

Initiatives for IP Strategies Responding to the Fourth Industrial Revolution

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Commissioner**

Japan Patent Office

- 1. Current Status of the Fourth Industrial Revolution and IP Rights**
- 2. Issues for Discussion**
- 3. JPO's Initiatives**

Reference

(Initiatives Undertaken by the JPO in the other area)

1. Current Status of the Fourth Industrial Revolution and IP Rights

The First Industrial Revolution



Watt's steam engine

Steam locomotive

Obtain power (Steam engine)

The Second Industrial Revolution

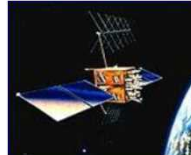


Electrical generator

Bell's telephone

Innovated power (Electric power / Motor)

The Third Industrial Revolution



The Internet

GPS (Global positioning system)

Advanced automatization (Computer)

Toward the Fourth Industrial Revolution

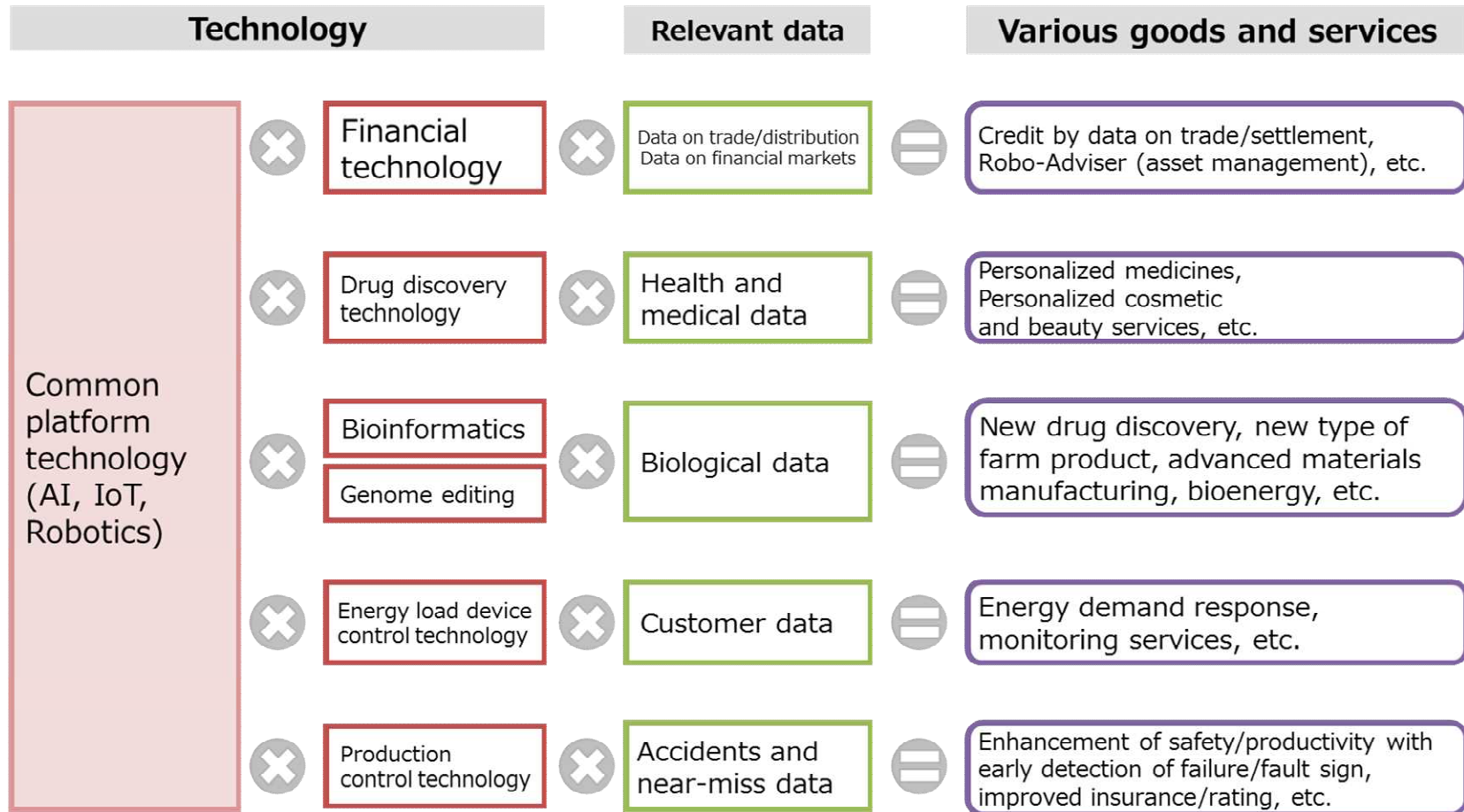
Autonomous optimization becomes available. (Artificial intelligence (AI) thinks by itself by utilizing a large amount of information, so as to take optimal actions.)

Emerging technologies bringing about the Fourth Industrial Revolution = IoT, AI, Big data

Various Services Being Created by New Technologies

Combining base technologies such as AI and IoT with data on specific technical areas will lead to creation new services.

Technologies (Common Platform Technology × Industry Core Technology) × Relevant Data



Source: “Interim report on ‘New Vision for Industrial Structure’ ” by the Industrial Structure Council under the METI

Overview of the IoT (Connections between and among 1 Data 2 IP Rights and 3 Standardization)

2 Examples of Objects of Intellectual Property Rights

(Excluding mere presentation of data and matters agreed upon by parties involved, etc.)

Sensor-Equipped Machinery

Operation Phase

Sensor-Equipped Machinery

3 Examples of Objects of Standardization

Interface

Interface

Communications

Communications

Big Data

Artificial Intelligence (AI)

Data for Learning

Raw Data

Learned Weighted Data

1 Examples of Data

Changes in R&D methods

Tremendous increase of data volume

All kinds of things will be connected via the network

Tremendous increase in number of machinery

Invention-Business

- Self-driving cars;
- Vehicle allocation business; and
- Maintenance services, etc.

Learning Phase

1. Open Technology : Standards $\hat{=}$ Platform

- Being utilized to expand markets
- Licensing standard essential patents (SEPs) under fair, reasonable and non-discriminatory (FRAND) condition

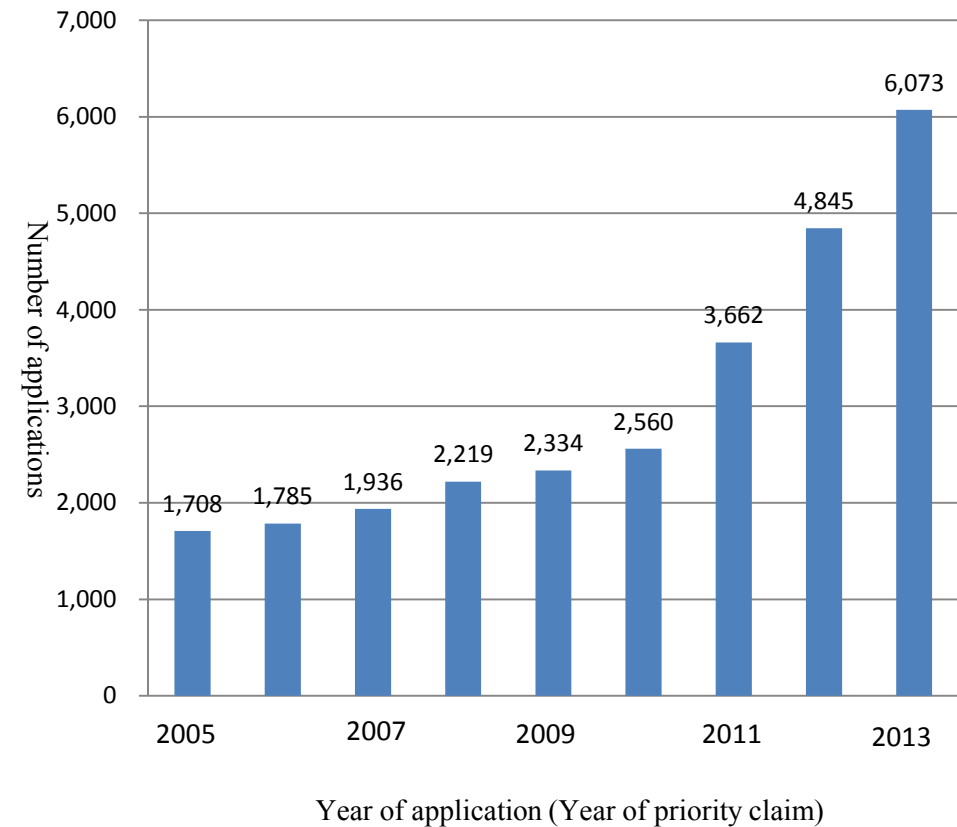
2. Closed Technology : Patents + Trade Secrets

- Gaining profits exclusively in the expanded markets
- Or, being utilized to exclusively collect and analyze data

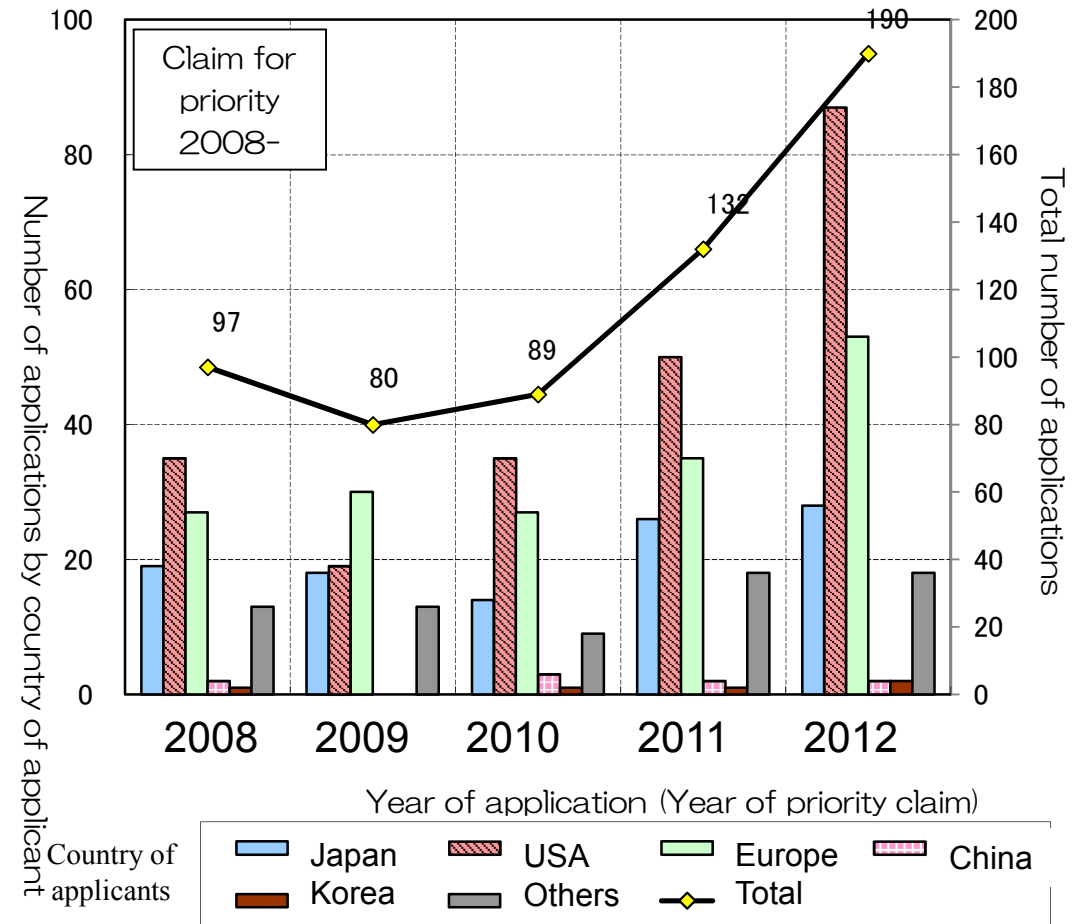
3. Data: At present, no means for comprehensive protection of data as intellectual property (Only partially protected as copyright works, trade secrets, or patents)

- Collecting data (big data), analyzing data (with AI), and obtaining feedback will provide new added value to things.

Changes in the Number of Patent Applications for Total Factory Control (G05B19/418)
(Total number of applications in Japan, U.S., Europe, China and Korea)



Changes in the Number of Patent Applications for Artificial Intelligence (AI) Technologies



2. Issues for Discussion

The JPO, in collaboration with the relevant departments of the Ministry of Economy, Trade and Industry (METI), **set up a committee to discuss the best possible intellectual property (IP) system, in order to deal with the Fourth Industrial Revolution.**

Agenda Items

- (1) Discussion on a system for encouraging utilization of data
 - Discuss system to protect data/database and their related technologies
- (2) Discussion on the best possible IP system to deal with changes in industrial structures
 - How to solve the issue of standard essential patents (SEPs)
 - Give appropriate protection to IP rights to respond to cross-border infringements
- (3) Promote strategic international standardization to respond to the Fourth Industrial Revolution

Schedule

- October 2016 : Set up the committee
- December 2016 : Sort out the points to be discussed
- March 2017 : Prepare Interim report based on the results of the studies

Current Status

- At present, companies don't find any advantages in providing data to others, which they themselves collect;
- No business practices and rules are established, under which data is exchanged without infringing rights of others. Also, no progress has been made in smoothly organizing the relationships between and among rights of concerned parties; and
- In case free rides are easily given to collected databases and developed technologies themselves, no incentives will result in terms of providing and making investments in data.

Study items

■ System to protect databases and related technologies

- Discuss appropriate protection for databases, information protected by encryption, AI, and image analysis technologies: and then, when necessary, consider what a new legal system should be like, based on the protection provided under the current Copyright Act and Unfair Competition Prevention Act, including implementation of measures to prohibit illegal copying.

■ Contract templates for data utilization between companies

- Understand the actual state of data utilization between companies, as well as basic contract, by studying them; and based on the results of the study, discuss what data contracts should be like to promote further utilization of data.

Current Status

- Growing importance of technologies that will be used by cross-industry companies by connecting things through various networks
- Increase in equipment and services, which can be connected across borders through various networks

- Increase in abstract and highly usable rights
- Increase in number of patents per single product
- Complexity in concepts of jurisdiction and governing laws
- Unclear handling of standard essential patents (SEPs)

No change in the importance of acquiring patent rights

⇒ Means to ensure the freedom of business activities

- Administer the working of patented inventions by others
- Matters to negotiate for using the rights of others

Study Items

■ How to solve the issue of standard essential patents (SEPs)

- How the interests of patent rights holders and users should be balanced in terms of patent rights that are essential for manufacturing products that use standards for information and communications technology (ICT)

■ Protection of data structure

- Necessity to indicate ways for determining patentability in patent examinations on data structure

■ Strengthen the global competitiveness of companies by utilizing inventions on business activities

- How the best possible patent portfolio should be established by Japanese companies in the fields of software and business activities, based on utilizing the high level of patent predictability in examining inventions on business activities in Japan

■ Others: Appropriate protection of IP rights to respond to cross-border infringements; response to companies specialized in exercising patent rights; protection of works created by AI; and support for business expansions by SMEs

(3) Promote Strategic International Standardization to Respond to the Fourth Industrial Revolution

Current Status

Under the Fourth Industrial Revolution, **companies as cross-industry groups can be connected by sharing information**. As a result, **discussions are needed to establish a framework for promoting international standardization** in order to enhance the global competitiveness of Japanese companies.

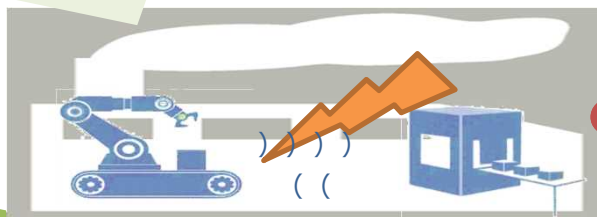
Study Items

- Discuss how to accelerate a cross-industry project, that utilizes a national R&D agency
- Improve the framework for promoting international standardization to enhance the global competitiveness of Japanese companies, in which companies take the lead
- Reinforce collaborative efforts across industry, government and academia to develop human resources for standardization

Example of a Cross-Industry Project that Utilizes a National R&D Agency

In factory:

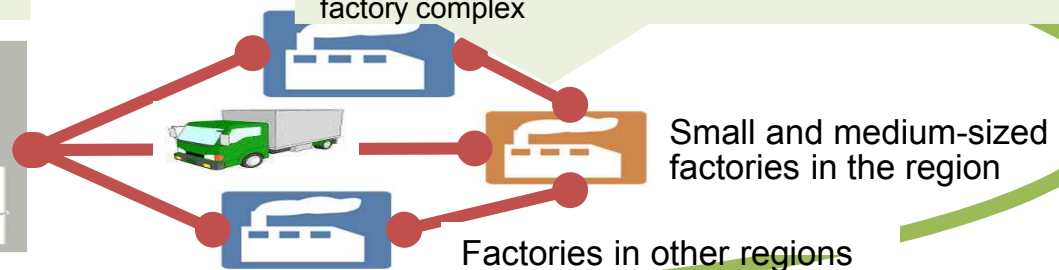
- Parts, robots, and machine tools exchange design information by utilizing IT (“Communications”)
- Specific processing methods for manufacturing products are autonomously determined, so as to conduct automatic production



Conceptual Diagram of Smart Manufacturing

Between factories

- Establish a flexible and open, electronic ordering system and a distribution system, which are available to SMEs
- Administer and automate the entire system centrally by IT
- Improve the productivity and operation efficiency of the entire factory complex



- ✓ Since smart manufacturing is a field of regional fusion, in which there is no particular industry association to manage it, the National Institute of Advanced Industrial Science and Technology takes the lead to promote a project in this field.
- ✓ Discussions have been being conducted to standardize data items that connect the facilities and equipment in and outside the factory.

3. JPO's Initiatives

Added examples to the JPO's Examination Handbook

Although the number of patent applications filed at the JPO is expected to steadily increase for inventions on IoT technologies in various technical fields, the Examination Handbook did not show any examples of examinations by the JPO on IoT technologies.

- ✓ **Made 12 examples** on how JPO's examiners determine the patentability of inventions on IoT technologies and added them to its Examination Handbook
- ✓ **Examples are made to show core technologies of inventions and their issues** in the Examination Guidelines, in order for applicants to easily understand the examination practices.
- ✓ **Examples include as many technologies as possible in various technical fields**, which have been gaining attention in recent years.

On September 28, 2016, the JPO published these examples in both Japanese and English on its website.

http://www.jpo.go.jp/tetuzuki_e/t_tokkyo_e/files_handbook_sinsa_e/app_z_e.pdf

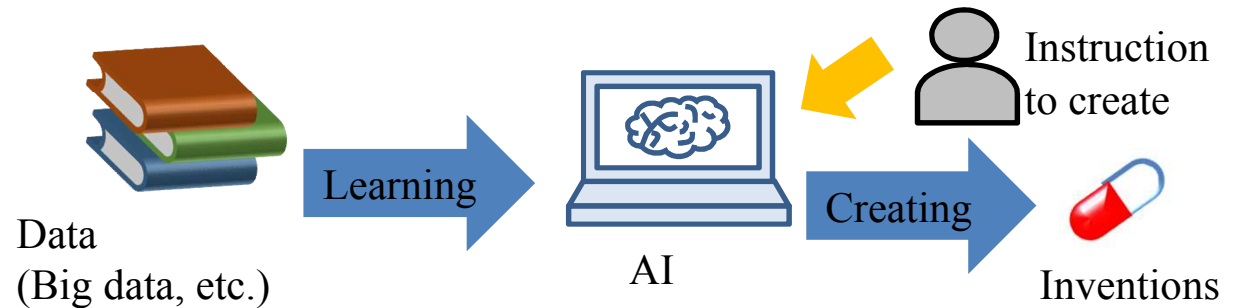
Addition of patent classifications for inventions

- The JPO assigns patent classifications to identify specific technological fields for inventions claimed in patent applications.
- Although IoT technologies have been retrieved by patent classifications based on each of the elemental technologies, such as sensors and communications, there were no patent classifications to comprehensive retrieve IoT technologies.

- ✓ **Added patent classifications on a cross-sectional basis in terms of technology**, which can comprehensive retrieve IoT technologies

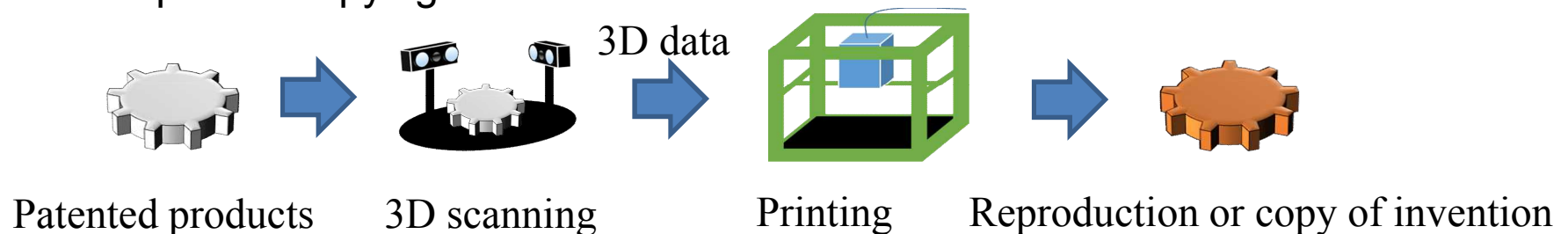
Works created by using AI technology

- When the use of AI technology is increased, the human work in creation is supposed to be decreased.
- In this case, how can we decide who are inventors? and how can we protect such inventions?



Data for 3D printing

- Could it be an indirect infringement to make and transfer 3D data for patented products?
- How about private copying?



Three major initiatives in the 2016 IP5 Joint Statement in Tokyo

- (1) Enhance the relationship with users;
- (2) Continue providing high-quality and reliable examination results; and
- (3) Explore the IP Offices' readiness to actively respond to emerging new technologies**

The IP5 Offices will explore ways to cooperate on office responses to emerging technologies, such as IoT and AI. This may be accomplished through sharing information on and exchanging opinions about the effects of these technologies.

JPO's initiatives

In October 2016, at the working-level meeting of the IP5 Offices held in Europe, the JPO introduced the following activities:

- Major revisions made to its Examination Handbook, i.e. addition of examples on patent applications for inventions on IoT technologies; and
- Major initiatives that the JPO has been undertaking to deal with emerging technologies, such as IoT and AI, in addition to agenda that the JPO proposed to respond to these emerging technologies

Reference: Other Initiatives Undertaken by the JPO

Achieving More Prompt and Higher Quality Examinations

Fastest in the World

Standard Total Pendency* : Around 15 months

FA Pendency : Around 10 months

**The World's
Highest Level**



*Excluding some cases where the JPO requests an applicant to respond to the second notification of reasons for refusal and where the applicant performs procedures they are allowed to use, such as requests for extension of the period of response and for an accelerated examination.

Highest Quality: Creation of “Strong, Broad-scoped, and Useful” Patent Rights

Initiatives for Quality Management

- To strengthen the quality management system of approvals, consultations, quality audits, etc.

Expanding Foreign Literature Searches

- Conduct searches on foreign patent literature for all patent applications
- Increase searches conducted by registered search agencies on foreign patent literature

Revision of Examination Guidelines

- Thoroughly review the Examination Guidelines and make the contents easy to understand and simple

- A major advance in harmonizing patent systems globally came in 2011, when the U.S.' first-to-invent system was finally revised to the first-to-file system. Also, developed countries have been discussing patent system harmonization, including the grace period. The JPO has been actively working on advancing the discussions.
- Also, harmonizing the patent system's operating practices does not necessarily require legal revisions. However, harmonizing operating practices may significantly impact examination practices, affecting description requirements and determining unity of invention. Accordingly, based on a proposal made by the JPO, a "Patent Harmonization Expert Panel (PHEP)" was set up by the IP5 Offices, and the PHEP has since been conducting studies on ways to harmonize the practices.

Harmonization of Patent Systems

At the Group B+ Meetings attended by developed countries, discussions have been advanced on the following four key issues for patent system harmonization:

- (1) Grace period
- (2) 18-month publication system
- (3) Conflicting applications
- (4) Prior user rights

The Group B+ members agreed to hold a symposium for users in June 2017.

Harmonization of Operational Practices of the Patent System

At the IP5 PHEP, discussions have been advanced on the following three issues:

- (1) Unity of inventions
- (2) Disclosure obligation of prior arts by applicants
- (3) Description requirements in specifications

Harmonize operating practices in the international phase under the Patent Cooperation Treaty (PCT) system

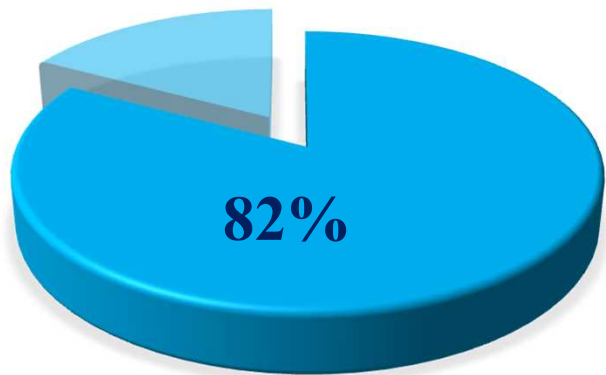
Agreed to reduce workload by making effective use of IT tools

Reflect user opinions into comparative studies of case examples

Patent Prosecution Highway (PPH)

- The PPH was first proposed by the JPO, and was implemented for the first time in 2006. Now, the JPO is implementing the PPH with 35 IP offices.

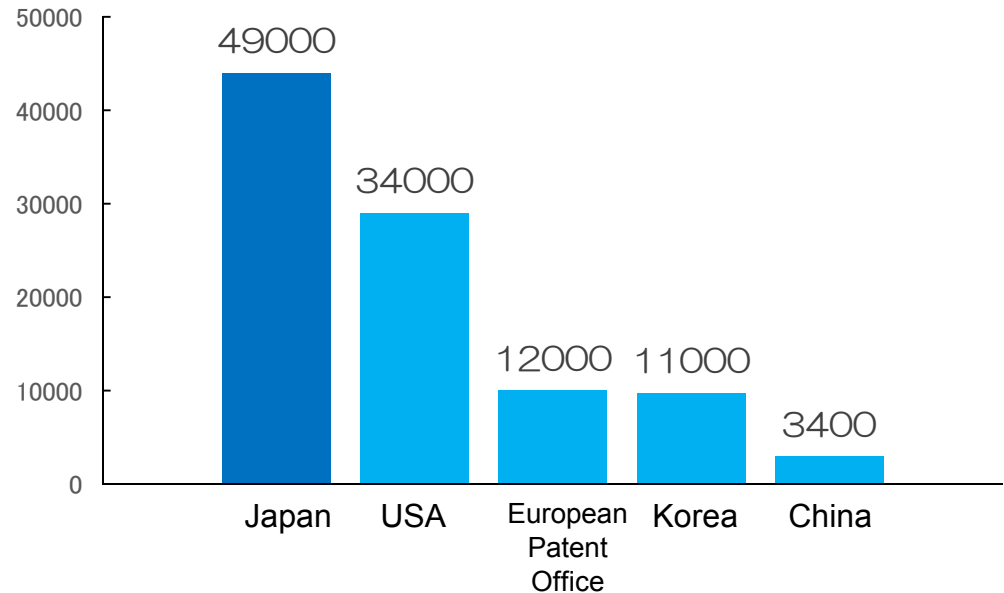
The percentage of total GDP of PPH members* in the global GDP



*PPH members and CPG (Cooperation for facilitating Patent Grant) members are included.

PPH achievement

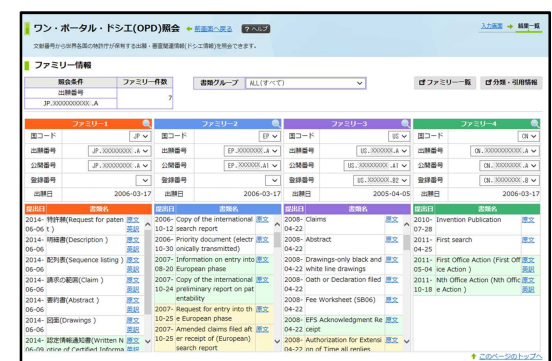
- The number of PPH applications based on the JPO's examination results is about 49,000 (largest number in the world)



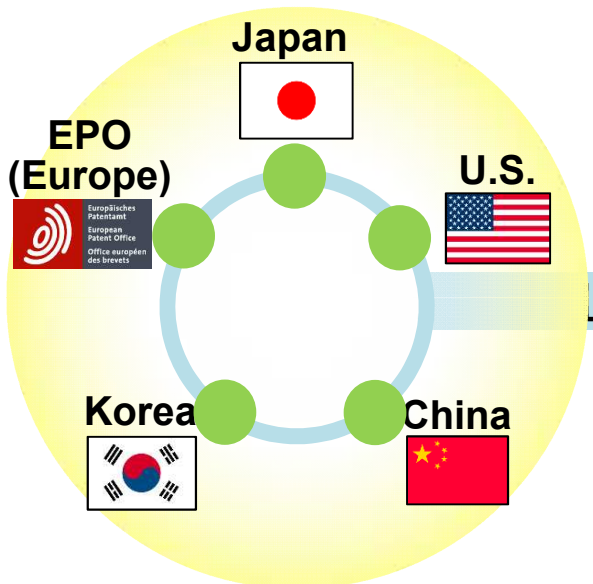
Establishing Global Dossier

(Expansion of Common Network for Sharing Dossier Information Worldwide)

- The Global Dossier is an initiative that creates a virtual, shared IT system to provide unified services, such as the sharing of dossier information, based on linking the systems at IP Offices.
- Under this initiative, the One Portal Dossier (OPD) was established as a common system to share dossier information among the IP5 Offices. Then, the OPD was linked to WIPO-CASE, which is a system created by the WIPO to share dossier information. Also, in July 2016, we started to provide the dossier information to users. The JPO has been providing technical support to developing countries in order to increase the number of participant members in WIPO-CASE.



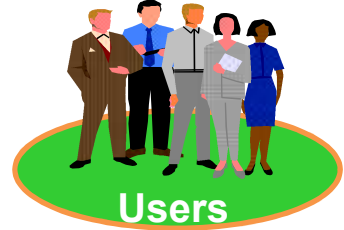
One Portal Dossier (OPD)



WIPO-CASE

- In addition to the IP5 Offices, 21 countries/organizations participate (as of December 2016).
- Participant members are expected to increase in the future

JPO began providing dossier information to users through the Japan Platform for Patent Information or the J-PlatPat in July 2016.



* Azerbaijan, U.K., Israel, India, Indonesia, Australia, Canada, Cambodia, Singapore, Thailand, Chile, New Zealand, Papua New Guinea, Philippines, Brunei, Viet Nam, Malaysia, Mongolia, Laos, EAPO, and WIPO

The JPO's initiatives for strengthening the enforcement of intellectual property rights includes promoting international exchange activities in the legal field of intellectual property (IP). The JPO holds various symposiums on IP and conducts mock trials. This has been done in collaboration with various related organizations including legal professionals.

■ Examples of international exchange activities in the legal field of IP

1. United States/Japan Patent Symposium (in Washington D.C.)

The JPO participated in the United States/Japan Patent Symposium in May 2016, which was hosted by the Giles S. Rich American Inn of Court that serves as a means for the U.S. legal community to exchange opinions in the area of intellectual property.



Photo of the United States/Japan Patent Symposium

2. Europe / Japan Mock Trial (in Paris)

In September 2016, the JPO held an international symposium jointly with the European Patent Lawyers Association (EPLAW), the Japan Federation of Bar Associations (JFBA), and the Intellectual Property Lawyers Network Japan (IPLNET). At the symposium, many individuals involved in IP participated from the U.K., France, Germany, and Japan.



Photo of the Europe / Japan Mock Trial - Gathering evidence in patent proceedings (in Paris)



3. Symposium on Patent Litigation in Europe/Japan 2016 (in Tokyo)

In November 2016, the JPO held an international symposium jointly with the German-Japanese Lawyers' Association, the Japan Intellectual Property Association (JIPA), and the International Association for the Protection of Intellectual Property of Japan (AIPPI JAPAN). At the symposium, many individuals involved in IP participated from Japan and Europe.



Photo of the Symposium on Patent Litigation in Europe and Japan 2016 (in Tokyo)



