

## IoT Japan

The ability to process data and information and the development of the ability to connect anything electronic to the Internet will more than likely continue to see rapid progression in the future. This will create new business opportunities and offer new products and services which will return new value to the companies providing these new products and services. New partnerships will develop across disparate fields which traditionally have operated independently and under different sets of standards from each other.

This new utilization of data will require numerous changes to the present means of categorizing inventions, etc., with regards to the methods for performing and the protections involved in the exchange of personal information between companies; how that data is processed in accordance with the perceived desires of consumers from whom the data was collected; the manner in which this new Internet of Things (IoT) connectivity influences the manner in which international standards (for example, SEPs) are to be harmonized, licensed and replaced by new technologies, how new inventions produced by Artificial Intelligence (AI), as well as data for 3D and 4D printing, are classified in regards to being inventions which may be protected as intellectual property. These are just a few of the issues that will need to be thoroughly addressed in order for businesses and consumers to achieve the greatest benefits from advances in IoT, AI, and 3D and 4D printing.

This article will mainly focus on how the Japanese government and businesses are/should be preparing for the numerous changes that will unquestionably emerge as IoT, AI, and 3D and 4D printing continue to develop as critical tools

which will drive future commerce.

In the future, the full exploitation of IoT will require that data utilization, R&D, Intellectual Property rights (IPR) and other assets be managed simultaneously. At present, Japan looks good in the areas of edge computing and the decentralization and delegation of data processing to user terminals in order to ensure the steady handling of the volumes of fresh data being produced.

## I. Current State of Affairs

### 1. Utilization of Data

Japan has recently implemented two new Acts stipulating how personal information must be handled in order to balance the right to privacy of individuals and to ensure the proper distribution of data and information so that business and competitiveness are strengthened.

The Basic Act on the Advancement of Utilizing Public and Private Sector Data (the original Japanese and an English translation of the Act can be found at <http://www.japaneselawtranslation.go.jp/law/detail/main?re=02&vm=04&id=2975>) was promulgated in December 2016, and sets out a list of requirements detailing how data and personal information held by the Japanese government, municipalities, and businesses can be used and provided to other agencies and/or businesses while maintaining safeguards in order to ensure the safety and the reliability of the data and information, and establishes a future framework detailing the issues which will need to be addressed as IoT technology continues to evolve in the future.

The revision to the Act on Protection of Personal Information, also known as the Personal Information

Protection Act (both acronyms "APPI" and "PIPA" are used in the literature, however, in this document, APPI will be used exclusively) was fully implemented on May 30, 2017 and is similar to the EU's General Data Protection Regulation (which entered into effect on May 25, 2018), in that the APPI regulates the collection, transfer and processing of personal information.

The APPI established new regulations and a "sensitive personal information" category which demands that the handling of such information be done so in a manner so as to not run the risk of the data being misappropriated and used against the individual. Sensitive personal information includes information regarding an individual's race, gender, religion, social status, medical and criminal histories, etc. The APPI is applied to and protects information, such as that which might be collected in a job application. The applicant/employee must consent to (opt-into) the use or transfer of their sensitive personal information (unless it is for the protection of health and safety, i.e., a medical emergency) and employers must inform their employees, ahead of time, as to the reason(s) that the applicant's/employee's sensitive personal information will be used and/or disclosed to a third party. The applicant/employee may opt-out of this previously agreed to consent.

The APPI also regulates the cross-border (international) exchange of data and personal information being transferred out of Japan. If the country or party receiving the data and personal information is deemed to have PIPA-like standards with regards to the protection of data and personal information, or both the transferring party and the receiving party can ensure that the data and personal information will be handled in a manner similar to that

prescribed by the APPI, the data and personal information may be transferred out of Japan. The transfer of data and personal information to the from a Japanese subsidiary of, for example, an American or European multinational corporation even to the main corporate offices thereof is considered disclosure to a third party, and thus, requires the consent of the individual prior to the data being transferred.

On July 17, 2018, following on the heels of the passage of the EU - Japan Free Trade Agreement, the EU and Japan recognized that each other's data protection systems were essentially "equivalent" to each other and hence, individual's private data could be shared therebetween. After separate final reviews by Japan and the EU member states, the agreement of adequacy is expected to be adopted and in force by the end of 2018.

Under the APPI, an individual's consent is not required prior to the transfer or processing of their private information, as long as steps have been taken in order to make it practically impossible to directly trace the information back to the individual. This may be done by assigning users specific personal information to a target range, such as an age range which would make it more difficult to concretely assign a collection of data to an individual. Additionally, the APPI requires that companies maintain records indicating how the personal information was obtained and to whom the data was transferred as well as requiring that any personal information that is deemed to be no longer relevant for the purpose(s) it was originally collected be deleted.

The APPI was amended on June 12, 2020 in order to  
1) Expand rights of a third party to demand deletion,  
discontinuation of data processing or of transfers to third

parties and the right to request records of transfers of personal information to third parties. In addition, short-term data (less than 6 months) is now considered to be "retained personal data" and prior provisions apply thereto.

2) Restrict cross-border transfers of data and permit the Personal Information Protection Commission (PPC) to order foreign companies to report on their activities and take measures to safeguard information.

3) Increase financial penalties associated with violations of APPI are covered by the PPC, which can levy criminal fines up to 1,000,000 yen (\$9260\*). A fine of up to 100,000,000 yen (\$926,000\*) may be levied for ignoring an order from the PPC or the wrongful provision or utilization of a personal information database. \*Based on 108 yen to \$1 USD (rate as of July 2020)

The Unfair Competition Prevention Act was amended and revised in late 2015 in order to include the prohibition of use of information obtained through illegal means. Both criminal and civil deterrents covering infringement of trade secrets were bolstered. The revision encourages the enhancement of data-encryption technology as a means for protecting data being used in a manner which harms the public good.

These laws should serve as a foundation by which an individual's private information (i.e., medical records) remains private and prevents such private information from being disclosed or offered to third parties who may use an individual's private information for unethical reasons. Questions remain as to what other private information may be included in an individual's private information.

## 2. Use of the Intellectual Property System

As more and more Japanese businesses become service-based, the use of data and personal information will unquestionably increase. By and large, the Japanese public distrusts the collection and any laissez-faire utilization of their personal information and many Japanese companies are very protective of their trade secrets. As stated above, new safeguards have been installed in order to protect the personal information of individuals and further safeguards will become necessary as the technology of IoT continues to evolve.

The Japanese government has examined means by which the promotion of data utilization can be balanced with IPR, including future restrictions of copyright in order to enable technological innovation. In the future, inventions using software which combine processing and networking and inventions used in numerous technical fields (AI) will certainly increase. This will increase the number of one product/one service patents which has the potential to bring about numerous infringement cases, and new standardization and licensing issues that will require novel solutions.

The number of users of Standard Essential Patents (SEPs) will increase along with the expansion of IoT. This will undoubtedly lead to numerous licensing and FRAND issues as well as an increase in infringement cases.

At present, in Japan, there is a lack of a cooperative framework between private industry and the public sector. IPR may interfere with the distribution and utilization of data and information. A balance between the protection of data and information (which encourages the further utilization thereof) and the distribution of data and

information is essential so that the distribution of data and information is not hindered by IPR. Establishing further protocols by which data can be traced (traceability) may allow data and information to be distributed with without the fear that the data and information may be misused and may avoid the need for complex licensing or excessive IPR infringement cases.

The contracts established between Japanese companies regarding the transfer of data and information are relatively unclear and have yet to be seriously tested in a court of law. In Japan, there are no standard "one-size-fits-all" contracts and/or standard non-disclosure agreements. In addition, numerous Small and Medium-sized Enterprises (SMEs) often do not employ standard contracts or licensing, as they are currently more focused not on the development of products, but on the services which use products. Basically, Japan is in dire need of contract standardization in terms of how information is to be used and transferred.

Additionally, Japan has a dearth of human resources (people) who are versed in international standardization. While Japan's industrial associations are designed based on the products they produce and sell, and are largely limited to hardware, it is envisioned that the advent of IoT will force this to change by bringing in both in-house and external experts as well as those knowledgeable in terms of the target and goals of standardization. The extent to which Japan participates and drives international standardization in IoT, AI, and 3D and 4D printing will have to be expanded in the future.

### 3. New Technology and the Influence on IP Systems

Data deemed to merely be the presentation of

information is unpatentable under Japanese patent law, as no technical idea was used in the creation of the data. Additionally, direct human involvement in the creative activities leading to the invention is deemed to be essential in order to receive IPR. The concept that an invention possessing AI wholly creates an invention itself that would be patentable had a human being been active in the creation of the invention will soon no longer be limited to the realm of science fiction movies and novels.

At present, the UK, New Zealand, India and other countries have begun to amend their copyright laws to address the inevitability of an AI invention creating something worthy of copyright protection. Most copyright laws and for that matter, IP laws require that a human being play the key role in the creation of, for example, a work of art or a photograph. Clearly, an AI invention is not human, however the laws have been amended to provide the copyright (or other suitable IP right) to the person who made the initial arrangements for the work of art or the invention to be made. Essentially, the IP right will be granted to the inventor or the user of the AI device which created the work of art or the invention.

Aside from the changes to some copyright laws, the concept that a new invention may be patentable if AI is solely/mainly involved in the creation thereof will represent a new paradigm that will definitely need to be addressed. As AI will undoubtedly produce numerous new designs and trademarks prior to the creation of a potentially patentable invention, modifications to the design and trademark laws to accommodate AI will be seen as the first step in how much direct human involvement will remain a necessity in determining whether an invention is patentable



or not.

#### 4. IoT Patent Classification Category

In November 2016, the Japan Patent Office (JPO) announced the formation of a new patent classification category designed for IoT. At present, IoT is an amorphous concept and the direction(s) in which it will radiate in the future cannot be accurately predicted. The JPO deemed that the traditional IPC classification category would be wholly insufficient to categorize IoT, as IoT will more than likely bridge numerous fields as it develops.

In order to more accurately classify IoT inventions, the JPO christened a new FACET indication with the somewhat unfortunate 3-letter classification, ZIT. ZIT is the world's first classification category that will allow for a proper search of patent applications related to IoT inventions using terms such as "for health care" or "for communication" to span several fields with the same general search criteria. (Detailed information in both Japanese and English regarding the new ZIT classification may also be found on the Ministry of Economy, Trade, and Industry (METI) website).

[https://www.wipo.int/edocs/mdocs/classifications/en/ipc\\_wk\\_ge\\_17/ipc\\_wk\\_ge\\_17\\_item2\\_3\\_jpo.pdf](https://www.wipo.int/edocs/mdocs/classifications/en/ipc_wk_ge_17/ipc_wk_ge_17_item2_3_jpo.pdf)

It was announced on June 6, 2018, that this new classification category would be greatly expanded and subdivided as necessitated by the advent of new technologies. This will allow more precise searches to be conducted by restricting the search to IoT and the technology sectors employing IoT. The new IoT-related search terms can be found on both the Japanese and English versions of the J-Plat Pat website (<https://www.j-platpat.inpit.go.jp>). In July 2019, the IPC classification code G06N was assigned to inventions

deemed to be AI-core inventions and a new IPC classification code G16Y for IoT-technology entered into force in January 2020.

The current expansion of search terms uses the following letter combinations corresponding to an IoT-related technological field.

CODE	CATEGORY	CODE	CATEGORY
ZIT	Internet of Things (IoT)	ZJM	Services IoT
ZJA	Agriculture, Fisheries, and Mining IoT	ZJP	Health Care and Social Welfare Enterprise IoT
ZJC	Manufacturing IoT	ZJR	Logistics IoT
ZJE	Electricity, Gas, or Water Supply IoT	ZJT	Transportation IoT
ZJG	Home and Building/Home Appliances IoT	ZJV	Information and Communications IoT
ZJI	Construction IoT	ZJX	Amusement, Sports, and Gaming IoT
ZJK	Finance IoT		

## 5. International Intellectual Property Infringement

The Internet era has seen the dawn of servers located in one country being used to house and operate websites generally frequented by customers in other countries. Servers housing Japanese websites frequented by Japanese customers may not be located in Japan. Additionally, as the systems by which payment is made for use or purchase of the invention/service may also cross borders, how separate portions of the invention being operating (internationally) in numerous geographical locations may affect IPR

infringement cases is far from cut and dry.

To date, there have been no legal precedents in Japan regarding cross-border infringement for an Internet-based invention. Japan operates under the Principle of Territoriality (Tokyo District Court 2000 (Wa) 20503, September 20, 2001) which states that the "main place of the act" or where the substantial part of the patented invention is operated is the market venue. This "venue of implementation" can also be interpreted to mean the market venue where money is exchanged for the invention/service.

3D and 4D printing also present a litany of potential problems for IP rights holders. As only the 3D data of a patented invention is scanned or copied, the data is merely distributed, not the patented inventions, thus, it is questionable as to whether someone who distributed 3D data would be liable for infringement. If the 3D data or 4D data (based on CAD/CAM systems) is a program which contains instructions, for example, for operating a 3D or a 4D printer, then the 3D data would be considered to be a product which would fall under the Patent Act.

However, analog blueprints are not protected under existing IP laws, thus, as data alone is not considered a program, there is a grey zone as to whether 3D data actually represents a program. The Examination Handbook for Patent and Utility Model in Japan published by the Japan Patent Office details numerous examples of when 3D data could be considered a program and when it is a product (Annex B, Chapter 1, Computer software related Inventions; retrievable at

[https://www.jpo.go.jp/e/system/laws/rule/guideline/patent/handbook\\_shinsa/](https://www.jpo.go.jp/e/system/laws/rule/guideline/patent/handbook_shinsa/)).

In the case of IoT, whether an invention is novel would

be determined based on whether the invention is a combination (the invention of device which is a combination of two or more devices or a manufacturing process with two or more steps) or a subcombination and whether this subcombination is novel. The determination of inventive step is clearly not as cut and dry as the following would suggest, however, the case when it is judged that the invention produces an advantageous effect compared to the prior art when the invention is connected to the Internet would contribute to determining the presence of an inventive step.

## II. Preparing for the Future

In April 2017, METI released a report summarizing the initial steps that both the Japanese government and industry should consider taking in order to better prepare for the new industrial revolutions that will undoubtedly be brought about by developments in IoT, AI and 3D and 4D printing.

The development of new data structures, which are technological operating systems-in-development and/or systems which have yet to be imagined will be the tools driving advances in IoT, AI and 3D and 4D printing in the future (and vice versa) and will require intellectual property protection, especially when a newly developed data structure becomes the new standard through which a preponderance of new technologies are operated.

The manner in which Standard Essential Patents (SEPs), which cover inventions deemed critical to achieve the current technical standards, relating to these burgeoning fields are to be managed will clearly have to evolve to include new processes and laws governing how licenses are issued and how disputes arising therefrom are resolved. The desire to move away from expensive and time-consuming litigation will

hopefully foster changes in how infringement cases are handled. Potentially, governments could set limits on licensing fees associated with SEPs which would limit the malignant effect that non-practicing entities (i.e., patent trolls) have on the progress of technological advancement. This expansion of FRAND would benefit Small and Medium-sized Enterprises (SMEs) who cannot afford expensive lawsuits, but desire easier access to SEPs. Additionally, private arbitration firms may be used as a cheaper solution (Alternative Dispute Resolution (ADR)) to settle licensing fee disputes. This would be of particular interest to SMEs and start-ups which generally, do not have the financial resources to enter protracted litigation with larger firms who have considerably deeper pockets. Currently, the Japan Intellectual Property Arbitration Center exists for such cases and while their role is anticipated to expand in the future, discussions into implementing an ADR system have been halted at least for the meantime, and are not included in the guidelines (published in June 2018, however, at present the guidelines are only available in Japanese) regarding license negotiations for SEPs.

The METI report also postulated that given the eventual growth of IoT, AI and 3D and 4D printing, different industries will eventually have to cooperate with each other in order to create and adopt new standards, business practices and create further business opportunities in the future. This will produce one substantially difficult problem for Japanese industry to overcome, as traditionally, there have been few incentives which encourage and foster cooperation between seemingly disparate industries, and cooperation among various industries and the public in Japan has only recently begun to be addressed. Clearly, any company

which clings to the old business models will find it difficult to adapt to a new global system that operates based on the expansion of integrated services and rapid interconnectivity for the sharing of data in order to respond to the demands of customers faster, more economically, and with less waste of resources.

The promotion of cooperation and collaboration between larger established companies and SMEs and/or start-ups must also be encouraged, as such cooperation and collaboration will undoubtedly lead to new research and development methods which allow for the faster implementation and the promotion of new business models utilizing the new technology and the promotion of international standardization.

On September 29, 2017, the Japanese government held meetings with several Japanese business federations which represent IoT-related industries for the purpose of discussing the future of SEP licensing. The main topics covered in these meetings included

- 1) What actions constitute appropriate negotiation practices, and
- 2) What constitutes a reasonable royalty and/or licensing fee when licensing an SEP.

METI published a series of guidelines detailing strategies for achieve the above in June 2018. These guidelines focus on how licensing in the newly developing field of IoT would be handled at least in the short-term with regard to SEPs. The guidelines are designed to provide a framework by which companies may seek remedies in the case that licensing negotiations were not being conducted in good faith and efficiently based on the duration of the negotiations, how each party has behaved in prior

negotiations, etc.

The guidelines are designed to provide a framework by which companies may determine reasonable royalty payments and will attempt to provide some examples of the current market values and potential costs associated with the licensing of the technology protected by an SEP. These royalty rates and/or licensing fees are also designed based on the degree to which the invention, as a standard, contributes to sales and to industry and its development, as well as the cumulative value of the SEP to the applicant, manufacturers, suppliers, etc., the cumulative royalty rates, the patent portfolio strength including other SEPs held by the applicant, and other aspects.

In addition, the guidelines request that the owners of the SEP and the companies or manufacturers to which the SEPs are being licensed have a complete understanding of the manner in which the licensed SEP technology is to be used, including restrictions on the use thereof. Lastly, the guidelines provide a framework through which the owners of the SEP can provide concrete explanations as to how they arrived at the royalty rate and/or licensing fees that they wish to receive in exchange for licensing their SEP technology to another company or manufacturer.

The JPO realizes that as IoT, AI and 3D and 4D printing are rapidly emerging technologies, the guidelines must also evolve in accordance with future advances in these fields.

Japan's manufacturing infrastructure and high speed internet should be and undoubtedly will be used to improve R&D; reduce the costs associated with the production and delivery of products and services; increase the variety of products and services in accordance with customer demands

and as a reaction to evolving markets; bundle products and services, and ultimately, reduce waste. With a plethora of data provided by the new interconnectivity, decisions and the delivery of goods and services to customers can be performed more rapidly. While Japan is technologically ready for the rapid advances that will be brought about by IoT, AI and 3D and 4D printing, many aspects regarding how these advances will be handled in terms of personal privacy, intellectual property, licensing, and international standardization have only begun to be addressed.