

Section 4 **System Reform toward Promotion of Science, Technology and Innovation**

1 System Reform toward Promotion of Science, Technology and Innovation

(1) Establishing a strategic council to overcome critical problems

In March 2012, CSTP established the recovery and restoration strategy project team, the green innovation strategy project team and the life science innovation project team under the Expert Panel on STI Policy Promotion.

These project teams were established as a forum in which a wide range of relevant experts, including those from industry, could collaborate with each other to address the nation's critical issues and to achieve innovation. This was deemed necessary because isolated results alone from R&D in each field had not been linked to the solution of social issues by the time of the 3rd Science and Technology Basic Plan. The project teams drafted action plans and discussed needed systemic reforms; including deregulations, system reforms, deployment acceleration, in order to formulate comprehensive strategic plans covering all aspects from R&D to systemic reforms. Following completion this work, the project teams were disbanded.

In September 2013, an Expert Panel on Key Issues was established to critically survey and examine current key issues and future issues listed in the FY2013 Action Plan as specified by the CSTP and the Comprehensive STI Strategy. The goals were to secure promotion of problem-solving based policies of the 4th Basic Plan and to provide additional relevant issues to the FY2013 Action Plan.

Committees under the expert panel were organized by the science fields specified by Chapter 2 of the Comprehensive STI Strategy, three strategic project teams: energy strategy project team, next-generation infrastructure, recovery and revitalization strategy project team and regional resource strategy project team, and three working groups: environment working group, nanotechnology and material working group and ICT working group.

(2) Strengthening industry-academia-government “knowledge” network

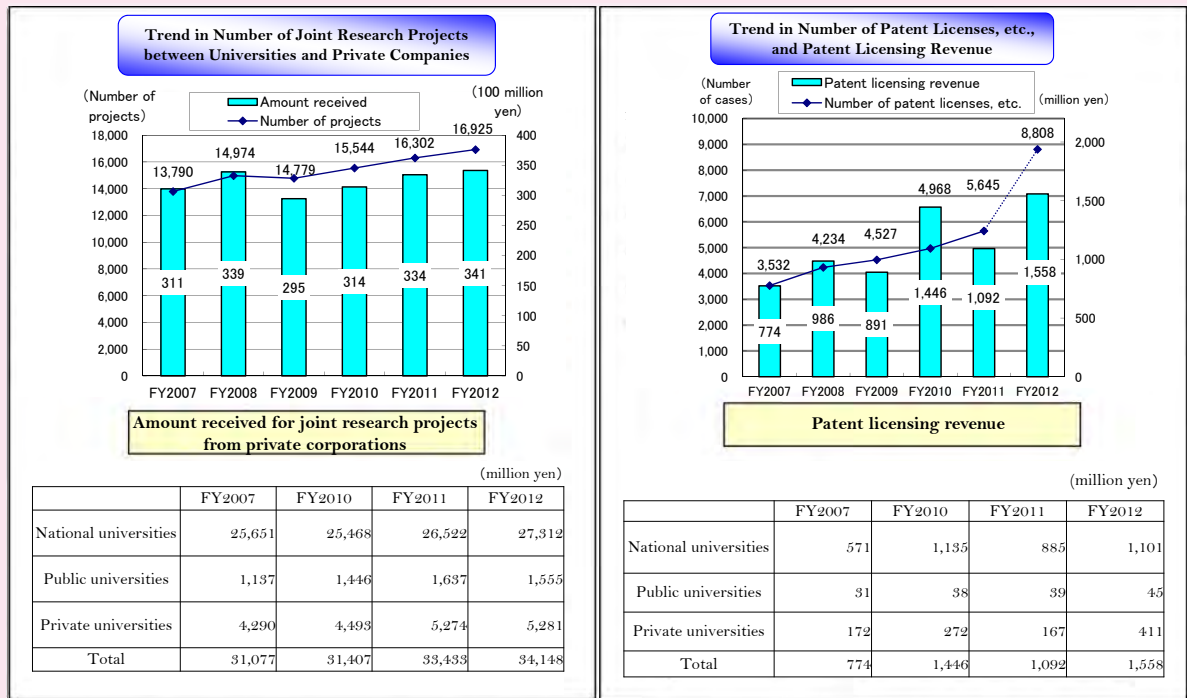
Innovation drives Japan's economic growth. In order to link high-quality research results of universities and public institutions with innovations, it is necessary to strengthen the industry-academia-government “knowledge” network. The following provides the situation of current industry-academia-government collaborations and the government's efforts to strengthen that collaboration.

1) Current status of domestic and international industry-academia collaborative activities

(i) Status of industry -academia-government collaboration at universities

Since transformation of national universities into independent administrative agencies in April 2004, cooperative industry-academic-government activities have been increasing. In FY2012, “the number of the collaborative research activities” between universities and private corporations was 16,925 (a 3.8% increase over the previous year) and “the amount received for joint research from private corporations” was about 3.41 billion yen (a 2.1% increase over the previous year). In contrast to FY2007, “the number of the cooperative research activities” increased by approximately 1.2 times, and “the number of the patent licensing” reached 8,808 (Figure 2-2-9).

Figure 2-2-9 / Transition in Achievement of Cooperative Research at Universities



- Notes: 1. Subject: National, public and private universities
 2. The term "Universities" indicates universities, junior colleges, technical colleges and inter-university research institutes.
 3. The number of patent licenses denotes the number of patents which have been licensed or transferred (patent at the stage of "to be received" included).
 4. The broken line is used for the FY2012 survey because the survey renewed the method of counting the number of PTC* licensing applications for those licenses was granted during transition period of relevant counties. *Patent Cooperation Treaty: Licensing an international patent effective in all of the PCT member counties for a patent licensing application that is submitted to one of the member countries.
 5. "Total" amount and "total of intermediate total of national, public and private universities" amount may not match because any amount less than 1 million yen

Source: Implementation Status of Industry-Academia-Government Collaborations at Universities (2012), MEXT (as of December 13, 2013)

(ii) Activities of the Technology Licensing Organization (TLO)

TLO¹ is an organization providing enterprises with licenses of patents from research at universities, in exchange for licensing fees from the enterprises, and it returns the fee to the university or researcher / inventor as research funding.

As of March 1, 2014, 38 TLOs had been approved by MEXT and METI under the "Act on the Promotion of Technology Transfer from Universities to Private Business Operators" (Act No. 52 of 1998). In FY2012, the number of patent licenses reached 3,105.

2) Effort to expand industry-academia-government collaboration

(i) Development of industry-academia-government collaboration system at universities

MEXT has been implementing programs to improve the environment for universities and other institutions to independently and sustainably develop industry-academia-government collaboration. At universities, industry-academia-government collaboration systems have been comprehensively managed

1 Technology Licensing Organization

by experts. These systems are lead by the vice president and have a pan-academic and cross-sectional headquarters in which the sections of industry-academia collaboration and intellectual properties are unified. As of April 1, 2013, 235 universities have established industry-academia-government collaboration headquarters. Industry-academia-government collaborations have become rooted in Japan.

In order to create innovation through industry-academia-government collaboration, it is important to utilize and strengthen systems at universities. Since FY2013, MEXT has been assisting universities for their open innovation through interactive workshops designed for fusion of various fields and acceptance of diverse ideas. (Opportunities to work out new ideas through communications among participants form different fields, business and sectors.)

METI is collaborating with MEXT on verification projects for the evaluation model and the industry-academia-government collaboration centers model. METI is also developing models to reform systems for promoting; the use of an objective evaluation model of the PDCA cycle for industry-academia collaboration activities, to establish rules for intellectual property rights use between business and university and to increase the mobility of researchers at the industry-academia collaboration centers of leading universities. In addition, METI provides support for industry-academia collaboration activities that are implemented as a verification project for developed models.

The Japan Patent Office has sent “university network IP advisors” (university intellectual property management experts) to wide-area networks configured by multiple universities, through the National Center for Industrial Property Information and Training (INPIT), in order to develop university IP management systems and to enhance IP management function in accordance with the development of industry-academia-government collaboration.

MIC is promoting cooperative industry-academia-government R&D and holding demonstration tests using the New Generation Network Testbed (JGN-X) that has been developed and managed by the NICT (Refer to Part 2, Chapter 3, Section 1, 2 (2)).

Through The Regional Support Coalition of Industry-Academia Collaborative Activities, MAFF has allocated coordinators (agriculture, forestry and fisheries and food industries experts) across the country to collect research seeds and to support research planning.

(ii) Enhancement of R&D through industry-academia-government collaboration

JST is promoting three programs: 1. The Adaptable & Seamless Technology Transfer Program through Target-Driven R&D (A-STEP), which seamlessly supports from the discovery of prospective technological seeds in universities and public research institutes through to commercialization; 2. The Strategic Promotion of Innovative R&D (S-Innovation), which supports R&D carried out under themes selected among excellent research outputs in academia and aims to create the foundations of new industries ; and 3. The Collaborative Research Based on Industrial Demand, which supports basic research in academia that could resolve technical challenges common in industry. In addition, JST launched the Next Generation Technology Transfer Program (NexTEP) in order to support private corporations which are working on commercialization of universities’ research outputs in the near-to-mid-term. NexTEP aims to ensure that universities’ innovative technology can benefit society and to contribute to future innovation.

3) Promoting development of industry-academia-government network

To promote development of industry-academia-government networks, it is essential to raise shared awareness between industries and academia. Japan is bringing together people from private corporations and universities throughout the country and attempting to match them up through forums with open lectures and seminars. In order to share information, universities are disclosing their achievements by means of workshops, publication of journals and annual reports, presentation of research papers at conferences and in academic journals as well as patent disclosures. Major efforts by the country:

(i) The 11th Award of Winners Contributing to Industry-Academia-Government Collaboration (FY2013)

At Innovation Japan 2013 - Universities exhibition of technology and business matching 14 outstanding achievements that contributed greatly to industry-academia-government collaboration were awarded by the Prime Minister and other ministers (Table 2-2-10).

Table 2-2-10 / Award Winners Contributed to Industry-Academia-Government Collaboration

Award	Project	Winner
Prime Minister's Award	Research and practical application of 100 gigabit high-speed optical transport system technology	NEC Corp. Fujitsu Ltd. Mitsubishi Electric Corp. Kazuro KIKUCHI, Professor, Department of Electrical Engineering and Information Systems, Graduate School of Engineering, University of Tokyo
Minister's Award, Ministry of State for Science and Technology Policy	Development of fingolimod for the treatment of multiple sclerosis	Kenji CHIBA, Director, Advanced Medical Research Laboratory, Research Division, Mitsubishi Tanabe Pharma Corp. Tetsuro FUJITA, Professor Emeritus, Kyoto University Shigeo SASAKI, Director of Development, Taisho Technos Co., Ltd.
Minister's Award, MIC	Practical application of network speech translation technology	Eiichiro SUMITA, Director, Multilingual Translation Laboratory, Universal Communication Research Institute, NICT Teruji KOBAYASHI, President, Feat Ltd. Makoto NATSUME, President & CEO, Narita International Airport Corp.
Minister's Award, MEXT	Development of a tailor-made-hyper precision operation simulator for training of intravascular surgery	Toshio FUKUDA, Professor Emeritus, Nagoya University; Professor Meijo University Seiichi IKEDA, President, Fain Biomedical Ltd. Fumihito ARAI, Professor, Nagoya University
Minister's Award, MEXT	Development of a mass production process of a rare metal-free LiFePO ₄ cathode	Shigeto OKADA, Associate Professor, Institute for Materials Chemistry and Engineering, Kyushu University Naoki HATTA, Chief Engineer, Chiba Technology Center, Research and Development Headquarters, Mitsui Engineering and Shipbuilding Co., Ltd. Kazuo ABE, Director, LIB Materials Dept., Machinery & Systems Headquarters, Mitsui Engineering and Shipbuilding Co., Ltd.
Minister's Award, MHLW	Development of a drug discovery database for "Neglected infectious tropical diseases"	Yutaka AKIYAMA, Professor, Graduate School of Information Science and Engineering, Tokyo Institute of Technology Kiyoshi KITA, Professor, Department of Community and Global Health, Graduate School of Medicine, University of Tokyo Tropical Diseases Research Team, Astellas Pharma Inc.
Minister's Award, MAFF	Development of Benifuki green tea with a high content of methylated catechin and its application to external preparations	Mari YAMAMOTO (MAEDA), Head, Food Function Research Lab., National Food Research Institute, National Agriculture and Food Research Organization (NARO) (Former affiliation: NARO Institute of Vegetable and Tea Science (NIVTS)) Shingo YANO, Director of Product Development, Bathclin Corp.
Minister's Award, METI	Trail coin laundry - MEMS development open platform to provide rich know how and facility	Kentaro TOTSU, Associate Professor, Micro System Integration Center, Tohoku University Koji HONMA, President, Mems Core Co., Ltd.

Minister's Award, METI	Development and practical application of innovative drug discovery technology using microdose clinical study	Yuichi SUGIYAMA, Head of Sugiyama Laboratory, RIKEN; Professor Emeritus, University of Tokyo Mutsumi FUKUDA, President, Sekisui Medical Co., Ltd. Shinji YAMASHITA, Professor, Faculty of Pharmaceutical Sciences, Setsunan University
Minister's Award, MLIT	Development of a real-time ground liquefaction judgment device (Piezo Drive Cone)	Yosuke OHYA, Earthquake and Structural Dynamics Group, Port and Airport Research Institute Shunichi SAWADA, Vice-Director, Geotechnical Analysis Dept., Engineering Headquarters, Oyo Corp. Takahiro SUGANO, Director for Special Research, Port and Airport Research Institute
Minister's Award, MLIT	Real-time observation of torrential rainfall with X-band MP radar	River Department, NILIM Masayuki MAKI, Research Affiliate, NIED Tadashi YAMADA, Professor, Faculty of Science and Engineering, Chuo University
Minister's Award, MOE	Development of high-efficiency wind turbine using wind-lens turbine technology	Yuji OHYA, Director, Research Institute for Applied Mechanics, Kyusyu University Takashi KARASUDANI, Associate Professor, Research Institute for Applied Mechanics, Kyusyu University Takanori UCHIDA, Associate Professor, Research Institute for Applied Mechanics, Kyusyu University Hideki NISHIMURA, Development Dept., Riamwind Co., Ltd.
President's Award, Japan Economic Federation	Establishment of TPEC, vertical industry-academia collaboration research body	AIST Fiji Electric Co., Ltd. Ulvac Inc.
President's Award, SCJ	Practical application of a high efficiency ultraviolet laser light source (CLBO wavelength converter)	Takatomo SASAKI, Professor Emeritus, Osaka University; Specially Appointed Professor, Photon Pioneers Center, Osaka University Yusuke MORI, Professor, Osaka University Yukikatsu OKADA, President, Kogakugiken Corp

(ii) Innovation Japan 2013 – Universities, exhibition of technology and business matching (August 29 and 30, 2013)

MEXT and METI, in cooperation with JST and NEDO, held “Innovation Japan 2013 - Universities exhibition of technology and business matching”, which was Japan’s largest matching forum, with people gathering from universities, public research institutions and private corporations. This forum aims to actively return cutting-edge research achievements from academia to society.

(iii) Agribusiness Creation Fair (October 23–25, 2013)

In cooperation with the relevant ministries and institutions, MAFF holds the “Agribusiness Creation Fair” every year. The objective is to exhibit technology seeds from private corporations, universities, public experimental research institutions and independent administrative institutions, all of which are engaged in

research in the fields of agriculture, forestry and fisheries and food industries, so that they can collaborate with institutions which are in need of technology. In FY2013, the exhibition was held next to an exhibition hall of private corporations promoting industrial use of their new technology. At the fair, 173 institutions from all over Japan exhibited their seeds and about 35,000 people participated. Coordinators acted as go-betweens for the industries and universities, promoting match-ups between participants and visitors. Local agribusiness creation fairs were also held at two locations in Japan, strengthening the industry-academia-government collaboration network at the local level.

(3) Developing platforms for industry-academia-government collaboration

To promote STI effectively and promptly, it is necessary to develop forums at which industry-academia-government can cooperate with each other.

1) Developing centers for the creation of cutting-edge innovation

MEXT has been implementing the Center of Innovation Science and Technology based Radical Innovation and Entrepreneurship Program (COI STREAM) since 2013. In collaboration with JST, MEXT has been organizing and operating large scale R&D centers for industry-academia collaboration at which universities, public research institutions and industries can work together to compete with the world. The centers have been concentrating on industry-academia collaborative R&D that focuses on practical application from the basic research phase to achieve cutting-edge innovations and create new industries.

COI STREAM has set three visions with the aim of realizing a desirable society and way of life within 10 years. They identify innovative challenges to fulfill the visions at centers called "COI sites." At COI sites, universities and businesses make utmost efforts, especially

businesses, to take the lead in the practical application of research results. The goal is to build a large-scale R&D center that is world competitive and where concentrated R&D is conducted by universities and businesses seeking the commercialization of research results (Figure 2-2-11).

In FY2013, MEXT selected 12 COI sites, at which cutting-edge innovate research is conducted by academic-industry collaboration, and 14 trial COI sites for examinations of concepts and element technologies to solve R&D challenges as candidates for future COI sites (Figure 2-2-12).

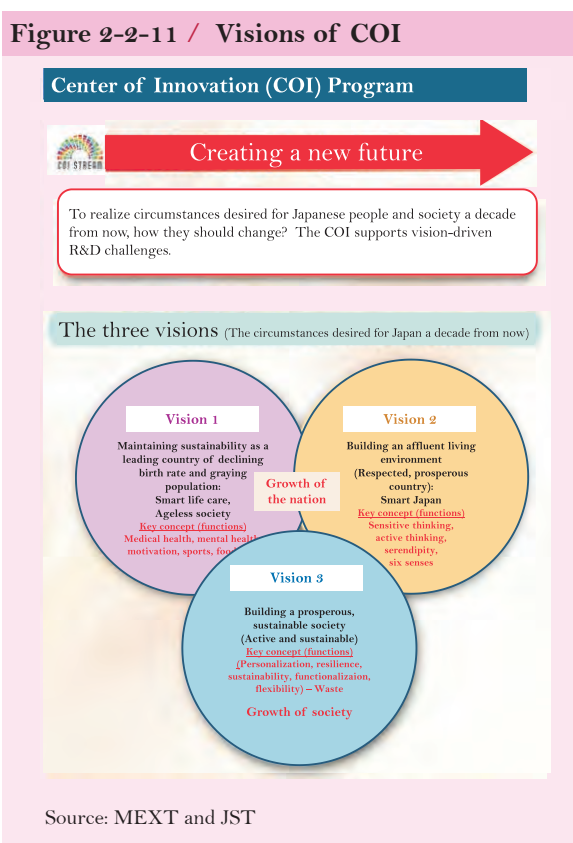
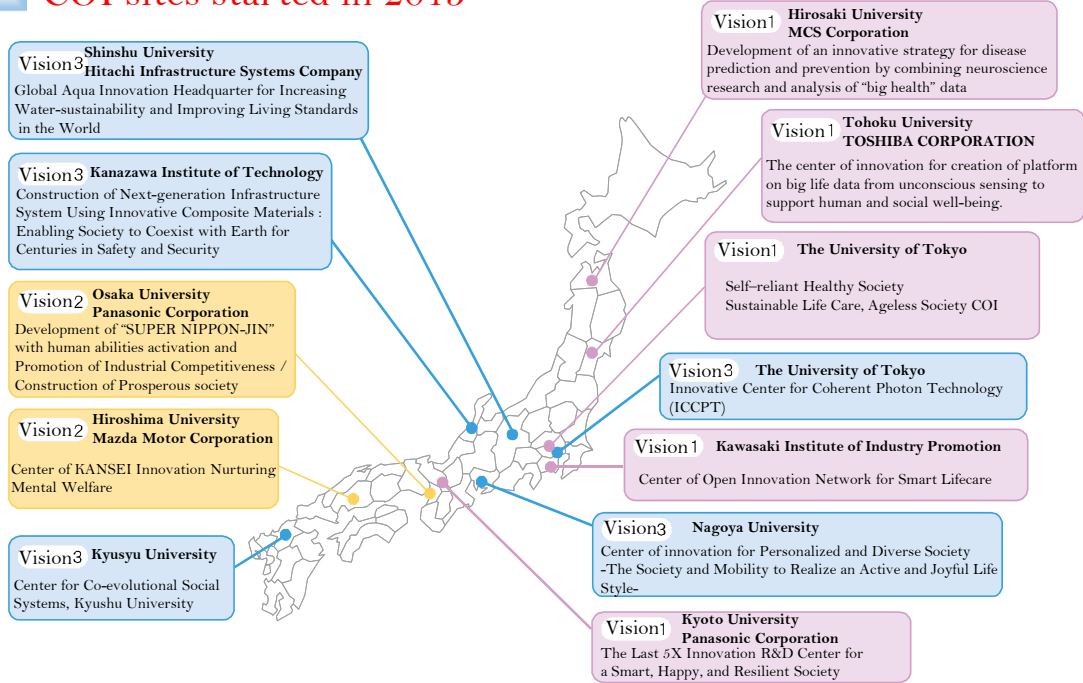


Figure 2-2-12 / COI Sites

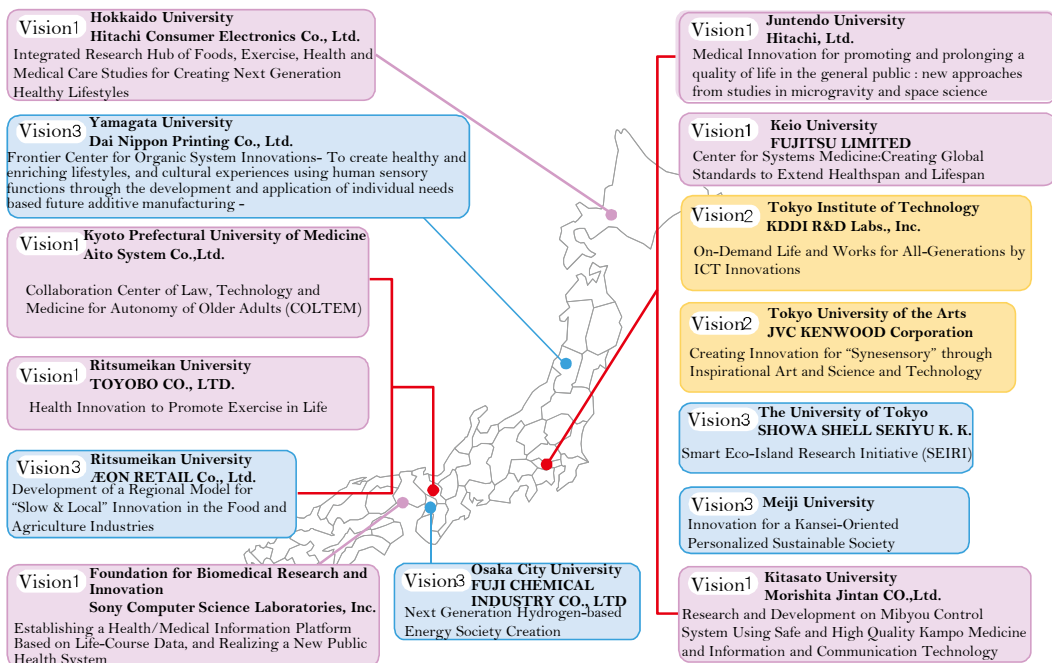
The Center of Innovation (COI) Program

COI sites started in 2013



COI Trial (COI-T) started in 2013

※ These sites were selected on a trial base and expected to be a COI site.



Source: MEXT and JST

2) Developing open innovation centers

(i) Infrastructure development for industrial-academic cooperative activities

METI has been implementing a program for promoting innovation through industry-academia collaboration. For the revitalization and development of the regions hit by the 2011 Off the Pacific Coast of Tohoku Earthquake, the program promotes development of a full-scale open innovation environment that efficiently creates innovations by concentrating the knowledge and expertise of academia and industry, while at the same time creating a framework for the smooth and continuous commercialization of research results.

(ii) Enhancement of Functions in Tsukuba Science City and Kansai Science City

The National Spatial Strategy (National Plan) (Cabinet decision of 2008) has stated, “Universities and national and research and development institutions, including those in Tsukuba Science City and Kansai Science City, are important intellectual/human resources and they are to be utilized to contribute to our nation’s development”.. Based on this statement, Tsukuba Science City and Kansai Science City are working on the following activities.

The Basic Plan has also stated, “International R&D complexes including Tsukuba Science City and Kansai Science City have been improved, but their already accumulated complexes are to be further enhanced functionally.”

a) Tsukuba Science City

Tsukuba Science City has been developed to form a center of R&D and education of the highest level in Japan, away from the congestion of Tokyo. The city has more than 300 research institutes, including 32 national experimental research and education institutes, and has been promoting many governmental plans, such as research exchange and improvement of functions for international research exchange.

On November 12, 2013, the city held a commemoration ceremony to celebrate its 50 year anniversary.

The city has an accumulation of advanced nanotechnology research facilities and human resources. Under the support of the Cabinet Office, MEXT, METI and Japan Business Federation, the four core institutes (Tsukuba University, NIMS, AIST and KEK) served as the major force in organizing a world-class nanotechnology research center and the June 2009 launching of the Tsukuba Innovation Arena (TIA) as the base of industry-academia-government collaboration. In April 2012, the High Energy Accelerator Research Organization (KEK), that possesses the Photon Factory, joined TIA to become the fourth core institute. TIS is promoting the formation of the center to make the most of increased core research domains and core infrastructure. Public relation undertakings, including the TIA Open Symposium held in December 2013, were made to improve the convenience of TIA for participating companies and to increase the number of participating companies.

March 2013, Tsukuba Innovation Arena Collaboration Promotion Office was opened in the new TIA Collaboration Building in AIST Tsukuba West. It is expected to serve as a center for fostering next-generation leaders in nanotechnology and a center for R&D to provide efficient open innovation facilities.

Aiming to foster next-generation human resources in the field of nanotechnology and to create new industries that will lead Japan in the future, the TIA graduate school collaboration project held the Summer

Open Festival in 2013 at the TIA Collaboration Building. It attracted 850 young researchers, including under graduate students, graduate student and business researchers from around Japan. In addition to the Nanoele Course, in FY2013 the Powerele Course and Nano Green Course were held, which gained much attention from industry.

Paralleling these activities as an R&D base open to industry, academia and government, TIA is expanding collaboration networks with private corporations and universities as well as promoting the industrialization of nanotechnology and the development of human resources, by supplying sample materials obtained from projects to user corporations and seeking their feedback for evaluation.

Under the Research and Innovation Promotion Headquarters established in FY2010 to enhance open innovation hub functions and under the Tsukuba Innovation Arena Headquarters established in FY2013, AIST is working on industry-academia-government collaboration while determining the various technological needs of industries and society, exploring technological seeds and promoting R&D projects. Specifically, AIST is promoting activities of TIA-nano, an open innovation hub. AIST has participated with 23 technology research associations as part of an undertaking to form a co-creation platform and also carried out 27 large-scale external funding projects. In addition, AIST held the AIST Open Lab, an event to share the results of its research with business managers, researchers, engineers, universities and public research institutions.

b) Kansai Science City

Kansai Science City is promoting the construction of towns that will play a role as the base for developing the world's culture, science and research, and the nation's economy. As of the end of FY2013, it had about 120 facilities engaged in various research activities.

3) Organizing a co-creation platform under which industry and universities interact through discussions

JST is implementing a program known as the Collaborative Research Based on Industrial Demand. The program is aiming to organize a co-creation platform where dialogs between industries and universities take place in order that universities can identify and engage in basic research for technical issues faced by industries and to accelerate the solution to such issues.

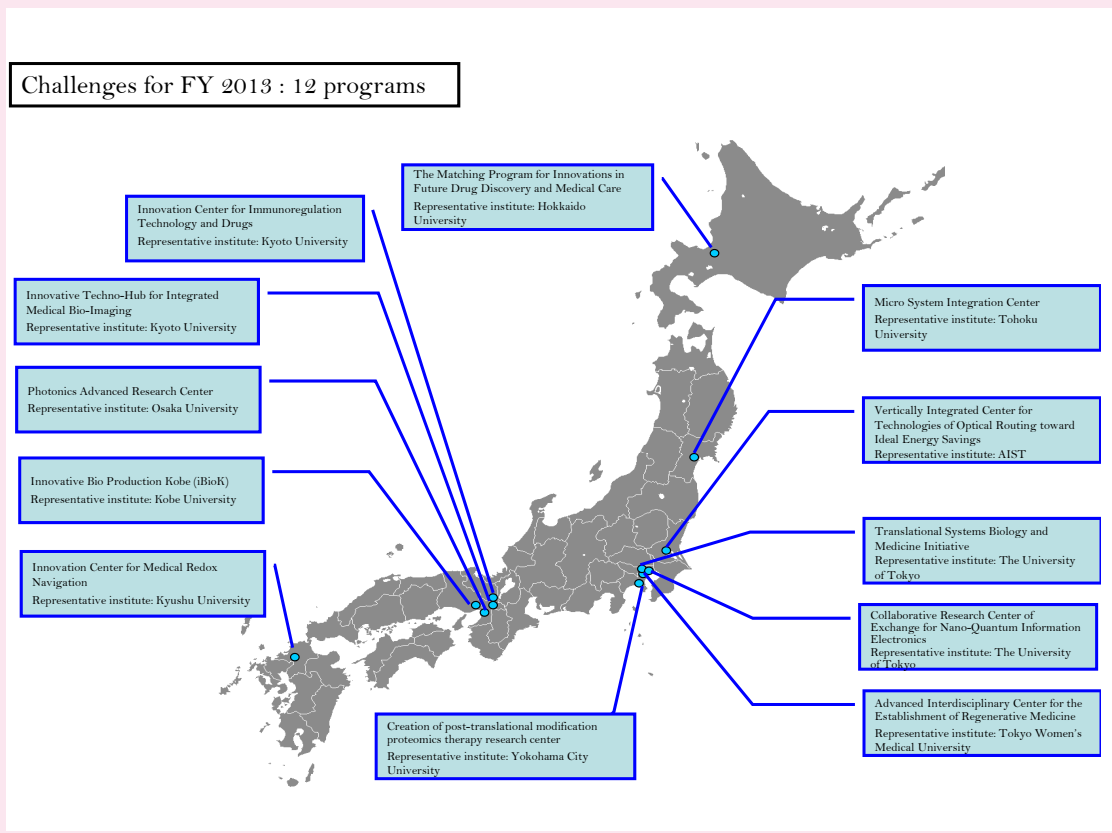
In addition since FY2012, JST has taken up issues faced by the industries in the Tohoku region to promote the creation of research performance for the recovery of the affected regions, in collaboration with the industry organizations (Tohoku Economic Federation, and others) and local governments.

MAFF arranges for coordinators to promote industry-academia co-creative collaboration and hosts local matching forums to support the diffusion of local R&D and technology, so that the people involved in the process, from R&D to its diffusion and industrialization, can work collaboratively toward the same goal.

4) Creation of Innovation Centers for Advanced Interdisciplinary Research Areas

MEXT is promoting the "Creation of Innovation Centers for Advanced Interdisciplinary Research Areas" to support institutions that form the base of R&D, from the first stages to future commercialization under the industry-academia collaboration for advanced interdisciplinary research areas. This is considered important for innovation creation; currently 12 projects have been supported as of FY2013 (Figure 2-2-13).

Figure 2-2-13 / List of Projects being Implemented under the Creation of Innovation Centers for Advanced Interdisciplinary Research Areas



Source: MEXT

2 Construction of a New System for Science, Technology and Innovation

(1) Environmental improvement to support industrialization

To create new industries and jobs to vitalize the economy, it is essential to activate start-up businesses utilizing the results of advanced S&T.

By the end of 2008 approximately 2,000 university ventures had been created across the country as a result of industry-academia-university efforts. However, the number decreased to 69 companies in 2011 compared with 252/year, at the peak in 2004 and 2005. Therefore, MEXT has been promoting an environment of improvement for start-ups by supporting a seamless process from initial stages of R&D to industrialization.

1) Support for university-launched venture companies

MEXT has been implementing the Program for Creating START-ups from Advanced Research and Technology (START) since FY2012. START is a project that supports university research whose findings such as patents and know-how have potential applications in business start-ups. Under this project, the commercializations of technologies that have a high potential to develop large-scale business is supported, using the commercialization know-how of venture capitalists and other private-sector experts. Through

this project, an Innovation Ecosystem that provides an environment in which innovations derived from research is planned to be established in Japan.

MAFF has organized a study group to compile a report on the promotion of interdisciplinary research (August 30, 2013), to proceed with collaborative research with other domains. This is because, in recent years, many cutting-edge technologies that are expected to be applied to the fields of agriculture, forestry and fishery and food have been developed in the medical, information technology and engineering fields.

2) Support for R&D type ventures

RIKEN has established a preferential treatment system for patent licensing to promote the quick diffusion and industrialization of achievements. Venture capitalization is initialized mainly by using RIKEN's research results and certified by RIKEN as useful for diffusion.

In addition, under the “Program for promotion of private-sector commercialization research,” NARO has, taking into consideration market needs and costs, been utilizing various resources, ubiquitous in rural areas, to promote the R&D of private corporations that is in the commercialization stage, toward the sextiary industrialization of rural areas.

3) Support by Small Business Innovation Research System (SBIR system)

Under a small business innovation research system (SBIR system¹) the agencies concerned constantly and jointly support R&D and industrialization in small and medium enterprises that use new technology. To assist R&D for new technology that might produce new small and medium business enterprises, subsidies and commissions have been granted, while several support measures, including reduced patent fees and low-interest loans by the Japan Finance Corporation, have been taken for industrialization. In FY 2013, seven ministries (MIC, MEXT, MHLW, MAFF, METI, MLIT, and MOE) designated 113 special subsidies in all, and earmarked about 45.5 billion yen as expenditures for small and medium enterprises.

(2) Regulations and systems to accelerate innovation

R&D activities are sources for the creation of new “knowledge” as well as the creation of new industries and new markets through innovations, thereby strengthening Japan's sustainable development and global competitiveness. Although regulations and systems have been established for the promotion of safe and smooth R&D, they could potentially impede innovation due to excessive strictness. The Japanese government established a system of the National Strategic Special Zones. It is positioned as the break-through point for reforming regulations and systems under the Japan Revitalization Strategy. In addition, the conventional Comprehensive Special Zone System and other special zone systems are expected to be increased. These systems are expected to accelerate innovations.

(Undertakings for the National Strategic Special Zones)

As the impetus for changing the Japanese economy by the drastic reform of regulations and systems, the main task of the system of the National Strategic Special Zones is to prompt structural reform of Japanese socioeconomy. The system aims to strengthen the international competitiveness of Japanese industries and

¹ Small Business Innovation Research

to form centers of international socioeconomic activities. The National Strategic Special Zones Law (Act No. 107, December 13 of 2013). Under this law, the Prime Minister serves as the chair and five ministers and five experts as members. A Steering Committee for the National Strategic Special Zones has been established to move the undertakings toward implementation of the system by setting basic policy.

(Efforts for the Comprehensive Special Zone System)

The government has carried out the first to the fourth designations and selected seven areas for the Comprehensive Special Zones for International Competitiveness to form industrial and functional clusters that will become the engine of Japan's economic growth. It has also selected 41 areas as Comprehensive Special Zones for Local Revitalization to strengthen local power through local vitalization with maximum use of local resources.

Of the areas that were selected as comprehensive special zone for international competitiveness, "Tsukuba" has numerous advanced research centers and Japan's largest international R&D base. However, Tsukuba has problems, such as research results not being directly linked to the creation of new business or new industry and also few instances in which institutions worked together toward the same goals and toward the creation of new projects and industries. To solve these issues and to promote life innovation and green innovation, Tsukuba is planning to utilize the benefits of designation for comprehensive special zone promotion, such as more extensive inter-organizational personnel exchange beyond industry-academia-government barriers.

(3) Development of a regional innovation system

To promote efforts to solve various issues at the local level and to vitalize local areas with S&T power, it is important to utilize the merits, diversity, uniqueness and originality that each area possesses. The agencies concerned have constructed mechanisms to jointly support local efforts so that each area can utilize its unique merits and characteristics for S&T activities. These efforts are intended to make local areas powerful through local STI, and to recover from the GEJE, eventually leading to Japan's upgrade and diversification in S&T and to strengthening of industrial competitiveness.

In FY2011, to promote local area innovation, MEXT, METI and MAFF selected regions having proactive and high quality concepts laid out by local governments, universities' research institutes, industry and financial institutions, as Regional Innovation Strategy Promoting Regions. They developed support systems to assist in a seamless process from the research to the industrialization stage by mobilizing all the policies of the agencies concerned. In addition, since FY2012, three ministries of the Reconstruction agency, MEXT, METI and MAFF have been supporting earthquake affected regions that have conceived independent and high quality concepts through industry-academia-government collaboration. They are called the GEJE Recovery Support-type of Regional Innovation Strategy Promoting Regions and are supported with an aim to creating local area innovation by utilizing local areas' advantages and resources.

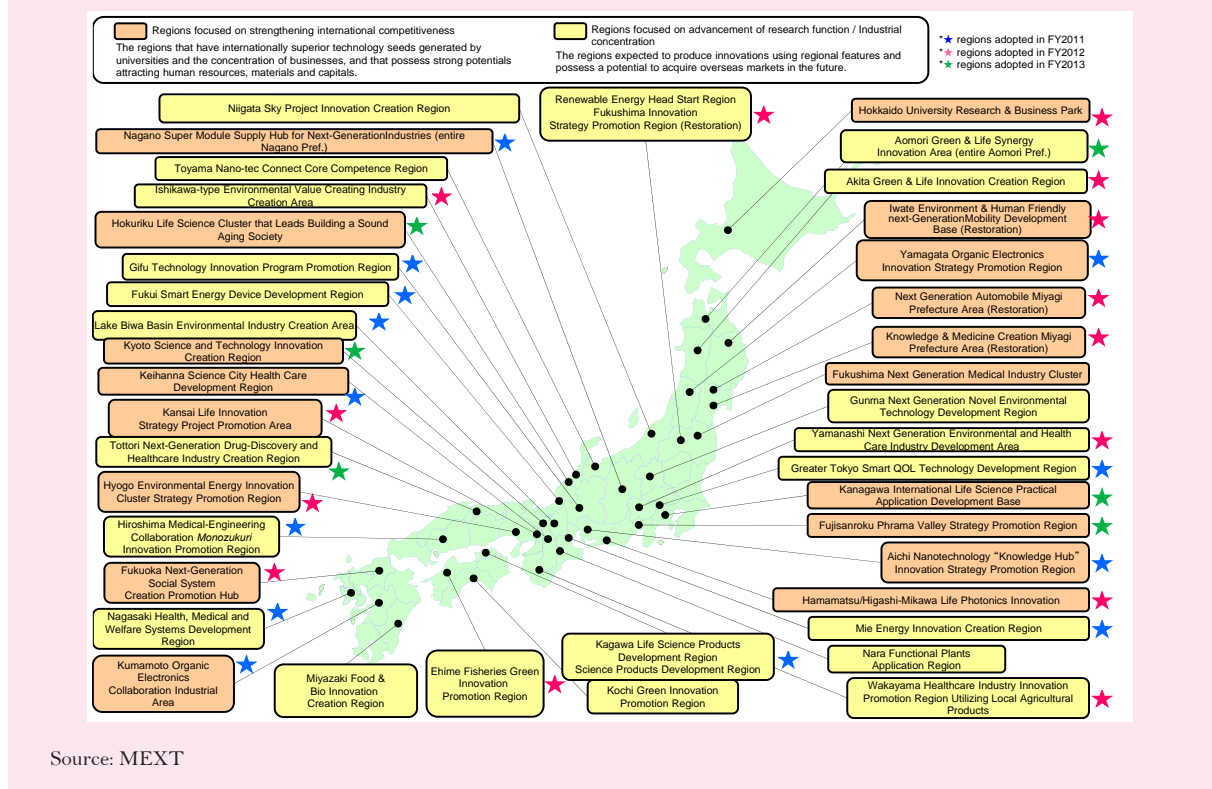
In FY2013, following up on FY2012, these three ministries selected eight Regional Innovation Strategy Promoting Regions. Four of them were designated, "Regions Focused on International Competitiveness" having strong potential to attract manpower, goods and money from abroad because of the technology seeds of internationally superior universities and a cluster of industries. Four of them were designated,

“Regions Focused on Advancement of Research Function/Industrial Concentration,” having the potential to capture overseas markets in the future, with the expectation of innovations through the utilizing the area’s property. This represents a total of 40 regions: 15 “Regions Focused on International Competitiveness,” 21 “Regions Focused on Advancement of Research Function/Industrial Concentration” and 4 GEJE Recovery Support-type of Regional Innovation Strategy Promoting Regions.

1) Ministry of Education, Culture, Sports, Science and Technology (MEXT)

Within the Regional Innovation Strategy Promoting Regions, MEXT has been supporting 33 regions which are expected to contribute greatly to the Science, Technology and Innovation Strategy in local areas in terms of the development of intellectual property and human resources. Regarding the “GEJE Recovery Support-type of Regional Innovation Strategy Promoting Regions,” MEXT has been supporting efforts intended to construct mechanisms for sustainable and developmental innovations (Figure 2-2-14).

Figure 2-2-14 / Regions in which Innovation Promotion Strategies have been supported: List of Regions selected in FY2013

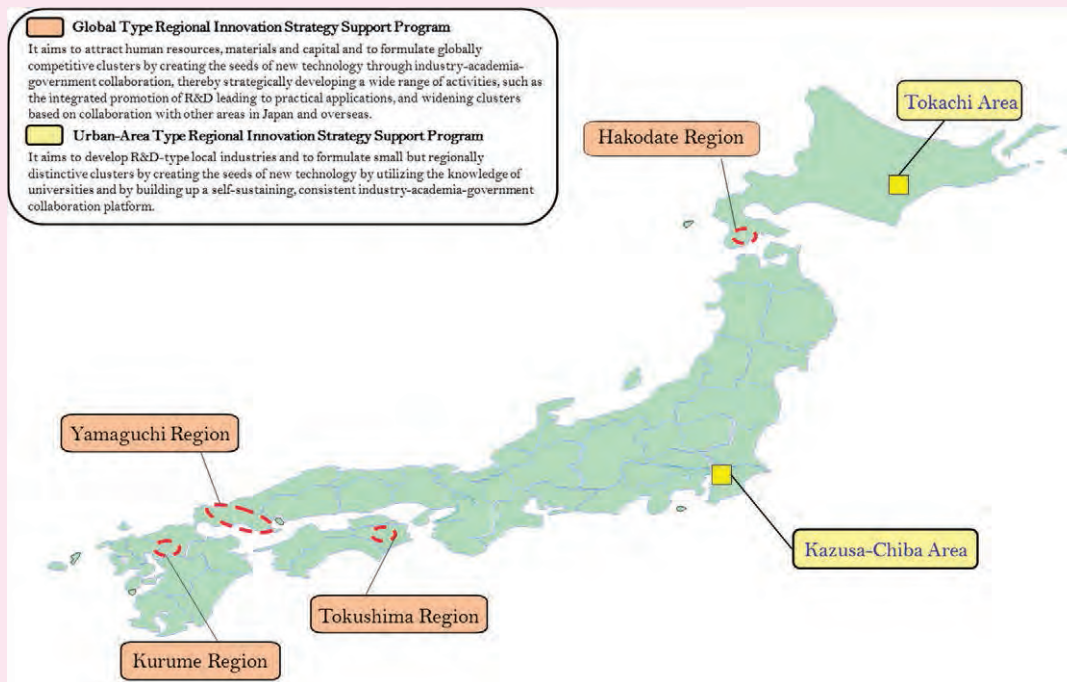


Source: MEXT

Under the Regional Innovation Strategy Support Program¹, MEXT supported 6 regions across the country which have been making efforts through the Knowledge Cluster Initiative, continuing the development of earlier work to construct regional sustainable clusters (Figure 2-2-15).

¹ MEXT’s “Knowledge Cluster Initiative” is a project to stimulate local economies with the formulation of “Knowledge Clusters” under local initiative. A knowledge cluster is a technology innovation system that consists of core public research institutes, such as universities, with their own R&D themes and potential, along with various parties, including enterprises within and outside the region under local initiative. This project started in FY 2002.

**Figure 2-2-15 / Regional Innovation Strategy Support Program
(Regions where the Program is Ongoing)**



Source: MEXT and JST

In addition, MEXT is implementing Creating Local Activate Human Resources Fostering Institutions that promotes social system reform and R&D together. Under the program, support is provided for undertakings by regional universities to form the basis for fostering excellent human resources that will contribute to the region. This is done by utilizing the university's uniqueness and characteristics, in cooperation with the local government and private business operators. As of FY2013, MEXT is promoting this approach in 18 sites that serve local vitalization using S&T.

To support regional innovation, JST implements a funding program, the Adaptable Seamless Technology Transfer Program through Target-Driven R&D (A-STEP), which provides the thorough assistance of S&T coordinators. In a seamless and comprehensive manner, A-STEP supports R&D from the discovery of technological seeds in academia to the commercialization of those seeds.

For the revitalization of the regions hit by the earthquake, MEXT, in conjunction with the Tohoku Economic Federation and local governments, has been supporting industry-academia collaborative research by using "connoisseurs of technology" and assisting research which could resolve issues that local industries wish to address.

2) Ministry of Internal Affairs and Communications (MIC)

For "the promotion of local industries through ICT R&D" under the Strategic Information and Communications Research and Development Promotion Program, MIC is promoting industry-academia collaborative research of ICT that will contribute to the creation of new local industries, promote local industries and vitalize local society.

3) Ministry of Agriculture, Forestry and Fisheries (MAFF)

Under “the program for promotion of science and technology research on agriculture, forestry and fishery and food” MAFF has set research topics that could lead to local vitalization using free ideas and the solution of issues faced by manufacturers, to promote cooperative industry-academia-university R&D led by prefectural experimental research institutions and local universities. It is specifically supporting the research of local innovation strategies. In addition, MAFF has allocated industry-academia-university collaborative coordinators nationwide who are experts of agriculture, forestry and fisheries and food industries, in order to promote R&D in local industries through support for preparation of research planning.

4) Ministry of Economy, Trade and Industry (METI)

METI has been conducting "the program for subsidizing creation of innovation by regional small- and medium-sized enterprise" to support verification studies that are collaboratively conducted by local small- and medium-sized businesses as the core, along with universities and other public research institutes. The program aims to promote the excellent practical application of technology created in the region through building an optimum combination of expertise and resources of small- and mid-size businesses, academia and government in order to contribute to the creation of new industries.

Tsukuba Center and the other eight local centers of AIST have been designated either as research bases, where the world highest level research are led in response to regional peculiarity or needs, or as collaborative bases, where AIST bridges its own technologies to local industries. This designation allow AIST to play the role of open innovation hub and to tackle vitalization of local industries through technological support for, joint research with or accepting human resources from SMEs, local universities and organizations. The Fukushima Renewable Energy Institute has been established in Koriyama city, Fukushima Prefecture.

(4) Promoting an intellectual property strategy and international standardization strategy

It has been a decade since enactment of the Intellectual Property Basic Act in March 2003. The circumstances concerning intellectual properties have greatly changed due to the growth of emerging countries, globalization of business environment and progress in ICT introduction in society.

The cabinet decided the Basic Policy Concerning Intellectual Property Policy in June 2013 to cope with current circumstances. The policy envisions the changes in the coming ten years and has set a goal to become the most advanced nation in the world in the area of intellectual property within that decade. Based on the basic policy, the Intellectual Policy Strategy Headquarters made the Intellectual Property Policy Vision, listing detailed policy issues. In order to ensure that domestic innovations will lead to a rise in the industrial competitiveness of Japan, the measures include following: 1) reviewing the system for employee inventions under the patent law, 2) protecting trade secrets, 3) improving the patent application review system in order to become the world fastest and highest quality patent examination system and 4) improving the support system to strengthen the intellectual property strategy of small and medium sized enterprises and venture companies.

The measures addressing the issues specified by the vision have been steadily progressed lead by the headquarters.

1) Building up a global intellectual property system to enhance industrial competitiveness

The Japan Revitalization Strategy has determined the necessity to drastically strengthen Japan's standardization strategy through promotion of a "top standard system" and other measures.

METI has been promoting the international standardization strategy through the combined efforts of the government, public and private sectors in order to raise the competitiveness of Japanese businesses in the internationally, resulting in the and eventual growth of the Japanese economy.

To this end, the "top standard system" was established in June 2012. Under this system, the Japanese Industrial Standards Committee (JIS) directly and swiftly examines drafts for international standardization proposed by major businesses that compete internationally. The system is leveraged to establish two technical committees of international standardization organizations whose secretariats are in Japan (Electrical Energy Storage System (IEC) and Fine Bubble Technology (ISO)). In addition, the following standards proposed by Japan were established: 1) Test methods to evaluate the joint performance of structures made from plastics and metals; 2) "High-performance ropes for mooring offshore petroleum oil - drilling ships; and 3) "Urine-absorbing aids -- Basic principles for evaluation of single-use adult-incontinence-absorbing aids from the perspective of users and caregivers"

The Standards Board of JIS approved promotion of a "high level JIS" in May 2013 by adding classifications to some of the current standards to enable proper evaluation of products that have higher levels of performance and quality than those called for by the current standards of JIS. This will allow for the proper distinguishing of quality and performance for high-performance materials and products in the fields in which Japanese manufacturing industries are strong.

Based on the "State of Standardization Policy in the Information and Communications Field, reported by the Information and Communications Council in July 2012, MIC is promoting standardization of smart-grids, digital signage¹, and next-generation browsers in the International Telecommunication Union (ITU²) and forums.

A conference of Study Group 16 (SG16) of ITU-T, the telecommunication standardization section of the International Telecommunication Union, was to be held in Sapporo in June 2014. The task of SG16 is to discuss standardization of image coding and digital signage methods.

Water supply has been included as one of the specific strategic fields for international standardization, so MLIT and MHLW are promoting its strategic international standardization under the IP promotion plan to ensure that Japanese corporations launching water supply and sewerage system businesses in the global market can achieve high-competitiveness. Currently, these two ministries are actively participating in the Asset Management Area (ISO/TC224WG6& ISO/PC251) and the Crisis Management Area (ISO/T224WG7) to lay out policies for ISO International Standards.

Establishment of the Project Committee on Wastewater Reuse for Irrigation (ISO/PC282) was lead by MLIT as the first ISO committee for Japan to serve as the secretariat in water related fields. The first meeting was held in Tokyo in January 2014. The committee has been working toward ISO standardization as it relates to recycled water and use of recycled water in urban areas.

¹ Digital signage is a system that transmits information using electric displays in the locations such as outdoors, store front, public space and transportation facilities

² International Telecommunication Union

2) Review of IP systems and improvement of IP activity-related systems

In response to changes in the world innovation environment, the relevant authorities are promoting the following approaches to develop and implement international standardization strategies, review IP systems, and improve IP activity-related systems.

(i) Japan Patent Office (JPO)

a) Promotion of global IP initiative

In the midst of growing economic globalization and open innovation, JPO is promoting the Global IP Initiative (laid out by JPO in July 2011) to incrementally improve global IP infrastructures, so that Japanese companies can smoothly engage in business internationally. Currently, JPO is implementing, along with 28 other countries (as of March 2014), the “patent prosecution highway (PPH¹)”. This will allow patent applicants, whose patents have first been determined to be patentable, to apply for early examination in other countries. In addition, JPO is promoting environmental improvement, including the use of machine-aided translation to examine patent documents, particularly those from Chinese and Korean.

b) Acceleration of examination system

In response to needs from patent applicants for patent right acquisition timing, JPO is implementing an accelerated examination system under certain conditions. Additionally, they have, since August 2011, been implementing the “Accelerated Examination and Accelerated Appeal Examination to Support Recovery from Earthquake Disasters” to speed the examination of patent applications from people and business facilities affected by the GEJE to allow them to utilize intellectual properties for restoration.

The Act for Special Measures Promotion of Research and Development Businesses etc. by Specified Multinational Enterprises (Act for Promotion of Japan as an Asian Business Center) (Act No. 55 of 2012) was enacted in order to promote activities to attract research and development bases and supervisory bases of global enterprises to Japan. In November 2012, the patents applied as the results of R&D projects approved under the act were, on a trial basis, included in the subject of the acceleration of patents examination system.

c) Collective examination for IP portfolio supporting business activities

As Japanese enterprises have been developing business overseas, the number of patent applications filed from Japan to overseas patent offices. JPO studied a new examination system to meet the needs of patent applications in response to the Global IP Initiative. In April 2013, JPO started a new initiative, titled “collective examination for IP portfolio supporting business activities,” under which it examines applications and grants rights across fields according to the timing of applicants’ business development to support applications for comprehensive intellectual properties. The subject to the new initiative is a group of intellectual rights (patents, design and trademarks) that is associated with domestic and overseas projects.

d) Information services concerning licensable patents and research tools

To expedite the use of IPs, JPO provides information of licensable patents and research tool patents in

¹ Patent Prosecution Highway

the form of a database through the National Center for Industrial Property Information and Training (INPIT).

e) Implementation and publication of a trend survey in technology

There is a call for coordination between R&D strategy and intellectual property strategy to enable utilizing patent information on R&D. Therefore, JPO has comprehensively analyzed technology trends by analyzing “patent application trends” in light of “R&D trends” and “market trends”; publishing the results.

f) Developing and securing human resources

To disseminate IP knowledge, JPO is supporting high-schools and technical colleges that provide practical IP education, through the National Center for Industrial Property Information and Training (INPIT).

(ii) Japan Science and Technology Agency (JST)

JST is making efforts ranging from the discovery of high quality research achievement, through support for patent acquisition, to industrialization. Specifically, the Agency is giving full support to the utilization of intellectual properties through the “Promotion of the Use of Intellectual Property”. This includes: supporting the strategic acquisition of foreign patents by universities through use of their research results, along with clustering of patents; supplying research and test expenses to researchers who want to intensify patents or to acquire additional data for commercialization; offering universities’ patent information free of charge through the Internet (J-STORE); and providing research environments (Science and Technology Commons) where universities’ patents have open availability so as not to restrict other ongoing research.