

ICT Policy for Realizing the Networked Knowledge and Information Society

Comprehensive ICT Strategy for Reconstructing the Tohoku Region and Revitalizing Japan

Interim Report Summary

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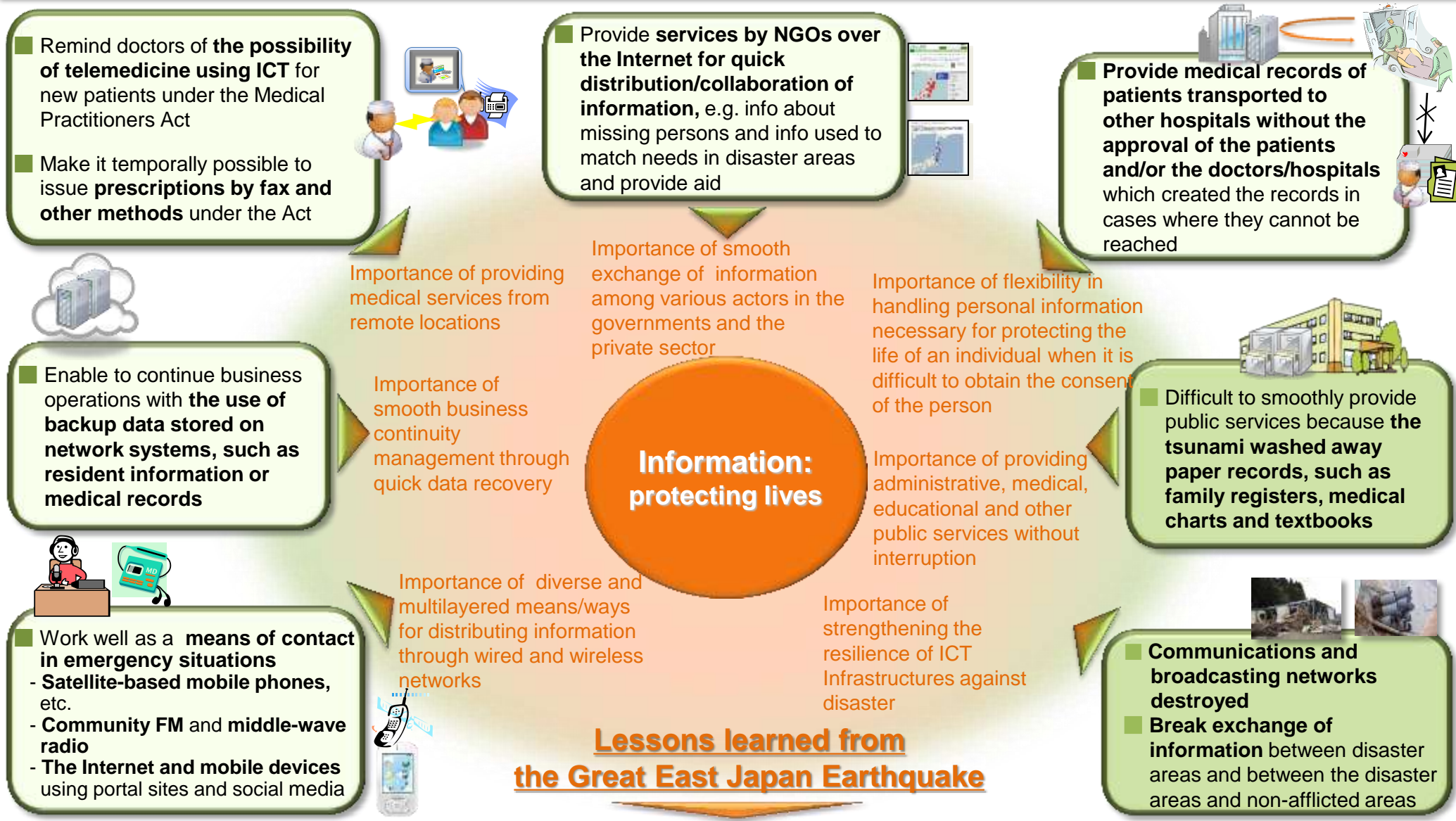
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Information and ICT: Lifelines



ICT facilitates the acquisition, sharing, transmission, storage, analysis, application of information beyond time and spatial limitations, and enables individual empowerment, improvement of convenience for the people, strengthening of interpersonal ties, efficient performance of economic and social activities, etc.

Basic Principles of Comprehensive ICT Strategy

The Networked Knowledge and Information Society

- Vision of society to be realized following the reconstruction of the Tohoku region and the revitalization of Japan (around 2020)

A society generating new values through the distribution, sharing, application, and storage of knowledge and information actively exchanged in all social and economic areas, thanks to the broadbandization and digitalization of communications and broadcasting networks

Reconstruction of the Tohoku Region

Necessary to provide the maximum available assistance for creative reconstruction led by the people and local governments in the disaster areas

Revitalization of Japan

Necessary to overcome supply constraints, to stimulate the economy by capturing global market growth, to build a disaster-resistant country, and to construct highly efficient social and economic systems

Promote
Simultaneously and
in Parallel

Basic Principles of the Immediate Comprehensive ICT Strategy

- (1) **Build disaster-resistant infrastructures** as a prerequisite for the roles expected of ICT
- (2) **Reconnect and strengthen bonds in the region** by deepening **interpersonal ties** through the smooth exchange of information
- (3) Construct social economic systems that enable **the generation of new business** for **sustainable economic growth** within a **disaster-resistant business environment**
- (4) Contribute to overcoming **the current energy constraints**
- (5) **Expand overseas, recover and boost confidence** in Japan in the global economic society

Realization of Information Distribution/Collaboration Platform for Promoting Utilization of Information

- The deployment of the comprehensive ICT strategy to this point has centered on (1) building ICT networks, (2) promoting ICT utilization, (3) establishing environment for ICT usage, and (4) promoting R&D and standardization activities. With respect to (2) in particular, efforts have concentrated on **promoting ICT utilization along “vertical axes” in each field, such as government, medical care, and education.**
- Based on the importance of horizontal information collaboration, which has been highlighted in the Great East Japan Earthquake, and based on the changing landscape in the broadband market prior to the earthquake, it is necessary to prioritize **efforts along “horizontal axes,”— i.e., the realization of information distribution and collaboration platform.**
- By deepening “interpersonal ties” through information distribution and collaboration and by building highly efficient, disaster-resistant social economic systems, we expect comprehensive ICT strategy **to support reconstruction of the Tohoku region and revitalization of Japan as well as to realize the networked knowledge and information society after those.**

Comprehensive ICT strategy to this point

Promote ICT utilization along vertical axes

Promoting ICT utilization

Government

Medical care

Education

...

(Individual fields)

Promote R&D and standardization activities

Establishing environment for ICT usage

Building ICT networks (infrastructure)

Lessons from the earthquake



Landscape changes in the broadband market

Future comprehensive ICT strategy

Strengthen efforts along horizontal axes

Promote ICT utilization

Government

Medical care

Education

...

(Individual fields)

Promote R&D and standardization activities

Realization of information distribution/collaboration platform

Ex. ➤ Move to open APIs, link data formats, ensure consistency in rules governing the handling of personal information

Establishing environment for ICT usage

Building ICT networks (infrastructure)

Reconstruction of the Tohoku Region

Revitalization of Japan

Basic Principles of Comprehensive ICT Strategy

- ① Build disaster-resistant infrastructures as a prerequisite for the roles expected of ICT
- ② Reconnect and strengthen bonds in the region by deepening interpersonal ties through the smooth exchange of information
- ③ Construct social economic systems that enable the generation of new business for sustainable economic growth within a disaster-resistant business environment
- ④ Contribute to overcoming the current energy constraints
- ⑤ Expand overseas, recover and boost confidence in Japan in the global economic society

Basic Directions for ICT Policy

Specific Measures

1. Strengthening Resilience of ICT Infrastructures against Disaster

- ① Reconstruct and strengthen resilience of ICT infrastructures against disaster
- ② Construct platforms for information provision with high redundancy

2. Reconnecting and Strengthening Bonds in the Region through ICT

- ① Promote development and use of regional ICT personnel
- ② Promote problem-solving oriented actions for self-sustaining region
- ③ Promote infrastructures development for ICT utilization in the region
- ④ Promote information collaboration between government and private sectors ("government 2.0")
- ⑤ Revitalize regions by ICT utilization in various fields

3. Generating New Business through ICT Utilization

- ① Facilitate dissemination of cloud services
- ② Promote telework
- ③ Actively Promote information utilization
- ④ Strengthen information security
- ⑤ Create new ICT bases in the Tohoku region
- ⑥ Generate new businesses by radio spectrum
- ⑦ Facilitate content creation and distribution

4. Contributing to Overcoming Energy Constraints through ICT

- ① Promote Japanese style of smart grid
- ② Promote green ICT

5. Strengthening International Cooperation and Collaboration in the ICT Field

- ① Form projects through cooperation with partner countries
- ② Standardization strategy coupled with project formation
- ③ Actively use finance
- ④ Form a global expansion framework
- ⑤ Strengthen transmission of information toward other countries

<Cross-sectorial measures that support above >

6. Promoting R&D in the ICT Field

- ① Future R&D issues
- ② System for R&D

Basic Directions

- It is vital to **strengthen resilience of ICT infrastructures such as communications infrastructures**, as they are **prerequisite underpinnings for the roles** expected of ICT.
- As made evident again in the Great East Japan Earthquake, having functioning communications and broadcasting infrastructures right after a disaster allows for the **distribution and sharing of vital information**, which enables **prompt restoration after the disaster** and the **assurance of victims' safety and security**.
- **Measures must also be deployed from the perspective of utilizing backup data on distributed systems** for the prompt assistance of victims.

① Reconstruct and strengthen resilience of ICT infrastructures against disaster

- ✓ **Construct multilayered ICT networks** (systems that link various ICT networks such as disaster radio networks, communications networks, and broadcasting networks so that in the event one ICT network is interrupted, disaster information and others can be transmitted via other ICT networks)*
- ✓ Promote the **assurance of network redundancy (sufficient leeway)**, such as **distributing Internet eXchange (IX) functions and data centers in multiple regions, constructing networks that combine satellite Internet and fixed and mobile communication networks**, and emergency restoration by **building wireless LAN grids** that operate when communications are interrupted*
- ✓ Further promote the **“Local government clouds”**

* To be embodied in combination with the results from studies by the MIC's Study Group on Maintaining Communications Capabilities during Major Natural Disasters and other Emergency Situations

② Construct platforms for information provision with high redundancy

- ✓ **Facilitate measures such as mirroring and cloud services by public sectors (establishment and share of procedures etc.)** to avoid access centralization*
- ✓ **Facilitate utilization of the Internet such as social media by public sectors (update of guidelines)** to deliver disaster information quickly and accurately*
- ✓ Promote the platform that can gather information from local governments and others and provide this information to multiple media channels (“safe and secure public commons”)

* To be promoted primarily by the IT Strategic Headquarters

Basic Directions

- Regional communities has faced challenges which are **maintaining public services such as healthcare in the shrinking and aging population, and maintaining and promoting agriculture and other industries**. In addition, solving these issues has become harder with the **flow of human resources to the cities**.
- The Great East Japan Earthquake has underscored **issues with the distribution of information in emergencies**, such as the inability to transmit information about the well-being of families at evacuation shelters.
- At the same time, there are other issues, such as a **lack of awareness of ICT's potential for solving such issues** and a **lack of needs ascertainment and personnel**.
- It is vital to reconnect and strengthen bonds in regional communities through ICT while being **respectful of the following two points**:
 - (1) Deploy **ICT policy that produces tangible benefits** by promoting ICT utilization which is "local-resident-oriented," "regional-autonomous," "bottom-up," "diverse-connectivity," and "user-friendly."
 - (2) Promote **ICT policy that supports intraregional links and wide-area expansion** based on the growth of "interpersonal ties."

① Promote development and use of regional ICT personnel

- ✓ Set up an "ICT Regional Manager System (tentative)"
- ✓ Award individuals who have contributed to the development and spread of local ICT usage

② Promote problem-solving oriented actions for self-sustaining region

- ✓ Use 11 Regional Bureaus of Telecommunications to ascertain needs of ICT utilization and to promote matching with ICT service providers, etc.
- ✓ Promote archiving and modeling of best practices related to content-driven regional revitalization
- ✓ Further facilitate the use of cloud services
- ✓ Promote the move to open systems and the standardization of systems as well as the assurance of interconnectivity between systems

③ Promote infrastructures development for ICT utilization in the region

- ✓ Promote such subsidizations as the grant program for promotion of ICT usage environment
- ✓ Further promote the "Local government clouds" (repeat item)
- ✓ Establish Internet access spots, such as Wi-Fi hot spots, at public facilities and roadside stations, etc.
- ✓ Promote the making of digital archives of broadcast content and other local intellectual properties

④ Promote information collaboration between government and private sectors

- ✓ Promote "Government 2.0," which realizes the provision of new services through public-private collaboration through the active release of administration-held data*

* To be promoted primarily by the IT Strategic Headquarters

⑤ Revitalize regions by ICT utilization in various fields

- ✓ Construct systems for local governments in afflicted areas to transmit via the Internet daily life information and others to evacuated residents
- ✓ Promote wide-area healthcare coordination through telemedicine, etc. and healthcare clouds (Japanese version of EHR) that provides access to medical records from mobile terminals, etc.
- ✓ Make use of ICT services such as cloud services in the farming, fishing, and forestry industries
- ✓ Promote ICT usage in the educational field

Basic Directions

- It is necessary to shift from technology-driven ICT utilization policy to **issue-driven and user-driven ICT utilization policy**. And in this regard, it is vital to develop ICT services that **truly respect the needs of seniors and other users**.
- It is necessary to **generate discontinuous “open innovation”** that will produce new solutions through **collaborations crossing industry lines**.
- It is necessary to scour for **new industry fields for Japanese corporations in the global market** and to groom players with skills to generate new businesses in the global market.
- In the midst of restricted power supplies, it is necessary to **improve the efficiency of economic activities** and to realize **sustainable business environments that are disaster tolerant**. Furthermore, it is important in view of the reconstruction of the Tohoku region to **generate new businesses that take advantage of the Tohoku region’s strengths**.

① Facilitate dissemination of cloud services

- ✓ Proactively assist efforts by “Japan Cloud Consortium” (JCC) to spread the use of cloud services

② Promote telework

- ✓ Collect and publicize **specific benefits and examples of business continuity plans (BCPs) and energy conservation measures** by introduction of telework
- ✓ Build **mechanisms for lending personnel support for systemizing telework and establishing and introducing operational guidelines**
- ✓ Examine **mechanisms that create jobs in afflicted regions by performing business tasks in the disaster areas through using telework for businesses outside the afflicted regions**

③ Actively Promote information utilization

- ✓ Prove technologies and rules in order to promote the use of **open application program interfaces (APIs) for information systems** and the **standardization of data formats**
- ✓ **Revise regulations** hindering ICT utilization,* **improve accessibility**, and **promote personnel training**
* To be promoted primarily by the IT Strategic Headquarters

④ Strengthen information security

- ✓ **Educate** users without sufficient awareness or skills **about information security measures**
- ✓ **Strengthen technical development and international ties** in the area of **forecasting and quickly responding to cyber attacks**
- ✓ Promote **information sharing between critical infrastructures***
*To be promoted primarily by NISC

⑤ Create new ICT bases in the Tohoku region

- ✓ **Establish software development bases using telework**
- ✓ **Invite domestic and overseas R&D and testing bases to the Tohoku region**

⑥ Generate new businesses by radio spectrum

- ✓ **Introduce new wireless technologies like white space, advance disaster radio systems, and establish and expand wireless systems such as Wi-Fi**
- ✓ **Develop the technology for “unbreakable wireless communication networks”** in which portable feature-rich radio stations autonomously form networks when communications are interrupted

⑦ Facilitate content creation and distribution

- ✓ Facilitate the **creation and distribution of 3D content** and the establishment of **creation and distribution common platforms that can be used by small content creators** in various regions
- ✓ **Foster creators, business producers, and other professionals**
- ✓ Establish environment for content distribution such as **measures against illegal distribution and unification of rights processing**

Basic Directions

- It is necessary to make maximum use of ICT to **overcome the current energy restrictions that are feared to continue over the medium term.**
- In the midst of concerns about power supply restrictions, a pressing administrative issue is **how to conserve energy on the energy consumer side.**
- It is necessary to lessen our dependence on systematic power supplies and to aim to **reduce the burden on the environment** by having corporations, households, and other energy consumers sell their solar energy and other forms of renewable energy to power companies, all centered on **Japanese style of smart grid.**

① Promote Japanese style of smart grid

- ✓ Promote the **standardization of communication protocols that will help bring down the cost of smart meters** and the **standardization of communication interfaces that both connect smart meters to home appliances and control devices**
- ✓ Promote **pilot projects with technologies for wireless systems used for smart meters**
- ✓ **Test the feasibility of smart meters and other technologies by constructing “local production for local consumption model”**
- ✓ **Examine security issues connected with using cloud services to process streaming data on power consumption collected from smart meters**
- ✓ Promote **efforts aimed at acquiring international standards** at the ITU, IEEE, and elsewhere by using the results of pilot test projects

② Promote green ICT

- ✓ Have Japan lead international standardization at such bodies as the ITU and promote the **establishment of best practice models** for energy conservation and lower eco-costs as well as **means for assessment of environmental impacts on an international scale**
- ✓ Promote **R&D and field testing to make the ICT field itself greener by devising efficient control methods for data centers and designing communication networks that consume less power**
- ✓ Examine having **local governments assist the adoption of ICT devices and solutions by homes and offices**

5. Strengthening International Cooperation and Collaboration in the ICT Field

Basic Directions

- It is necessary to switch to **ICT industries that capture global market growth**.
- It is necessary to construct **“problem-solving models” through open innovation** that crosses traditional industries divides and to solve issues jointly with partner countries.
- It is necessary to construct **collaborative relationships, such as promoting the creation of global partners beginning in the standardization stage**.
- It is necessary to **recover and improve trust in our country, which has been damaged by harmful rumors and others**.

① Form projects through cooperation with partner countries

- ✓ Strengthen **intergovernmental dialogue and efforts such as sending joint public-private missions overseas**
- ✓ Promote **project formation in the social infrastructure field** with emphasis on **ubiquitous solutions**
- ✓ Promote the **formation of projects that realize contributions to ASEAN nations (priority fields: sensor networks, disaster response, and e-Government) with clarifying the “smart network” concept**

② Standardization strategy coupled with project formation

- ✓ Urge partner countries to adopt **Japanese methods as standard methods and expand the relevant standards jointly with the partner countries**
- ✓ Promote **standardization in smart grid field, in digital signage, and in optical access networks**

③ Assertive use finance

- ✓ **Make use of long-term financing schemes by embedding ICT into power and other infrastructure projects**
- ✓ **Conduct preliminary examinations before forming projects with partner countries by using JICA’s “preliminary cooperative examinations”**

⑤ Strengthen transmission of information toward other countries

- ✓ **Strengthen transmission of video content overseas** through broadcasting, the Internet, and other means and **promote joint productions** by inviting foreign media to Japan
- ✓ Promote efforts such as **creating global PR conferences** using international events as forums
- ✓ **Immediately examine ways of processing rights** so that **broadcasting content can be expanded overseas**
- ✓ **Build joint public-private open platforms** for the production and distribution of global content

④ Form a global expansion framework

- ✓ **With forming pilot projects in ASEAN, form a consortium (by the summer of 2012 at the latest) along such axes as enhancing project-matching functions and financing coordination. Later, expand the following functions sequentially,**
 - (1) **Function to collect and share information and data on target countries**
 - (2) **Function to organize financing for project formation**
 - (3) **Function to organize assistance measures to connect initial project seeds to specific project proposals**
 - (4) **Function to coordinate among participating corporations**
 - (5) **Secure human resources for global expansion**

6. Promote R&D in the ICT Field

Basic Directions

- In today's circumstances that see intensifying international competition over the securing of resources and energy, accelerating economic globalization, and intensifying competition in emerging countries' markets, **science and technology competencies together with ICT professionals** are the very **assets that will maintain our international standing**.
- We create "**R&D strategic roadmap**" following the four categories: (1) **reconstruct and revive the country in the wake of the Great East Japan Earthquake and address the need for increased safety from disasters**, (2) **green innovation**, and (3) **life innovation**, which are the key points of our social and economic issues (needs); and (4) **promote technical innovation that will cause a paradigm shift in society** that requires long-term base R&D.

① Future R&D issues

(1) Promote green innovation

- (1) **Reduce energy consumption and lower carbon emissions by ICT usage** (communication technology related to smart grids, etc.)
- (2) **Reduce energy consumption and lower carbon emissions in the ICT field itself** (photonic network technology, etc.)

(3) Promote technical innovation that will cause a paradigm shift in society

- (1) **Network infrastructure**
- (2) **Wireless**
- (3) **Secure networks**
- (4) **Space communication system technology**
- (5) **Technology creating innovative functions**

(2) Promote life innovation

- (1) **Create a society for healthy, self-reliant lives through ICT** (ubiquitous network robot technology, etc.)
- (2) **Create user-friendly and socially-friendly communications** (universal communication technology, etc.)
- (3) **Realize the provision of information that gives comfort and warmth** (next-generation video delivery technology, etc.)

(4) Reconstruct and revive in the wake of the Great East Japan Earthquake and address increased safety from disasters

- (1) **Strengthen the disaster tolerance of communication and broadcasting networks**
- (2) **Sensor networks that enable the remote, real-time ascertainment, accumulation, and analysis of disaster scenes**

- ✓ Promote R&D together with intellectual property strategies that include international standardization strategies
- ✓ Regularly revise the R&D strategic roadmap in view of ever-changing social needs (discussion framework at the Information and Communications Council is a topic of future study)

② System for R&D

(1) Foster ICT professionals

- Discover and nurture producers and other professionals who have the ability to envision complete scenarios to the point of commercialization and to execute project management and other management tasks
- Foster professionals with a sense of balance by making use of intern systems
- Nurture and secure global professionals by inviting foreign researchers and assisting international research exchanges
- Support the passing down of technology and techniques
- Eliminate mismatches in labor supply and demand between the industrial world and universities
- Promote training using R&D projects and competitive funds

(2) Mechanisms to advance R&D effectively

- It is necessary to standardize basic principles from the first stages of R&D and to combine various research activities in an organic fashion and proceed with them simultaneously and in parallel
- Advance R&D using test beds built in the first stages of R&D
- R&D assistance measures are needed for small businesses and ventures to implement R&D results
- Setting up a venue for coordination and posting coordinators is effective in arranging related organizations to focus on reaching implementation of R&D results
- Promote R&D by small firms and introduce multistage selection methods for R&D using competitive funds

(3) Strengthen international competitiveness

- Build an open innovation environment through joint international research and international pilot projects
- Wider assistance through collaborations between ministries, local governments, and other bodies

(4) Regional R&D

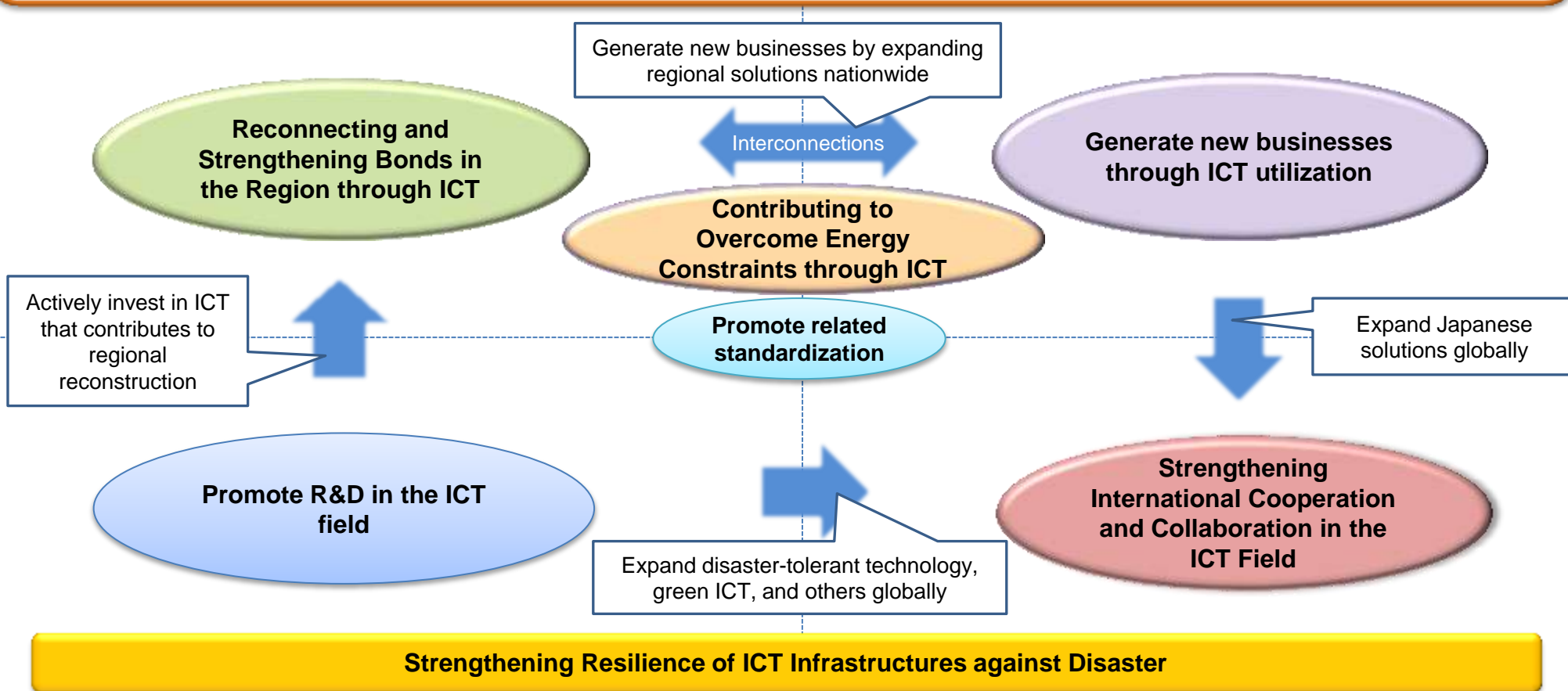
- Facilitate R&D that fits regional needs through joint government-academic-industry cooperation
- Revitalize R&D bases by taking advantage of characteristics of regions where research functions are concentrated

(5) R&D management

- Strive for the efficient operation of PDCA cycles and institute thorough assessments, revisions, and announcements at each stage — preliminary, selection, continuation, mid-term, conclusion, and follow-up

to the Progress of Reconstructing the Tohoku Region and Revitalizing Japan

- There was recognition of the importance of ICT policy from many perspectives prior to the Great East Japan Earthquake. The disaster and the resulting massive damage has **unintentionally highlighted its importance**.
- **Measures are interconnected**, such as the generation of new businesses by deploying new solutions nationwide via regional stimulation initiatives and international cooperation and collaboration by means of expanding these new solutions globally.
- **Future large changes are possible in the environment assumed by the ICT policy** due to local government needs in the afflicted areas and economic developments. It is necessary to **deepen ongoing examinations of ICT policy directions** while respecting the intentions of local governments in the afflicted areas and while remaining grounded on the recovery and reconstruction process.



- With promoting both reconstruction of the Tohoku Region and revitalization of Japan, it is necessary to **realize the society we are aiming for around 2020 that will follow those.**
- The networked knowledge and information society must be realized through the deep embedding of ICT in social economic systems and through **the smooth distribution and collaboration of information on the world's leading information distribution/collaboration platform.** We need more exhaustive studies including. Then, it is necessary to **deepen the examination of such topics as the followings.**

(1) Future Vision of Communications and Broadcasting Networks

- Machine-to-machine (M2M) communications will grow, the linkage between the real world and cyberspace will deepen, and social economic activities within cyberspace will be much more sophisticated.
- New vertically integrated business models will be widespread, the ties between devices and communications and broadcasting networks will be looser, and mechanisms that distribute information bi-directionally without regard for device and network differences will spread.
- 1:N (broadcasting networks), 1:1 (communications networks), and N:N (social media) will be combined in an organic and a mutually complimentary fashion, and networks will move to a freely connectable market environment based on user needs while taking advantage of the characteristics of each network (media).
- It is possible that the new widespread vertically integrated businesses will become incorporated in the global market and that the flexible business deployment of the Japanese ICT industry will be hindered.
- It is necessary to study authentication and billing functions so that communication businesses and content providers can construct win-win relationships.

(2) Future Vision of ICT Utilization Environments

- It is necessary to study the potential for establishing dynamic market environments in which venture businesses, consisting primarily of digital natives, can create new businesses in collaboration with their users.
- It is necessary to arrange user environments, while remaining true to the principle of private-sector-led innovation, in terms of methods of resolving disputes and issues of credibility with information.
- It is necessary to continue studying approaches to personal information from the perspective of resolving social issues such as the smooth flow of information in disasters.
- It is necessary to continue studying approaches to “network neutrality,” including the impact of the growth of cloud services, in the interest of ensuring fair competition between applications in the upper layer and networks in the lower layer.
- It is necessary to further promote ties with other countries with continuing to eye international expansion of the ICT industry, on such issues as fighting global cyber attacks and to foster international consensus on cloud services, including the application of legal systems on the distribution of data that crosses national borders.

ICT Master Plan for Reconstruction from the Great East Japan Earthquake

- Basic Policy**
- In view of successfully reconstructing the Tohoku region and revitalizing Japan as the driving force of the reconstruction, actively promote five pillars: ①strengthening the resilience of ICT infrastructures against disaster, ②reconnecting and strengthening bonds in the region through ICT, ③generating new businesses through ICT utilization, ④contributing to overcoming energy constraints through ICT, ⑤strengthening international cooperation and collaboration in the ICT Field, and ⑥ promoting R&D in the ICT Field, which is closely-associated with the other pillars
 - Based on the above, assist through intensive support measures for reconstruction of the Tohoku region

1. Strengthening Resilience of ICT Infrastructures against Disaster

2. Reconnecting and Strengthening Bonds in the Region through ICT

3. Generating New Business through ICT Utilization

4. Contributing to Overcoming Energy Constraints through ICT

5. Strengthening International Cooperation and Collaboration in the ICT Field

6. Promoting R&D in the ICT Field

Intensive Support Measures for Reconstruction of the Tohoku Region

➤ New Town Development by ICT Utilization

➤ Integrated Assistance for ICT Hardware, Software, and Personnel

➤ Creation of New ICT Bases in the Tohoku Region

➤ Generation of New Business Using Radio Spectrum

➤ Assistance for Introduction of Green ICT in Homes and Offices