-AI4A) and the Focus Group on Testbed Federations for IMT-2020 and beyond (FG-TBFxG) were set up in fiscal 2021 to start new studies on AI and future networks.

iii Initiatives at ITU-D

ITU-D assists development in the information and communications sector of developing countries.

The World Telecommunication Development Conference (WTDC), which is the supreme decision-making meeting of ITU-D, is held once every four years. In the current Study Group Period (2018 to 2021), ITU-D implements ICT development support projects, ICT human resource development and other activities based on the strategic goals and action plans adopted by WTDC-17 held in 2017. Individual projects include the Connect2Recover[54] initiative that was launched by ITU and MIC in 2020 to strengthen digital infrastructure and ecosystem in the light of the global needs for enhancement of communication networks, which came to the surface as a result of the COVID-19 pandemic.

(6) United Nations

i United Nations General Assembly Second Committee Economic and Social Council (ECOSOC)

In the United Nations General Assembly Second Committee handling economy and finance, the Commission on Science and Technology for Development (CSTD) set up under the Economic and Social Council (ECOSOC) leads discussions on promotion of global digital cooperation toward inclusive digital society, public nature of the internet and other issues. Through participation in CSTD annual meetings and other activities, Japan contributes to international discussions regarding information and the communication sector including internet governance.

ii Internet Governance Forum (IGF)

The Internet Governance Forum (IGF) is an international forum for dialogue on various public policy issues regarding the internet.

In December 2021, the 16th meeting was held in Poland. Japan made active contributions to the meeting by organizing an open forum on global data governance, and MIC Minister Kaneko took the platform of its closing session in the form of a video letter announcing that Japan would host IGF in 2023 toward maintenance and development of a free, open, safe and segmentation-free internet.

(7) World Trade Organization (WTO)

There has been little progress in the telecommunication sector since the agreement of the Basic Telecommunication Negotiations in 1997 as a result of stagnation of the Doha Round that started in 2001. However, based on the recent rising attention to e-commerce handling data distribution on the internet, like-minded members formally started e-commerce negotiations at WTO in 2019. Japan as co-chair country together with Australia and Singapore leads the discussions.

(8) Organization for Economic Co-operation and Development (OECD)

Pioneering discussions on the ICT sector are made at the Committee on Digital Economy Policy (CDEP) of the Organisation for Economic Co-operation and Development (OECD). MIC provides personnel and financial support to the OECD Secretariat and actively contributes to policy discussions at OECD as exemplified by many MIC officials serving as CDEP chair (since January 2020) or vice-chairs of Working Parties under CDEP.

Since 2016 CDEP has been working on initiatives on AI and adopted and published the "Recommendation of the Council on Artificial Intelligence" in May 2019. The recommendation presents principles to be shared by people engaging in AI and the matters to be tackled by governments. This is the first inter-governmental consensus document on AI. CDEP continues active efforts including establishment of the "AI Policy Observatory (OECD.AI)" that is an online platform on AI (January 2020) and setting up of the "OECD Network of Experts on AI (ONE AI)" that is an AI expert group (February of the same year).

(9) ICANN

For IP addresses, domain names and other internet resources that are absolutely necessary for internet use,

[54] At first, the initiative's target was Africa where internet connection rate was low, but with participation of the government of Saudi Arabia and declaration by the government of Australia to participate, it has expanded to a global scale.

it is important to ensure appropriate global management/coordination including prevention of overlapping assignments. International management/coordination of internet resources is currently handled by the Internet Corporation for Assigned Names and Numbers (ICANN)[55] that was launched as a nonprofit corporation in 1988. In addition to IP address assignment and domain name coordination, ICANN coordinates operation/deployment of route server/system and development of policy related to these technical services.

MIC actively contributes to ICANN activities as an official member of its Governmental Advisory Committee consisting of the representatives of the governments of the member countries. To address unauthorized use of DNS, for example, Japan proposed study of methods for the Registry-Registrar to observe the provisions of the contract with ICANN and identification of registrants of domain names in the 70th to 72nd ICANN meetings.

6. International cooperation in bilateral relationships

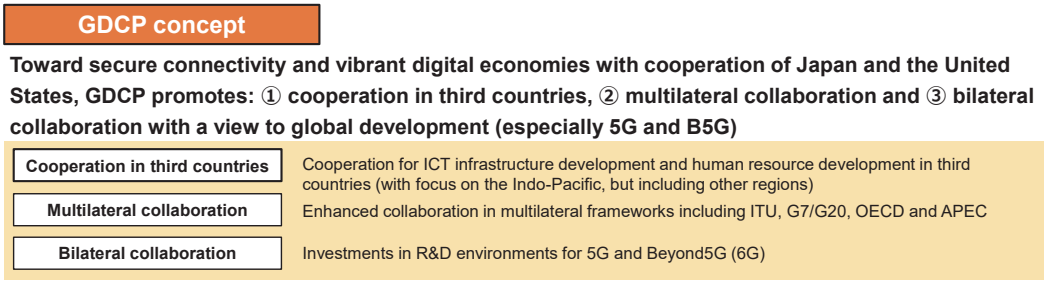
(1) Policy cooperation with the United States

Based on the outcome document[56] issued after the Japan-U.S. summit meeting between Prime Minister Suga and President Biden of the United States on April 16, 2021, the Global Digital Connectivity Partnership (GDCP)[57] was launched in May of the same year in order to promote secure connectivity and vibrant digital economies. With the launch of GDCP, the Japan-U.S. Policy Cooperation Dialogue on the Internet Economy (IED) is positioned as the framework to promote GDCP.

The 12th Japan-US IED intergovernmental and public-private meetings were held on November 11 and 12 combining face-to-face and online methods. Participants of the meetings discussed a broad range of issues including 5G/B5G and cybersecurity, cooperation in the international arena, AI, and global free flow of data. As an outcome of the meetings, the Joint Statement on the 12th U.S.-Japan Policy Cooperation Dialogue on the Internet Economy was released.[58] At the meetings, following expert-level working group meetings of the GDCP in May and October 2021, the two countries reaffirmed their commitment to promoting secure connectivity and a vibrant global digital economy.

At the private sector meeting on November 5, 2021, Keidanren, the American Chamber of Commerce in Japan (ACCJ) and other participants from American industry issued the "Joint Statement 2021 by the US-Japan Internet Economy Private Working Group." The Joint Statement was submitted to the two governments at the Japan-US IED public-private meeting.

Figure 4-8-6-1 Global Digital Connectivity Partnership (GDCP)



(2) Cooperation with Europe

i Cooperation with the European Union (EU)

MIC and the Directorate-General for Communications Networks, Content and Technology of the European Commission hold “Japan-EU ICT Policy Dialogues” (the 27th dialogue in February 2022 was the latest) for exchange of information and opinion on ICT policy, and “Japan-EU ICT Strategy Workshops” (the 13th workshop in April 2022 was the latest) to promote public-private collaboration/cooperation in the digital field.

At the 27th Japan-EU ICT Policy Dialogue, the two sides discussed 5G/Beyond 5G(6G), regulatory reform, AI, DFFT and cybersecurity, and reaffirmed the importance of in-depth discussions by like-minded countries for establishing international rules including DFFT.

In addition, the Japan-EU Digital Partnership was launched in May 2022. The partnership covers digital priorities shared by Japan and the EU, with the Digital Agency, MIC and METI playing leading roles from Japan and the European Commission (EC)'s Directorate-General for Communications Networks, Content and Technology (DG Connect) doing so from the EU.

ii Cooperation with European countries

(i)The United Kingdom

In May 2022, MIC, the Digital Agency and METI launched the UK-Japan Digital Group with the UK as a framework to tackle common digital priorities of the two countries. The group will hold a director-general-level meeting, and MIC will be in charge of the coordination.

(ii) Germany

MIC holds Japan-Germany ICT policy dialogue with the Federal Ministry for Digital and Transport (BMDV)

[55] Mr. MAEMURA Akinori (Japan Network Information Center: JPNIC) from Japan has been ICANN board member since November 2016.
[56] https://www.mofa.go.jp/mofaj/na/na1/us/page1_000951.html
[57] https://www.soumu.go.jp/menu_news/s-news/01tsushin08_02000119.html
[58] https://www.soumu.go.jp/menu_news/s-news/01tsushin08_02000126.html

of Germany to deepen the mutual understanding between Japan and Germany on policy aspects in the ICT field and promote the collaboration and cooperation of the two countries. At the 6th meeting held as a web conference in March 2022, the two countries discussed the governments' initiatives to promote Open RAN, the status of progress in R&D toward Beyond 5G, global digital governance, digital platform policies and data utilization/AI. Through the discussions, Japan and Germany confirmed that the two countries continue the collaboration. In addition, public-private sessions were held to exchange information on 5G and other initiatives in Japanese and German industries.

(iii) France

MIC and the Ministry for the Economy, Finance and the Recovery of the French Republic hold Japan-France ICT Policy Dialogues to share information on the latest initiatives regarding important ICT topics. The latest meeting was the 21st Dialogue in June 2021.

(3) Cooperation with Asia-Pacific countries

MIC cooperates with information and communication departments of Asia-Pacific countries in the ICT field including communication infrastructure development and ICT usage.

i India

In September 2021, MIC, the Ministry of Communications of India and other organizations held the "Japan-India intergovernmental consultation and public-private workshop in the field of 5G," shared the current status of intergovernmental and public-private 5G and Beyond 5G(6G) initiatives in the two countries and directions of future initiatives, and exchanged opinions.

ii Southeast Asian countries

MIC has held ICT Joint Working Groups between Vietnam and Japan since 2018. In the 5th Working Group, the two sides exchanged opinions on digital transformation, cybersecurity, 5G and other matters and agreed to continue Japan-Vietnam cooperation.

In November 2021, MIC held an online meeting with the National Broadcasting and Telecommunications Commission (NBTC) of Thailand to share information and exchange opinions on 5G policy and other topics and deepened understanding of the recent information and communication administration including 5G development in the two countries.

In July 2021, MIC and the Ministry of Communications and Information of the Republic of Singapore signed a Memorandum of Understanding on Cooperation in the information and communications field. The two countries agreed to further strengthen cooperation in the field (ex. digital economy, AI, cybersecurity).

Philippines is the only ASEAN country adopting the Japanese terrestrial digital television standard. MIC continues support for smooth transition to terrestrial digital in the country with a view to support through ODA.

(4) Cooperation with Latin American countries

In Latin America, following Brazil, which adopted the Japanese terrestrial digital television standard (ISDB-T) in 2006, 14 countries adopted ISDB-T. Currently, MIC supports activities to end analog broadcasting in the countries and introduction of the Emergency Warning Broadcast System (EWBS) that is one of the functions of ISDB-T in Peru, Ecuador and other countries.

MIC also holds 5G seminars in Latin American countries to explain the importance of constructing open and secure 5G networks, in particular, and supports Japanese enterprises having excellent technologies in this field to expand their business in this region.

Furthermore, in order to encourage initiatives to use Japan's excellent ICT to solve social challenges in these countries, MIC conducts: demonstration of Smart City including protection of World Heritage in Cartagena, Colombia; demonstration of agriculture ICT solutions to improve operational efficiency of agricultural producers in Ecuador and Brazil, and; demonstration of medical ICT solutions using Local 5G in Chile.

(5) Cooperation with other regions

i Cooperation with Africa

Cooperation with African countries in the ICT field has progressed starting from the adoption of the Japanese terrestrial digital television standard (ISDB-T) by Botswana (2013) and Angola (2019). The Japan-Africa ICT High-level Round Table, an official side event of the 7th Tokyo International Conference on African Development (TICAD7) held in Yokohama 2019 adopted a joint statement that includes Japan-Africa cooperation in the field of ICT.

Toward realization of the agreed matters in the joint statement, since fiscal 2019 MIC has implemented demonstration experiments of communication infrastructure (Senegal and Kenya), agricultural ICT (Botswana and Ethiopia), and medical ICT (Ghana, Kenya and the Democratic Republic of the Congo) to contribute to solving of social issues in Africa, while at the same time supporting development by Japanese enterprises. The results will be reported at the 8th Tokyo International Conference on African Development (TICAD8) scheduled in 2022.

ii Cooperation with Middle East

MIC has strengthened the cooperative relationship with Saudi Arabia. Based on "Japan-Saudi Vision 2030" (2017) and the memorandum of cooperation with Saudi Arabia on cooperation in the ICT field signed with the Minister of Communications and Information Technology of Saudi Arabia (2019), MIC has established cooperative relationships between enterprises of the two countries and supported technology deployment by Japanese enterprises through dispatch of a public-private mission to Saudi Arabia in fiscal 2018 (the mission was suspended from fiscal 2019 to 2020 due to the COVID-19 pandemic) and public-private online ICT workshops in January 2022. In fiscal 2021, MIC implemented a demonstration experiment of medical ICT using VR technology of Japan.

Section 9 Promoting Postal Service Administration

1. Summary

(1) Initiatives so far

The postal service that started from the foundation of "shinshiki yubin" (new postal service) in 1871 celebrated its 150th anniversary in 2021. During this period, the universal postal service has been provided to every corner of Japan through post offices in step with the growth of the country, while at the same time changing its organization from state-operation to public corporation and then private corporation with the times.

MIC has been working to ensure soundness in management of the Japan Post Group and fair and free competition, to secure universal service by post offices and to use the post office network in the communities.

(2) Future challenges and direction

In terms of the financial condition of the Japan Post Group, operating income continues to decrease but ordinary profit and current net profit maintain a certain level. In the postal and physical distribution sector, the number of post offices has been around 24,000, and postal matters continue to decrease while packages are increasing. In the financial (savings and insurance) sector, the balance continues to decrease or remain level.

As the social environment surrounding the Japan Post Group is changing, it is important that post offices and their services continue to improve users' convenience and contribute to the communities, while at the same time the Japan Post Group secures the required performance as a private enterprise and maintains the post office network and universal service in the medium- to long-term.

It is necessary for MIC to continue to ensure soundness in management of the Japan Post Group and fair and free competition, and secure stable universal service by post offices. Moreover, MIC needs to promote improvement of users' convenience and contribute to the communities through diverse and flexible services adapted to the new era and digitalization, and streamlining of operations by effectively using the network of 24,000 post offices.

2. Promoting post office administration

(1) Securing universal postal service

i Subsidy/contribution system to support maintenance of the post office network

In order to ensure stable provision of universal postal service, a subsidy/contribution system to support maintenance of the post office network was established in June 2018 and its operation started in April 2019. The Organization for Postal Savings, Postal Life Insurance and Post Office Network delivers subsidies and collects contributions. In fiscal 2022, the amount of subsidy to Japan Post was about 280.8 billion yen, while contributions were 230.7 billion yen from Japan Post Bank and 50.2 billion yen from Japan Post Insurance.

ii Review of postal services by partial amendment of the Postal Act, etc.

The Act Partially Amending the Postal Act and Act on Letter Service by Private Business Operators (Act No. 70 of 2020) was enforced in May 2021 to review the services related to delivery days of the week for ordinary mail, the number of days required for delivery, and pertinent conditions. In Response, Japan Post partially reviewed its postal services in order since October 1, of the same year. The review includes no delivery on Saturdays and later delivery (**Figure 4-9-2-1**).

Figure 4-9-2-1 Partial review of the postal service implemented since October 2021

(1) No delivery on Saturdays

Implemented from Saturday, October 2, 2021
*Limited to ordinary mail. Normal post cards for election campaign are delivered on the day before the voting day.

(2) Later delivery (on the following day -> the day after next)

Stepwise implemented from Friday, October 1, 2021
*Limited to ordinary mail. No change to express, registered mail, Letax, Yupack, etc.)

<To destinations where mail used to be delivered on the following day if the mail was posted before 17:00>

Date of acceptance	Delivery day of week		
	Past	From October 2021	From January 22, 2022
Mon	Tue	Tue	Wed
Tue	Wed	Wed	Thu
Wed	Thu	Thu	Fri
Thu	Fri	Fri	Mon
Fri	Sat	Mon	Mon
Sat	Mon	Mon	Tue
Sun	Mon	Tue	Tue

(3) Expansion of the offices accepting special mails within the ward (quantity discount)

Mail needed to be brought to their delivery office in order to obtain discount. Discount is given also to mail brought to local dividing offices in charge of the delivery office.

<Commencing time>

-Bringing more than 100 pieces of mail at one time: from October 2021

-Bringing more than 1,000 pieces of mail at one time: from April 2022

(4) Lowering express delivery fee

Express delivery fee is lowered about 10% from Friday, October 1, 2021
*The fee is lowered considering the change in the delivery days of ordinary mail.

Weight	Fee up to Sep. 30	Fee from Oct. 1
Up to 250g	290 yen	**260 yen**
Up to 1kg	390 yen	**350 yen**
Up to 4kg	660 yen	**600 yen**

Note: from (1) to (3) above are implemented based on the partial revision of the Postal Act (enacted on November 27, 2020 and enforced on May 1, 2021)

(2) Ensuring soundness in postal service management

i Notification and approval of new services of Japan Post Bank and Japan Post Insurance

MIC and the Financial Service Agency approved "personal loan service (including direct handling of Flat 35)" in April 2021 and "intermediary operations for conclusion of investment blanket contract" in March 2022 based on the Postal Service Privatization Act.

In June 2021, Japan Post Holdings disposed of more than half of the shares of Japan Post Insurance. As a result, new businesses of Japan Post Insurance are made subject to notification instead of approval in the past and "revision of special medical contract" was notified in November of the same year.

ii Ideal Postal Services in the Digital Age

Since November 2020, MIC held a "Roundtable Conference on the Ideal Postal Services in the Digital Age" (hereinafter the "Conference").[59] The Conference released a final report of recommendations on: utilization of data at the Japan Post Group and post offices; contribution by the Japan Post Group to regional revitalization; enhancement of the compliance and group governance at the Japan Post Group; and contribution by the Japan Post Group to SDGs and its efforts for ESG (environment, society and governance) in July 2021.

Considering the recommendations of the final report, with the aim of promoting effective utilization of data held by the Japan Post Group while at the same time protecting privacy of correspondence and personal information, since October 2021, MIC has held a "Study Group on Utilizing Post Office Data and Ideal Privacy Protection" to study balancing of utilization of data held/acquired by post offices and privacy protection.[60]

iii Promoting monitoring of the Japan Post Group

Since 2018 there have been misconducts inflicting a loss to customers in the Japan Post Group, which include inappropriate sale by Japan Post Insurance and fraudulent use of cashless service in Japan Post Bank. To address this situation, MIC as the supervising ministry of Japan Post Holdings and Japan Post provided guidance and took administrative dispositions as necessary, and monitored their recurrence prevention measures. However, there were still frequent misconducts that damaged public trust in postal services, which included embezzling of a large amount of money by postmasters and abandonment of a mass of postal matters, etc.

Based on the study result of the "Roundtable Conference on the Ideal Postal Services in the Digital Age - Compliance Working Group," MIC put together a basic approach for its supervision, and formulated and released "the Guidelines for Supervision of Japan Post Holdings Co., Ltd. and the Guidelines for Supervision of Japan Post Co., Ltd." In August 2021. In February 2022, MIC set up a postal administration monitoring meeting, which aims to strengthen MIC's supervision system in postal administration and promote proper monitoring of the business sector with the advice of experts.

(3) Contribution to regional revitalization

i Supporting utilization of post offices

Under the "Post Office Revitalization Project (by post offices and local governments by using ICT)" that has been promoted since fiscal 2019, MIC implemented demonstration projects to promote monitoring and disaster countermeasures in communities (Miyoshi City, Hiroshima) and to support administrative procedures using digital technologies (Yatsushiro City, Kumamoto, and Ishigaki City, Okinawa) in fiscal 2021.

In January 2022, a "post office monitoring application

[59] https://www.soumu.go.jp/menu_news/s-news/01ryutsu14_02000095.html
[60] https://www.soumu.go.jp/main_sosiki/kenkyu/postaldata_privacy/

that uses smart speakers" that was demonstrated in these projects was launched as a service for local governments by Japan Post. MIC plans to spread the result of the project across the country, while at the same time creating model cases of collaboration of post offices and local governments, etc.

ii Promoting entrustment of municipal affairs

In May 2021, the Act on Handling of Certain Services of Local Governments at Postal Offices (Act No. 120 of 2001) was amended[61] to add administrative processes including issuance and renewal of electronic certificates of individual number cards to the services that post offices may be entrusted with (ex. issuance of public certificates such as copy of the certificates of residence).

MIC also implements a "program to promote use of individual number cards at post offices" using the fiscal 2021 supplementary budget. Under this program, demonstrations are conducted to expand usage of individual number cards at post offices as residents' infrastructure rooted in the community. MIC continues to promote the spread of individual number cards toward further digitalization and regional revitalization.

3. Promoting postal administration in the international field

(1) Response to the Universal Postal Union (UPU)

The Universal Postal Union is a specialized organization of the United Nations and leads various cooperation projects and development of fair and open rules on international mail (ex. rules for handling expansion of cross-border e-commerce) for the purpose of global development of a universal postal service network to further improve convenience of international mail.

MIC makes voluntary contributions to UPU and conducts various cooperation projects, which include: (1) support for construction of a disaster-resistant postal network; (2) support for construction of a postal network with less environmental burden; (3) support for initiatives to use postal networks as infrastructure for social needs including watching over communities and new business development; and (4) raising added value of postal service network by using ICT and other cutting-edge technologies. Through these projects, Japan actively contributes to further development of the international postal network services and fair and open rule making regarding international mail at UPU.

Mr. METOKI Masahiko who served as Chair of the Postal Operations Council from October 2012 to August 2021 was elected Director General of UPU first from Asia at the 27th Universal Postal Union (UPU) Congress held in August 2021. He took up the position in January 2022. (The term of office is four years. One person may be elected up to two terms.)

(2) Supporting overseas development of Japanese postal infrastructure

As part of the "Infrastructure System Overseas Promotion Strategy 2025"[62] (amended in June 2021) of the government, MIC promotes overseas development of Japanese postal infrastructure system. This initiative provides excellent postal technologies and operational knowhow of Japan to India and other emerging and developing countries in Southeast Asia and Eastern Europe to support modernization and upgrading of postal services of the countries. Taking opportunities of renewal or extension of sorting machines or other important postal infrastructure, MIC tries to grasp needs and challenges of overall postal services of the partner countries, explores business opportunities including e-commerce and digital transformation and promotes entry of Japanese businesses with technologies/knowhow in these fields, while at the same time working to win peripheral businesses including equipment to be used in sorting centers.

MIC continues to promote overseas development of Japanese postal infrastructure by advancing the existing cooperation projects with these countries, while implementing basic surveys on postal service conditions of individual regions to identify new partner country candidates.

4. Trends of correspondence delivery

The Act on Correspondence Delivery by Private Business Operators (Act No. 99 of 2002) allowed correspondence delivery service by private business operators. Specified correspondence delivery that provides services not impeding provision of the universal postal service is provided by 586 operators (as of the end of fiscal 2022). The services include: service to go rounds of a fixed route, receive and deliver correspondence at each point; express delivery service within a short distance or limited area; and service similar to telegrams to deliver messages of congratulation or condolences together with a decorated card.

In order to promote understanding of the purpose and the system of correspondence service and ensure appropriate sending of correspondence, MIC disseminates information on the definition of correspondence and the correspondence delivery system.

[61] The Act on the Arrangement of Related Laws for the Formation of a Digital Society (Act No.37 of 2021) and the Act to Prepare Related Laws for the Promotion of Reform to Enhance Local Autonomy and Independence (Act No. 44 of 2021)
[62] Infrastructure System Overseas Promotion Strategy 2025: https://www.kantei.go.jp/jp/singi/keikyou/pdf/infra2025.pdf