

SOFTWARE PATENT ELIGIBILITY AND THE LEARNINGS FROM THE JAPANESE EXPERIENCE IN ADDRESSING CHALLENGES AND ISSUES ON SOFTWARE PATENTING

Rico E. Collado

Intellectual Property Office of the Philippines

JPO Long Term Study-Cum-Research Fellowship Program (FY2017)

Supervised by

Dr. Yorimasa Suwa, Senior Researcher, APIC-JIPII

Advisers

Mr. Yuji Tsuruya

Patent Attorney, HARAJUKU SOGO

Mr. Takeshi Ueno

Senior Counsel, IP Law, IBM Japan

From 21 September to 28 December, 2017

Abstract

This study is about how Japan addresses the issues and concerns in software patents and software patenting. Software patents, as critics say, are vague and overboard that innovations in this technology are stifled because inventors are afraid to step on someone else's patent, so to speak. This notion is aggravated by the increased number of software invention patents being issued by IP offices from around the world, thereby increases the chances of facing infringement and invalidation cases on part of software users and other innovators. Software Patent Quality is also put to scrutiny because of amount prior arts to be considered in the conduct of examination in the IP offices. Also, this research determines the role of ICT and software innovation in the next industrial revolution.

This study is conducted in order to validate or invalidate these assumptions mainly by a qualitative research, that is the interviews conducted to industry players, academic person and lawyers who shed various explanations and clarifications on the assumptions stated. As gathered, it can be surmised that the software patents indeed supported the innovation in Japan, the main motivation being is the incentives that brought about by the patent. Patent thickets exists in Japanese companies may be because they want to protect their business niche. Patent thickets, though viewed as a bad strategy because they create barrier in a technological field, can be used as a negotiation tool to create standards with other companies. Japanese companies are wary of the cost of an infringement so they often go for an out of court settlements. Patent trolls virtually do not exist in Japan but if they do, they will experience loss because of the size of the market. Though there is an increase in number of software and ICT patents in Japan, this is not viewed as something contributory to failed patent quality. Japan Patent Office (JPO) has instituted substantive quality examination efforts to addressed patents that are vague and overboard. Anyway, there are post grant review and invalidation procedures in case they left out on something.

The Philippines is not as innovative as Japan when in it comes to ICT and software patenting. In fact, more ICT patents are issued to Japan by the Philippines government. The Philippines is yet to develop a software industry that would experience the issues and challenges described. Not much investments are done in terms of R&D that would develop this industry. They say investments can come in to a country if the business climate is conducive to their business and well protected. This also extends to protecting the innovations they created. The Philippines should improve its laws and procedures including the way they

conduct patent examination to seize opportunities provided in the ICT and software patents. A knowledgeable patent examiners is desirable that can really look into the nuances of software patent applications. Most often, software patent applications are rejected because of their abstract nature and fail to pass their clarity issues. It is important that there should be a proper claims drafting for software patent claiming to address these issues. Much like the ones in the chemistry patent claims of Use Claims where clarity of subject matter is resolved.

Table of Contents

Abstract.....	i
Table of Contents.....	iii
List of Tables	iv
1. Introduction.....	1
2.1 Patent Eligibility of Computer Software in the Philippines.....	4
2.2 Innovation and ICT situation in the Philippines	4
2.3 Software Patent Eligibility in Japan – Overview of Patent Law.....	5
2.4 Innovation in Japan and ICT related applications.....	6
2.5 Quality Examination focus of JPO.....	6
3. Methodology of the Research	9
4. Results and Analysis.....	11
4.1 Interview to IP Persons in the companies - Members of the Software Committee of Japan Intellectual Property Association (JIPA)	11
4.2 Interview to Academic researcher - Professor Mitsuyoshi Hiratsuka of Tokyo University of Science	13
4.3 Interview to Lawyers - Members of the Patent Committee of Japan Patent Attorneys Association (JPAA)	14
4.4 Comparative analysis of the opinions from Japanese stakeholders	16
5. Implications and Recommendations	20
5.1 Implication	20
5.2 Recommendations for the Philippines	21
Acknowledgements.....	23
References.....	24
Appendixes	
Appendix I: Interview with the JIPA Software Committee	A-1
Appendix II: Interview with Professor Hiratsuka of Tokyo University.....	A-9
Appendix III: Interview with member of the Japan Patent Attorneys Association (JPAA)	A-14

List of Tables

Table 1. History of Software protection in JP EP US.....	7
Table 2. Summary of the answers to Research Question 1.....	16
Table 3. Summary of the answers to Research Question 2.....	17
Table 4. Summary of the answers to Research Question 3.....	18

1. Introduction

In today's knowledge economy, people are putting weight importance to the IP assets, which includes the know-how, innovations and expertise. Exploration of intellectual property seems one of most effective ways of gaining competitive edge. For this reason, the software companies are becoming more prospective or protecting their innovation. Before they do this for copyrights, however, these recent years they are growing the trend to seek patent protection of software also. The growth of the internet specialty e-Commerce has helped to give this trend. However, this trend attracted more criticism to promote innovation in this area. Such a criticism has started normally in the United States.

In 1990, there are more patent software being issued in US. The phenomena was triggered by the case law that expanded the data definition in patent eligibility to software programs. Thereby the restriction under the Patent Law was being relaxed. By the end of 1990 in USPTO more than 20,000 software patents were issued in a year. By 2013, it grew to 68,000 patents per year. In that year, also issued software patents surpassed the other technologies. In Japan, the same process has been observed, but the increase was triggered by the increase in the investment on R&D and not by the change in Patent Regime.

However, critics say that the large number of software patents stifles innovation, because there are no room for the others to innovate without setting on the other shoes. The increase of number of the software patents create a dense patent thickets. Companies file patent application just to protect their business interests. There is also a growing opinion that software patents claims are vague and overreaching and that quality is questionable, thus casts doubts on how Patent Offices conduct patent examination. Low quality patents lead to high probability of invalidation or infringement. The situation is also abbreviated by "Patent trolls" who obtain the patent rights in order to profit by means of licensing and litigation rather than positioning the products which the business is subscribing the patent.

The Philippines government recognizes the importance and wealth brought about by Information and Communications Technology (ICT) innovations. In fact, last May 2016, the President signed into the law for creation of Department of Information and Communications Technology that is tasked for the planning, development and promotion of the country's ICT agenda in support of the national development. The state also expects that the growth in Philippine ICT innovations will continue upwards due to opportunities in telecommunications services such as business processing, financial and health services. More and more people recognize the ease of doing business transactions through the technology. Gone are days when

one does not have to queue up in a bank to do one's transactions. One simply had to stay at home and access his bank account to do money transfers electronically.

Also in 2016, the Philippines became the 2nd destination for call centers and business process outsourcing (BPO) in the world next only to India. Businesses around the world have recognized the Philippines as an opportunity to flourish their outsourcing businesses as the nation is full of talented people and English language is widely spoken. It is no surprise that innovations are created everyday by these talented people. However, mostly they are not protected by intellectual property because they just give them away as they are customized to cater only to the needs of their clients. Also, most of the innovations in the area of business outsourcing rely upon software and therefore can be protected by copyrights only.

Businesses around the world have recognized the need of having a patent as a stronger alternative for protecting their innovations created through business processing. IBM, who is the leading innovator in patenting business process, has long been successful and have amassed wealth through licensing of their patents. By these patents, a regime called Software Patents has emerged in the Intellectual Property world and more and more companies have applied patents for innovations created in their processes, liking the idea of bringing in dollars into their businesses through patent licensing. However, while software patents and software-related innovations are repeatedly challenged in the IP courts, ironically, more and more computer implemented invention patents are being issued by IP offices around the world. Court decisions of Supreme Court of US (SCOTUS) such as *Bilski vs Kappos* (2010) have created impetus for this phenomenon. The decision have expanded the definition of patent eligibility and encompass business methods as subject of a patentable invention (in the Philippines, method of doing business is included in Rule 202 under the heading Non-Patentable inventions). In the case of *Alice Corp. vs CLS Bank* (2014), the decision states the elements that should be present in a computer implemented invention application therefore effectively discriminating those nuisance applications who just seek protection that are merely computer program per se.

By these decisions, IP offices around the world have begun to rethink their process of issuing patents by amending their patent examination procedures to accommodate and protect innovations relating to computer implemented inventions. The Philippines is no exception. The present investment climate in the Philippines especially in the area of ICT has created opportunities, and innovations coming from them should be protected by either copyrights or patents.

There is a need for the Intellectual Office of the Philippines (IPOPHL) to amend its present guidelines addressing issues involving issuances of patents relating to computer implemented

inventions. The present examination guidelines, created in 2001, appear to be outdated and may no longer be appropriate in addressing issues and challenges happening in the IP System. As more technologies involving ICT innovations emerged, so is the business of protecting them is of top most importance. As discussed above, ICT innovations rely heavily on computer software which are specifically excluded from patentability as computer program per se.

In Japan, the JPO has created guidelines specifically addressing nuances of software related inventions. The definition of an invention provided by the Patent Law in Japan is "a highly advanced creation of technical ideas by which a law of nature is utilized" (Article 2, paragraph 1). As to the computer software related invention, the guidelines for examination provide a test of whether or not the application filed after January 10, 2001 constitutes the above invention in law. More specifically, in the application, there is tested if information processing of software is realized in a concrete manner by use of hardware resources. Such a synergistic relationship between software and hardware is now construed as being equivalent to the utilization of a law of nature.

In addition to the theme of the study, this research will make an opportunity to gain better understanding of the Japan Patent law and procedures and gain insightful experiences on search and examination.

By introducing conceptual aspects of the Japanese patent system as a model, the problems identified will be resolved. The study on the differences or similarities in the implementation and application of appropriate and relevant legislative patent provisions as well as the study on the differences or similarities in patent examination practices between the Philippines and Japan encourages support for current and future revisions of the IP Code's Implementing Rules and Regulations. Japan's practices, policies and experience on ICT invention applications examinations will provide a new perspective on how we can handle the same here in the Philippines.

In the Philippines, IPOPHL is continuing to innovate and upgrade its systems and procedures by adapting worldwide standards. The impetus to the outcome of this study is the IPOPHL's bid to become a newly appointed ISA/IPEA in the WIPO.

2. Basic Information and Previous Studies

2.1 Patent Eligibility of Computer Software in the Philippines

IP Code (R.A. 8293) of the Philippines provides that inventions must be patentable and a technical solution and technical problems in the Philippines activities in Sec 21. Software program per se is not patentable in the Philippines under the Sec 22. However, the subject matter of a software patent application has technical character, then, it could be eligible and the examiner will consider [IPOP HL, 2015].

To process a technical character, the solution to the problem should be a technical solution. In construing of software patents eligibility in Philippines, a technical character software shall have technical problem(s). A solution has to have a “further technical effect.” However, if the technical feature runs under its normal operations, like calculations, it is not eligible even though it has technical character.

As for a business method, it is not patentable still in Philippines. However, if the description specify that the hardware is used to carry out the method, it may contain a mix of technical and non-technical features and the examination is carried out in same manner as software invention application.

2.2 Innovation and ICT situation in the Philippines

Innovation can be measured by how much cost each country is investing in the R&D and how many patent applications are filed by each National Patent Office.

In the Philippines, only 0.1% of GDP is spent for R&D and 64% of R&D cost is spent by the private sector. There are the issues in the developing innovations in Philippines, like manpower issues, unfocused projects, short term research, and lack of funds. So, in the IPOP HL, the average of yearly patent filing ranges from 3,000 to 3,200 applications. Further, 95% of patent filings are dependent on foreign applicants.

ICT invention applications account to 16% of those received applications, but, virtually, almost all of them are from foreign countries and only one from the Philippines local. Japan has the second highest number of PCT applications per assignee, 17% of the total of ICT applications in the Philippines, next only to US which consists 47% of the total applications.

Quality management in the Philippines was first introduced in August in 2016 are directives only 17 to be trained as the patent quality reviewers and two examiners per examining division were assigned. Normally, the examination reports were randomly selected from the mailing of those reports and finding sent back to the division team together with the examiner concerned and examiner came to span to the findings.

ICT examination guidelines in the Philippines was first drafted in November 2016 [IPOP HL, 2017]. It has been discussed several months. In the process of the creation of examination guidelines, in August 2017, a draft guideline was presented to the expert in JPO, as the guideline must be reviewed by its stakeholders before the publication. Use of this guidelines will greatly help IPOP HL ICT examiners to construe patent eligibility of software patents.

2.3 Software Patent Eligibility in Japan – Overview of Patent Law

As for the discussion about software patent eligibility in Japan, at first the overview of Japanese Patent Law is described. Japanese Patent Law has an industry oriented purpose. The purposes of the Art. 1 of the Patent Act are to promote protection, utilization of the inventions in Japan and creation of invention, and contribute the development of the industry. So, in that sense, it depends on the industry oriented purpose under Japanese Law. Japanese patent holders enjoy the exclusive right to work the patent as a business for 20 years, which stated in Art. 68. In case of computer programs, the act of working is realized by providing the computer program through the internet [JPO, 2015].

In construing software patent eligibility in Japan, invention have to have highly advanced creation of technical idea utilizing the laws of nature. That was mentioned in Art. 2 (1). Inventions may be a product, a process or a process, which is producing a product. It must be industrially applicable, must be novel and must have inventive step under Art. 29(1) (2). For software related inventions, “Utilizing the laws of nature” is met when the software will cooperatively work with a hardware resource that works towards a specific goal. Business Method is construed the same [JPO, 2015].

In other words, to be considered statutory, a computer software invention must satisfy at least one of two requirements, which are hardware requirements and corporation requirements.

There are some evolution of the Examination Guidelines for computer software related invention in Japan as follows.

- In 1975, Japan started to allow applications pertaining to software; but limits only to “method” claims. Computer program per se is still not eligible.
- In 1982, in response to the increased number of applications relating to microcomputers, JPO revised the guidelines to include “product” in software.
- In 1993, subsuming the earlier guidelines, JPO released a new guidelines with the guidance for construing eligibility of software patents, to wit: (1) Inventions that feature software based information processing that utilize laws of nature; (2) Inventions that feature the utilization of hardware.
- In 1997, amendment was to protect claims relating to computer readable storage media.
- In 2000, expanding the definition of computer readable storage media to product claim.
- In 2002, the amendment was to protect computer programs as “product invention”.
- Japan Patent Law was amended to include computer software as product invention.

Table 1 describes how case lost are continuously defined the eligibility of software patents absorbed to patent in US, Europe, in comparison with JPO’s evolutionary examination guidelines. CLS Bank v. Alice of CAFC were defined what consecutive software patent and effective discriminating those applications steps of just software patents perceived.

2.4 Innovation in Japan and ICT related applications

In the last 20 years, there has been a slowdown in Japanese economy. Leadership to innovation according to global innovation index, in 2015 Japan is only at Tier 15 not much as the least because under Abenomics wait to improve Japan’s innovative position in the world, focusing on innovations under internet of things and artificial intelligence. In Japan, they spent 3.29 % of GDP on R&D expenditure, which is one of the best. In 2014, Japan has the highest PCT patents on ICT filed in WIPO.

2.5 Quality Examination focus of JPO

Patent quality is being instituted in JPO. JPO has the quality examination focused instituting quality over quantity. Speedy substantive examination is responding to the global

Table 1. History of Software protection in JP EP US
[Tsuruya, 2016]

	Japan	The United States	Europe
Before 1990	1975 Guidelines for computer related invention (part one) 1982 Guidelines for examination of microcomputer related invention 1988 Treatment of computer related invention in examination (draft)	1909 Hotel Security Checking Co. v. Lorraine 1972 Gottschalk v. Benson 1978 Parker v. Flook 1981 Diamond v. Diehr	1987 T0208/84 (VICOM Appeal decision)
First half of 1990	1993 Revised Examination Guidelines for certain technical fields Section 1 "Computer software related invention"	1994 In re Schrader 1994 In re Alappat 1994 In re Warmerdam, In re Lowry Protection of medium containing software	
Second half of 1990	1997 Supplemental Guidelines for "Computer software related invention" Protection of medium containing software	1998 State Street Bank useful, concrete and tangible result test Denial of exclusion for business method invention from patent protection	1995 T0769/92 (SOHEI Appeal Decision) 1998 T1173/97 (IBM Appeal Decision) Technical effect or technical character is tested
After 2000	2000 Revised Examination Guidelines for certain technical fields Section 1 "Computer software related invention" Protection of program claim Claim which defies appropriate concrete data processing is allowable 2002 Revision of Patent Law Program claim is allowable 2008.1 Commissioner of JPO ask the taskforce whether the definition of invention in patent law should be revised. 2015 Examination Handbook	2005 Draft Guidelines for Statutory subject matter 2008.10.30 Bilski CAFC Machine-or-Transformation Test 2010.06.28 Bilski Supreme Court 2012 Mayo (Biotech) 2013.5.1 CLS Bank v. Alice CAFC 2014.6 Alice Supreme Court 2015.6 Update: Subject Matter Eligibility (USPTO)	2000.09 T0931/95 (Pension Benefit System Partnership Appeal Decision) Apparatus claim for business patent could be allowable 2000.11 EPC Diplomatic Conference 2005.7 EC Computer Directive dropped 2008.1.25 in UK Astron Clinica Case, Program claim is allowable 2008.10.8 in UK Symbian Case, Operating system (DLL) patentable 2010.05.12 Opinion to President asking EPO Board of Appeal regarding Software protection

markets. For the first action pendency, JPO has reduced their number of months of the pendency from 16.1 to 10.4 months in 2013. Also they set the new goal to reduce total pendency from 18 to 14 months from the request for examination at the allowance to the final decision. Also they increased the fixed-term examiners from various technological fields and industries who brought their expertise into the fold (from 294 in 2006 to 490 in 2013), thereby bringing the JPO output level to 50% from 2003 to 2013. To supplement and to manage the increased number of patent application, JPO increased the outsourcing of prior art searches [JPO, 2017-3].

To address matters about the patents, patent review or patent quality review has been introduced in JPO. Also in case of managing the distributing related intellectual property, JPO has instituted in the additional trial and infringement case trial.

3. Methodology of the Research

As for the methodology of research, it's qualitative research. Information have been gathered and analyzed from publicly available resources, such as case studies, articles, data retrieved from the Internet, such as opinion papers from some patent experts. Also the interview questions that support the research theme was formulated and the interviews from the stakeholders in Japan using the formed questions were conducted.

My main research theme for the studies to investigate how Japan managed to innovate despite control of describing software patents and patenting which let me to do the following research questions.

1. How has the ICT, especially software patents, assisted the innovation in Japan?
2. How do ICT or Software Patents are infringed in Japan and what strategies the users do in infringement or validation cases?
3. How has the Japan Government supported the innovation in ICT and what will be the most important IP support for ICT in the next stage?

Interviewees were catabolized to three categories and precise names of each persons and companies are as follows.

- IP Persons in the companies

Members of the Software Committee of Japan Intellectual Property Association (JIPA)

- Mr. Masakazu Hirano, Patent Division, Legal, Co,pliance & IP Unit, Fujitsu Limited. Chairman of JIPA Software Committee
- Mr. Hiroshi Takabe, Manager, Intellectual Property Department, Legal Division, Yahoo Japan Corporation
- Mr. Natsuki Fujimoto, Patent Attorney, R&D Group, Intellectual Property Section, Legal Department, Rakuten Inc.
- Mr. Shinsuke Kuniyasu, Chief, Intellectual Property Section, Legal Division, Kyodo Printing Co., Ltd.

- Ms. Izumi Oya, Patent Attorney, Manager, Patent Engineering Department, Copyright Corporate Intellectual Property Div., Mitsubishi Electric Corporation
- Ms. Makiko Kanno, Intellectual Property IP Engineer, Development Department, Planning and Development, Gurunavi, Inc.
And Other members of JIPA Software Committee
- Academic researcher
 - Professor Mitsuyoshi Hiratsuka, Department of Intellectual Property Strategy, Graduate School of Management of Science and Technology, Tokyo University of Science
- Lawyers

Members of the Patent Committee of Japan Patent Attorneys Association (JPAA)

 - Mr. Teppei Nakamura, Vice Chairman of Patent Committee, JPAA / Patent Attorney, Vice President, Qualified to Represent in IP Litigation, Minami Aoyama Patent and Trademark Attorneys
 - Mr. Manabu Suzuki, Member of Patent Committee, JPAA / Patent Attorney, K. Ito & Associates

4. Results and Analysis

For the research questions, I had with the interviews this seriously research analysis from the interview I got.

4.1 Interview to IP Persons in the companies - Members of the Software Committee of Japan Intellectual Property Association (JIPA) :

Points raised by industry representative in relation to Research questions were as follows.

RQ1: how has the ICT/software patent assisted innovation in Japan?

- Yes. Patent system assisted innovation in Japan
- ICT and software innovations should be protected by patents, however, they find the process of granting of patents for software slow as compared to the speed of its technological change
- Aside from software patent, open source software contributes to the innovation in Japan.
- Open Source software is a vital tool for the development of IT industry, however OSS providers need to patent their innovations to avoid litigations.
- Japanese companies tend to compile patent portfolios (therefore form a patent thicket), but they develop patents within their own business niche. If controversies arising from the relativeness or closeness to the competitors' patent portfolios, companies tend to resolve the issue via cross licensing. As much as possible they avoid litigations.
- Patent troll activities exist in Japan, especially in the software industry.

RQ2: How do ICT/Software patents are infringed in Japan? How do both patent holders and patent users respond to litigation?

- In Japan, to determine if there is an act of infringement, it had to be proven that the infringing party is using the patent for its own business. This is especially difficult in software litigation because software is intangible and the plaintiff has to provide a tangible

proof of infringement. Also, if the infringer is an individual, it is hard to provide proof whether the individual is using the software for his business or just personal use.

- On embarking a solution to infringement one may opt for invalidation, cross licensing or pay for the damages.

RQ3: How has the Japan Government supported innovation in ICT/Software and what will the most important IP support for ICT/Software in the next stage.

- Since business development in ICT is short and fast, an accelerated substantive examination for ICT patent application is desirable.
- Judiciary must create a special or specific criteria for judging for this kind of technology.
- In cases wherein the JIPA finds a patent is too broad, they send their opinion to the JPO, who may consider to evaluate how they issue patents (however, JPO is doing great on its job because they find patents in Japan are not over reaching).
- It is necessary for the system to have an Opposition system.
- In an IoT environment, several ICT devices are involved so it is important that there should be a clear cut criteria or guidelines that will construe the inventive step of combining several technologies for a special implementation or purpose. However, patents should be respected and as much as possible avoid an infringement.
- As IoT advances, systems relating to IoT may involve several other technologies, not just ICT or software. It is important that there should be a communication between examiners of different fields to help themselves in the course of their examinations.
- Government should create rules on how data is protected (in data sharing). However, it is desirable for the government to not to involve itself in data protection; because private companies need a leeway/freedom in accessing data.

Other issues and concerns:

- It is important for countries to have an accelerated substantive examination for ICT/Software applications and coupled it with a fair judicial system. This will benefit both local and foreign inventors.
- IP harmonization is also desirable such that a unified form of claim drafting is acceptable to many jurisdictions.

- For IoT technologies, it is important to develop a very strong patent such that competitors will not easily copy the technology.
- Information dissemination on Patents is desirable such that people will have a culture of respecting patent rights.

4.2 Interview to Academic researcher - Professor Mitsuyoshi Hiratsuka of Tokyo University of Science

Points raised by academe relation to Research Questions

RQ1: how has the ICT/software patent assisted innovation in Japan?

- Yes. Patent system assisted innovation in Japan
- Open Source Software (OSS) has an important role in innovation for an industry (e.g., Google OSS).
- OSS and Software patent should work collaboratively by creating a technical standard where everybody can use (in this way problems created by patent thickets are solved).
- Compiling patents portfolio is a bad business strategy and that patent thickets do not solve an innovation problem, in a way it hinders innovation instead.
- Japan must develop SEP guidelines. SEP prevents infringement litigations because parties agree to FRAND licensing. Inventions must be based on this standard.
- Patent trolls (patent trolling) will not survive in Japan, unlike in the US where trolls are vicious by collecting infringement money. There is a some kind of “cap” for collecting infringement money in Japan.
- Software patenting should be encouraged more in Japan. However, finds JPO’s assessment for Inventive Step too strict, thereby produce patents that are narrow in scope.
- Japanese companies rely heavily on their patents (they use these for negotiation etc)

RQ2: How do ICT/Software patents are infringed in Japan? How do both patent holders and patent users respond to litigation?

- In determining if a patent is infringed, it is important to look at how the patent claims are drafted (whether is broad or not). Reversed engineering the software code one way of determining.
- Solution to infringement varies: avoid the design of the patent (designing around), invalidate the patent (providing prior art) or just pay the damage or abandon the idea (if the patent is so perfect). Also, forming an alliance among competitors is a good option.
- Copyright do not provide enough protection for software. Prefers to protect software under patents.

RQ3: How has Japan Government supported innovation in ICT and what will the most important IP support for ICT in the next stage.

- In support to IoT/AI the government should establish an SEP (essential patent) standards, a Technical Standards which builds on the SEP standard and a Substantive Examination Guidelines which builds on both aforementioned standards.
- Promotion of the SEP is one challenge because parties might not want to share their patents (because patents need some kind of compensation)
- In an IoT environment, several ICT devices are involved so to avoid for a possible injunction/infringement, it is important to conduct prior art search first (before embarking on developing an ICT device).
- In an IoT environment, data sharing is of great concern. Issues on this have been discussed (at least in our level). Personal data such as health information, identity information should be protected.

4.3 Interview to Lawyers - Members of the Patent Committee of Japan Patent Attorneys Association (JPAA)

Points raised by the lawyers to Research Questions

RQ1: how has the ICT/software patent assisted innovation in Japan?

- Yes. Patent system assisted innovation in Japan

- Computer software programs should be protected under patents. Patents provide incentives for companies.
- Incentives are shared among inventors to encourage them to file more patent applications for the company. Increase in number of patent filings in this area in turn has supported innovation in Japan.
- Most companies in Japan do not take the Open Source strategy. They rather protect their innovations.
- Patent thickets exist in Japan, however, there are good and bad aspects of Patent thickets. Rather than create a monopoly, patent thickets create a sound competition among competitors by avoiding each of their own patents. Thereby creating great innovations. While patent thickets may be bad because it creates a barrier to enter into the field.
- Patent trolls virtually do not exist in Japan, however troll attacks are not as serious as in the US. There are only 1 or 2 warnings, or most 5, against trolls in Japan in the last few years. Compensation damages by trolls are very small in Japan.

RQ2: How do ICT/Software patents are infringed in Japan? How do both patent holders and patent users respond to litigation?

- In Japan, there is not special infringement procedure for software patents. The procedure is true to all of the technologies. Normally, the infringing party is sent a written warning and the case is lodged to the courts.
- There is small number of infringement cases in Japan as compared with the US. Companies avoid conflicts by cross licensing with each other (it may have something to do with the Japanese culture). There are only 10 to 20 filed infringement cases per year in Japan.
- Japanese companies tend to avoid high legal expenses so they settle disputes out of court.
- Normally, people opt to invalidate patents which have wider scope than theirs rather than designing around. However, recently, it is very difficult to win in an invalidation trial because the inventive step criteria in JPO become very low than what it is 10 years ago. So it is now difficult for lawyers to provide services for invalidation trials.

RQ3: How has Japan Government supported innovation in ICT and what will the most important IP support for ICT in the next stage.

- Post grant review is now re-introduced in the patent law system so it now easier to correct the wider scoped patents. However, post grant review cases are very low in Japan, so in that sense, patents produced in Japan are robust and strong.
- IoT and AI encompass many technologies. So JPO should train intra-divisional examiners who can transcend technologies other than their own.

4.4 Comparative analysis of the opinions from Japanese stakeholders

The summary of the answers to Research Questions 1: How has the ICT, especially software patents, assisted the innovation in Japan? is shown in table 2. It seems that they agreed that patent or software patent assisted innovation in Japan. Everybody said yes to that question. However they have putting the opinion when it comes to the software patent being contributed innovation in Japan. JIPA and JPAA said that open source software patent are indeed contributed to the innovation in Japan. Also they had different opinion about patent thickets in Japan. They said it is a normal strategy. Also patent troll exists in Japan, but if they exist, there is only minimal affect from them.

Institution	JIPA	Prof. Hiratsuka	JPAA
RQ1: How has the ICT/Software patents assisted innovation in Japan	• Patent assisted innovation • Software innovation should be protected by patents • Open source Software (OSS) contributed to Japan's innovation but OSS should be patented • Patent thicket is a normal strategy. • Patent troll activities exist in Japan	• Patent assisted innovation • OSS and Software patents should work together towards creating a technical standard. • Patent thickets hinders innovation. • Developing guidelines for Standard Essential Patents (SEPs) is a must • There is no patent troll activity in Japan • Finds JPO's inventive step assessment too restrictive thereby producing a very narrow claimed patents.	• Patent assisted innovation • Computer programs should be protected under patents. • Patents incentivize innovation through royalties • Companies do not do OSS strategy. • Patent thicket exist. It either assisted innovation or hinders innovation because builds barrier to entry. • Patent trolls virtually non-existent.

Table 2. Summary of the answers to Research Question 1

The summary of the answers to Research Questions 2: How do ICT or Software Patents are infringed in Japan and what strategies the users do in infringement or validation cases? is shown in table 3.

Everybody agreed that invalidation is the most way to invalidate the patent. Is there behavior when face the infringement they just invalidate the patents as solution for the infringement.

Table 3. Summary of the answers to Research Question 2

Institution	JIPA	Prof. Hiratsuka	JPAA
RQ2: How do ICT/Software Patents are infringed? How do patent holders and users behave?	- Proving infringement in Software is difficult because of its abstractness and judges lack technical background. - Solution to infringement are: invalidation, cross licensing or pay for damages	- Finds JPO's inventive step assessment too restrictive thereby producing 'narrowed' patents - Solution to infringement: avoid the design (designing around); invalidate the patent (provide prior art); abandon the idea; form alliance with competitors - Software inventions should be protected by patents; more protection than copyrights	- Small number of infringement cases in Japan because companies avoid litigation expenses so they just cross license each other or just go for an out of court settlement (has something to do with the Japanese culture). - If a patent is wide scoped, then a company just invalidate the patent by providing prior arts.

The summary of the answers to Research questions 3: How has the Japan Government supported the innovation in ICT and what will be the most important IP support for ICT in the next stage? is shown in Table 4.

All of the interviewees said that the important point is that there should be opposition system or patent quality review system in the government and also since IOT/AI environment is being developed. Also, JPO should establish another section who can examine application relating to IOT.

Table 4. Summary of the answers to Research Question 3

Institution	JIPA	Prof. Hiratsuka	JPAA
RQ3: How has the Government supported innovation in ICT/Software and what will be the most important IP Support for ICT/Software in the next Stage	• Since ICT/Software development is fast so should the examination procedure. • A special court for judging Software technology. • It is necessary for a Opposition system • Importance of clear cut guidelines for construing Inventive Step of Software applications. • Establishment of communication between examiners bec. IoT applications encompass many technologies. • Rules for data protection in the IoT environment.	• In support of IOT/AI, the government should: 1) Establish essential patent standards; 2) a Technical Standards which builds on SEP; 3) Examination Guidelines which builds on aforementioned standards. • Promotion of SEP standard is a challenge. • Issues on data protection in the IoT environment.	• Post grant review is re-introduced in JPO to correct the patents that should not have been patented. • Japan lags in IoT initiatives than US, China. • Japan is strong in IoT products, so the government should form strategies in protecting these products. • Since IoT encompass many technologies, JPO should train intra-divisional examiners who can transcend technologies other than their own. • There should be an IoT examination guidelines.

I thought from the study that it can be concluded that the patents really supported innovation in Japan. Because they provide incentives to inventors through royalties, they file more patent applications and supported innovation in Japan. Because more patent applications were filed, Japanese companies are pro-patent. The software innovation are protected under patents utility, so they prefer to protect software innovation through patents.

From the interviews, the companies do not go for open source strategy, however open source strategy supports innovation because they served as a platform for more innovations in Japan. Also designing around is not an option for innovation, but companies rather file for invalidation for patents that are deemed to be broad and overreaching.

When faced with an infringement cases, Japanese companies tend to settle disputes by cross licensing to each other or go for an out of court settlement are the preferred strategies. However, data getting from the data on infringement cases, there is no patent troll activities in Japan according to them. But if it did exist, then patent troll activities are not so fell and patent trolls will not have the big business in Japan because of the market. US is very big. Software Patents produced in Japan are of quality and robust because of the quality reforms xxx JPO.

Problems on quality in software patents are addressed in JPO because they have instituted patent quality review. Japan will soon developed technical standard for the using the standard essential patents as backbone. Japan will also develop strategies on how to collect patents will be included in SEPs and develop guidelines for the Fland negotiations. Standard setting organizations in Japan will be greatly invented for this and standard essential patents for ICT devices in the Internet of things environment.

As for the other concerns from the interview, they said there is importance of having an accelerated substantive examination procedure for software patents because software shortly get full of over time. Also they wish there is an IP harmonization in most of IP offices in the world for unified format for patent claims of software patents. Also a strong patent is desirable to keep off infringers. And there should be IP dissemination in countries like Philippines or in the SAM because to develop a culture for expecting IP.

From the results I found some differences in the opinion as the following.

- For the assessment of inventive step in JPO, Prof Hiratsuka said it's very strict. He wished that criteria should be lowered, while the member of JPAA said the assessment of inventive step in JPO is too high by triggers more allowed patents under software patents.
- They had different opinion about patent troll's existence in Japan. Prof. Hiratsuka and the members of JPAA said that there is no patent troll activities in Japan. However the members of JIPA said there is patent troll activity and actually one of the companies of patent trolls has gotten more than 100 million yen.
- On the question of open source software patent if it supports the innovation in Japan or not, Prof. Hiratsuka and the members of JIPA said "Yes, it does", while the members of JPAA said "No, the companies just prefer to patent their software". Actually they advised the organization for open source software to file for patent of their innovations.
- As for the question on whether the patent thickets supports innovation in Japan or not, Prof. Hiratsuka said "No. It hinders innovation because patent thickets are then to just innovate in the own technology, while both of the members of JPAA and JIPA said "Yes, it is a normal business strategy."

5. Implications and Recommendations

5.1 Implication

As a result of this study, it can be surmised that indeed patents supported innovation because patent incentivize innovation through rewards and royalties. Royalty is one motivation for people to invent more. Also the JPO is doing a great deal of a job for producing patents which of quality and robust. This is attributed to the quality reforms that the JPO is instituting for the past years.

Though Open source software assisted in improving the innovation in Japan, they are deemed to be not a good business strategy because the software could be exploited by others and reward is minimal. Most Japanese companies are pro-patent and they rather patent their innovations to protect. Also designing around to a patent is not a normal strategy. Companies rather file for an invalidation if they found out that a patent is broad and over reaching.

In software patent infringement, in Japan to determine there is an infringement, the software should be “done as a business” (Art. 68). However, providing proof of infringement may be difficult because software is intangible and judges are not that knowledgeable on the technology. So it is important for litigants to describe the act and the software in a most tangible way.

Japanese companies are aware of high litigation costs in infringement cases that is why they tend to pool patents to protect their business niche. Compiling patents or patent thicket is a normal strategy for Japanese companies. If faced with an infringement, companies reach resolution by cross licensing to each other or pursue an out of court settlement. That is why there are too little infringement cases in Japan. If the case is filed in the courts, normally the courts recommend for an out of court settlement.

There is a criticism that software patents are broad and have over reaching claims. In Japan, there is a Post Grant Review procedure in the JPO where a third party can invalidate the patents by providing prior arts. So the question on quality of patents being produced in JPO can be addressed through this procedure.

Japan will soon develop technical standards (e.g. UMTS of EU) using the Standard Essential Patents (SEP) as its backbone. Japan will also develop strategies on how to collect patents that will be included in the SEPs and develop guidelines in the of FRAND negotiations.

The standard setting organizations in Japan will be greatly benefited here. Standards are essential in the interoperability of ICT devices in the IoT and AI environment.

5.2 Recommendations for the Philippines

1. Explore the possibility of harmonizing the substantive examination procedures of both IPOPHL and JPO by agreeing to proper claims drafting for software patent applications. This is to address the possible clarity and eligibility rejections of applications relating to software. Japan will be the benefited in this strategy because there are more Japanese patent applications are received in the Philippines. In Japan, software inventions require that the law of nature is utilized to construe eligibility. This is realized by using hardware resources. This is different in the Philippines wherein software patent eligibility requires there is “further technical effect”. Though they differ in construing eligibility, they are similar in a sense that software per se are not eligible for patents and that software, to be eligible, it must be shown that the software is applied to a computer or a machine to achieve its purpose. Also, in Japan, software is explicitly categorized as a product in the Patent Law while in the Philippines, software products can be claimed in a computer readable medium.

2. Train ICT examiners to improve their technical background in software and software patenting. Since software or ICT devices belong to high technologies category, it is important that the skills of understanding of the examiners on these technologies should be high too. This can be done by sending examiners for seminars on ICT and software and learn histories and evolutions of these technologies and its impact on society and economy. Or by sending in the IPOPHL, experts who will conduct lectures on these matters. Ease of access to information and literatures regarding ICT innovations and techniques is also a desirable strategy. Subscription to non patent literatures is one way of doing this.

3. Adopt the “examination group” strategy of the JPO. This is to address the difficulties of examining ICT and software patent applications in the IoT (Internet of things) environments. IoT patent applications encompass other technologies such as medical, agricultural. In this way, quality search and examination on this technology can be achieved.

4. Intensify patent information on software patent eligibility and copyrights. This is to develop culture of respecting rights brought by patents and Intellectual Property in general. Education in IP will break the habit using knock off software and putting premium on hard work.

5. Develop the software industry by increasing investments in research and development as a government strategy. Increased R&D in software industry development will lead to more innovations in this area and in turn will lead to increase in patent applications.

Acknowledgements

I hereby express my sincere gratitude to Intellectual Property Office of the Philippines for providing me with this wonderful opportunity to enhance my professional skills and expand my knowledge on Intellectual Property Rights.

I am extremely thankful to The Japan Patent Office, The Asia Pacific Industrial Property Center of the Japan Institute of Invention and Innovation (APIC/JIII) for sponsoring this valuable long-term study cum research and for the excellent atmosphere provided for this study and I am indebted to them for all the help and assistance provided.

My heartfelt thanks to the Supervisor Dr. Yorimasa Suwa, Senior researcher of APIC/JIII for his tireless guidance and encouragement and introducing me to many interviewees who are experts in their relevant fields. I express my sincere gratitude to all the Interviewees for spending their valuable time with me providing very useful information and contributing to my research immensely.

My special thanks to Mr. Yuji Tsuruya and Mr. Takeshi Ueno for their valuable guidance and professional advice for this research.

I express my sincere thanks to Mr. Takao Ogiya, Director General, APIC/JIII for his kind support and for providing a highly professional and also a homely atmosphere for this study cum research.

My heartfelt thanks to Mr. Shibata, Ms. Yuki Takishima and Ms. Tomoko Uno of APIC/JIII for their extra ordinary support and enthusiastic coordination during my stay in Japan.

I express my best and warmest regards to all the staff of APIC/JIII and to my friends and colleagues in India and Japan who are too many and if I try to mention all their names I run the risk of missing a few and I am grateful for all their support and well wishes.

References

- IPOPHL. (2015). *R.A. 8293: The Intellectual Property Code, as amended by R.A.s 9150, 9502, and 10372*. Retrieved from IPOPHL:
<https://drive.google.com/file/d/0B2or2OrWYpIfN3BnNVNlUfjUmM/view?ts=58057027>
- IPOPHL. (2017). *The Manual for Patent Examination Procedure*. Retrieved from IPOPHL:
http://www.ipophil.gov.ph/images/2018Uploads/Patents/2017_Manual_for_Patent_Examination.pdf
- JPO. (2015). *Patent Act (Tentative translation)*. Retrieved from JPO:
<http://www.japaneselawtranslation.go.jp/law/detail/?id=2828&vm=04&re=01>
- JPO. (2017-1). *Examination Guidelines pertinent to IoT Related Technologies ~Application Examination Guidelines and Examination Handbook to IoT, AI, 3D-Printing Technologies, etc. ~*. Retrieved from JPO:
www.jpo.go.jp/tetuzuki_e/t_tokkyo_e/pdf/iot_examination_e/01.pdf
- JPO. (2017-2). *Case examples pertinent to IoT, etc. related technology*. Retrieved from JPO:
https://www.jpo.go.jp/tetuzuki_e/t_tokkyo_e/files_handbook_sinsa_e/app_z_e.pdf
- JPO. (2017-3). *Examination Quality Management*. Retrieved from JPO:
http://www.jpo.go.jp/english/ip-rights/quality_mgt/index.html

Information from the advisor:

Tsuruya, Y. (2016). *Comparative Overview of the Japanese, US, and European Patent Examination Practice*.

Appendixes

Appendix I: Interview with the JIPA Software Committee

Date and time: 10:00 – 11:45 AM, November 28, 2017

Venue: Conference Room 1, Tokyo Head Office of Japan Intellectual Property Association
Asahi Seimei Otemachi Bldg.18F 6-1 Ohtemachi 2-chome, Chiyoda-ku Tokyo, JAPAN

ATTENDEENDEES

Interviewees:

Mr. Masakazu Hirano, Patent Division, Legal, Co,pliance & IP Unit, Fujitsu Limited.
Chairman of JIPA Software Committee

Mr. Hiroshi Takabe, Manager, Intellectual Property Department, Legal Division, Yahoo
Japan Corporation

Mr. Natsuki Fujimoto, Patent Attorney, R&D Group, Intellectual Property Section, Legal
Department, Rakuten Inc.

Mr. Shinsuke Kuniyasu, Chief, Intellectual Property Section, Legal Division, Kyodo Printing
Co., Ltd.

Ms. Izumi Oya, Patent Attorney, Manager, Patent Engineering Department, Copyright
Corporate Intellectual Property Div., Mitsubishi Electric Corporation

Ms. Makiko Kanno, Intellectual Property IP Engineer, Development Department, Planning
and Development, Gurunavi, Inc.

Other members of JIPA Software Committee

Rico Collado, Researcher

Dr. Yorimasa Suwa, Supervisor

Ms. Reiko Madrene, Interpreter

QUESTIONS AND ANSWERS

Research Question I:

How has the ICT, especially software patents, assisted innovation in Japan?

1. *Is protecting software inventions support innovation in Japan?*

In answering the first question under the first category, Mr. Hirano said that yes, unless software is protected, companies will make counterfeit software as provided by the competitions and this will mean that innovations will be inhibited. He explained that software patent have two main categories, the type of software that is installed in a conventional computer and is upgraded from time to time to improve the performance of the computer. The other one is a software that processes the function of an ICT related product. The software in the first category can be protected by a patent under the present Japanese patent system, however in terms of software in the second category, in the ICT related software, because it can be regarded as a business idea therefore, it may not be patentable. Instead, this kind of software is utilized in developing new business processes for corporate business activities. Since it takes a few years before a patent is issued under the present patent system, patent protection of software under the second category is insufficient because business activities tend to develop faster than the issuance of patents therefore by the time the patent software is issued, the business activity has already ended.

2. *Is open source software support innovation in Japan? Can a software patent and open source software licensing create a collaborative environment for innovation? In what way?*

Mr. Hirano: As for open source software or oss, it is not something that everybody can utilize for free. It is based on contract between the user and the software provider under a specific usage of the software. As a general practice, oss also support innovation.

3. *Is there a patent thicket issue exist in the area of Software patents in Japan? When do patent thickets are good/bad?*

Mr. Fujimoto: Compiling patents portfolio or some people called it a patent thicket, is a normal business strategy in Japan. If a patent right of a company is closely related in a

complex manner with a competitor's patent, the controversy should be resolved directly through cross licensing via the intervention of the business association where the both companies belong. It should not be resolved under a legal point of view.

Mr. Hirano: In addition, in terms of Business model patents, normally, a company tends to file for patents in areas where the company is strong. Even though the competitors owned many business model patents, it will not directly affect the company's business because it focuses on in its own specific business area.

4. *Is patent troll (Patent Assertion Entities) activities affect software innovation in Japan?*

Mr. Fujimoto: Patent troll activities exist in Japan especially in the software inventions sector because software is an idea and if one can describe it in a patent application, then one can get a patent for it. Some IT companies were involved in a patent litigation with a troll. In Japan, the litigation cost with a patent troll may amount to 10 million to 100 million yen, or may be 1 billion yen, it depends on the extent of the patent claim really.

Mr. Hirano said patent trolls also exist in other field of technology.

Research Questions II.

How do ICT/Software patents are infringed in Japan and what are the behaviors of patentees/software users to infringement cases?

Mr. Hirano: I explain first the infringement situation in Japan. First, it had to be determined whether an act is an infringement or not. In the Japan Patent Act, there is a provision which states that in order to determine there is an infringement, the alleged infringer is using the patent for his own business. This determination is important especially with Software patents because it had to be determined whether the infringer is using the software for a business or not (or it is infringing a certain claim in the patent or not). For an individual user (not a corporation), it is really hard to determine whether he is just using the patent for his own private use and not using the patent for his business.

1. How patent rights, especially software patent rights, are asserted in Japan? How disputes are settled/negotiated?

Mr. Hirano: When it comes to ICT software patents, they are invisible so to speak, because they got much to do with concepts. So from the point of view of the plaintiff, whenever there is litigation, one has to provide proof that there is really an act of infringement from the external visible perspective so to speak. In the actual litigation in the courts, for the plaintiff and the defendant, they need to come up with a very convincing and visible proof to judges who do not have technical background.

2. Is ‘designing around’ to a dominant software patent is the best solution to avoid a potential patent infringement? What steps would you/attorney do in case when the demanding party has wider scope of claims than your client’s?

Mr. Hirano: in terms of ‘designing around’ issue, whether it is good or bad, it is really a case to case situation. On embarking a solution for infringement, one may opt for invalidating the patent, a licensing negotiation, or pay for the license fee and try to resolve the whole issue. As for the dominant patents, one should strike a right balance between cost and effect and try to seek for an optimal solution. The solution for this kind of problem may be classified into three: outright designing around, go for a licensing negotiation and last, having to give up the business. For Fujitsu, whenever we start a new business, as a company, we conduct prior art searches first to make sure we are not infringing other parties’ patent rights.

Research Questions III.

How has Japan Government supported innovation in ICT and what will the most important IP support for ICT in the next stage?

Mr. Hirano: The JPO constantly updates its substantive examination guidelines for ICT related inventions; however, compared to other industry sectors, the time frame for the business development for ICT sector up to the start of the actual business is very short and fast. Therefore, an accelerated substantive examination is crucial and very important for ICT related inventions.

1. Software inventions are patentable in Japan. However, some critics say that software inventions cover many ideas and therefore cover many protections. What should the government do to prevent it from issuing patents whose claims scopes are broad and over-reaching? Should there be a Post Grant Review in the Patent Office?

Mr. Fujimoto: This (Infringements involving ICT inventions) really involves the application of the Doctrine of Equivalents and the extent of its application. It is important that the judiciary create very specific criteria for making decisions for this kind of litigation in this area.

Mr. Hirano: To add to whatever that was described, whenever the Japanese Government or its ministries/agencies will come up with something new, public hearing always take place. They invite stakeholders coming from various places to hear their views and opinions about it. Whenever the JPO make a revision or an update to their examination guidelines, a stakeholders meeting is always convened. When it comes to the question whether a patent is too broad or not; if JIPA is of an opinion that a patent is too broad, they make sure that they present this opinion to the JPO. However, for JIPA, patents produced in Japan are generally not broad. For Opposition System, JIPA thinks that this is necessary because if the scope of right is too broad, this affects the situation.

2. The Internet of Things (IoT) is the next big thing in Japan. IoT technologies rely on interoperability between smart devices in a network and may get into inventions which have been patented before. What challenges one may encounter in patenting these technologies? What should the Patent Office do to address these challenges?

Mr. Fujimoto: For Internet of Things, JIPA has a concern on patent rights that are granted for inventions which do not have special features that would make them patentable. For example, there is nothing inventive in slightly modifying the use of a conventional sensor. So it is important that a clear cut criteria or guidelines is needed that would construe the inventive step of combining many technologies for a special implementation/purpose.

Mr. Hirano: IoT and AI surely attract many attentions here in Japan. In IoT, one has to have a terminal and a server that process and between them there a list of

communication technologies that connect the two. If an invention falls into this framework, it is patentable in Japan. However, if there is a similar patent that is existing, the patent should be respected. As for the JPO challenges will be face in the future; private companies really avoid a situation in which a certain IoT technology or business is patentable in Japan but not patentable in other jurisdiction like in the USPTO or in IPOPHL. Since Fujitsu is a global business, we are looking for patents that can be registered with IP offices around the world.

Question: Would you suggest to amend the IP rules or examination guidelines of other IP offices like IPOPHL to accommodate IoT technologies (because IPOPHL is also accepting applications from Japan)?

Other opinions: There is no need to revise the rules or guidelines, however, guidelines/rules should have been made clear (on what to protect or not). If the rules would be revised, there is a possibility that technologies that were once patentable may not be patentable under the new rules; and the whole situation will be drastically reversed. However, there will come a time when IoT related technologies will become bigger (more popular), and if ever an IP office cannot provide legal protection on these kinds of technologies, then may be an amendment on the rules would be necessary.

Mr. Kuniyasu: Another thing, as IoT related technologies continue to advance, this may affect other technological fields, and for examiners from other technologies who may have nothing to do with IoT (or they may not have known about IoT) will also be affected. Therefore, as the prospect of having an increase number of applications related to IoT, it would be nice to establish communication between examiners of different fields because in the course of their examination, they may have encountered IoT technology in their own respective field.

At this juncture, since all the questions have been covered, Dr. Suwa suggested to the panel to shed some information on how they handle IoT technologies in their respective field and also if there is any request that they may have to the IPOPHL or to Philippines government.

Mr. Fujimoto: Rakuten develop Drone technology wherein the drone is use to deliver items. As for a request, it is important for an IP Office to enhance and upgrade the country's IP system. It should come up a fair IP system that will work equally for Filipino and foreign patent holders. If a case is brought to a court, the judges must come up with a very, very fair decision. So like two wheels that are in need of upgrades, both the administrative and the judicial systems should be upgraded simultaneously.

Mr. Takabe: This is mentioned in the questions. Open Source Software and Software Patents were one of the topics discussed by the Software Committee last year. Of course, Open source software is indispensable for the development of the Internet and IT industry but OSS and patent rights which is exclusive rights, are regarded as two different things and that is why there have been many litigations with Open software like Linux and others. In that sense, Some think that innovation is being inhibited to a certain extent. But from the point of view of companies that provide Open source software, first these things need to be protected by patents, and then based on that pre condition it can be widely spread and utilize by other users.

Mr. Hirano: Fujitsu is paying much attention to the UN's SDG (Sustainable Development Goals) and Japanese companies are trying to think about how they can contribute in the achievement and implementation of SDG. And our division, the IP division thinks what IP can do to contribute to the goals. It is important to come up with means and methods to fully utilize IP.

Other opinions: As for a request for IP offices, every IP laws (in the world) are different in terms of how a patent claim is treated, for example, whether dependencies of claims are allowed or not, and these are dictated by the system. With these in mind, really, IP harmonization is strongly recommended to achieve. If harmonization is attained, then it will be ideal for companies.

Mr. Kuniyasu: Kyodo Printing is a printing company, so when it's come to patents, it is not involved with software patents, but is involved in products for packaging with special function for IC cards and applies patents for visible prints such as QR codes etc. The company files patent applications with IP offices in the ASEAN region and in other parts of the world and in those countries, when it comes to patent rights, it not common

to find actual infringement cases. So it is hoped that patent information dissemination should be intensified so that people can voluntarily avoid infringing patents rights. It is hoped that that kind of culture will spread among ASEAN nations.

(End of document)

Appendix II: Interview with Professor Hiratsuka of Tokyo University

Date and time: 3:00 – 4: 00 PM, December 1, 2017

Venue: 2/F, Lecture Room, Kagurazaka Campus, Tokyo University of Science

1-3 Kagurazaka, Shinjuku-ku, Tokyo, JAPAN

ATTENDEENDEES

Interviewee: Ptof. Mitsuyoshi Hiratsuka, Tokyo University of Science, Professional Graduate School, Department of Management of Technology

Rico Collado, Researcher

Dr. Yorimasa Suwa, Supervisor

Prof. Hiratsuka first asked the researcher if Software is patentable in the Philippines. The response was that software is copyrightable, but it could be patented if it can be shown in the patent description and claims that the software can be applied or it can be used as a function in running a machine like computers etc.

Prof. Hiratsuka pointed that copyright protection is not enough for software innovations because the copyright protection ends if there is some changes in the source code. He even informed that software is patentable in Japan and Korea and that software patents in Japan should be used for businesses

QUESTIONS AND ANSWERS

Research Questions I:

How has the ICT, especially software patents, assisted innovation in Japan?

Prof. Hiratsuka mentioned that open source software (OSS) is very important in Japanese industry. The best example was that of Google's OSS and Google's patents are released for free because their market is large. Their patents are available for free and in so doing making their patents as a program standard. This is an example of open source. This is not like FRAND (Fair, Reasonable and Non-Discriminatory terms of licensing) where there is an amount of licensing fee, however, open source is free. People can download the software and researchers can use the google version so that it can be

improved and have the improved version is released to the market. In this way, OSS can be used in support to innovation.

I-1. Is protecting software inventions support innovation in Japan?

Yes

.

I-2. Is open source software support innovation in Japan? Can a software patent and open source software licensing create a collaborative environment for innovation? In what way?

Yes. OSS and Patents can make a collaborative environment by agreeing to establish or development the same format or program (standard) for all parties to use.

I-3. Is there a patent thicket issue exist in the area of Software patents in Japan? When do patent thickets are good/bad?

Yes and patent thickets are problematic and it is a bad business strategy unlike the OSS. This is related to answer to question no. 2 where there is a need for collaborative efforts between OSS and Patents to make a standard. There is a plan to create a committee to solve the problems created by patent thickets strategy. Japan (JPO) is creating a guideline for standards which tackles this problem and it includes FRAND strategies, what constitutes bad faith etc. The guideline should have been issued by March next year. EU is ahead of us, they already have their SEP (Standard Essential Patents) guidelines only this November. SEP prevents infringement litigations therefore addressed the problems in patent thickets which somehow stifle innovations (because patents are protected). SEP helps in negotiations for using patents like FRAND licensing, etc.

I-4. Are there patent troll (Patent Assertion Entities) activities in Japan? In what way it is affecting innovation in Japan?

No. If there is, the activity is so small because the market in Japan is small unlike in the US. And also there is “cap” amount for infringement money to collect. That is why patent trolling business in Japan is not good. Also, yes, there is a kind of relationship

between patent trolling and patent thickets (patent thickets stifle innovation, see answer above).

I-5. Before, software patents were unheard of because software was considered a mathematical formula to be run in a computer so therefore, an abstract idea. However, in the advent of jurisprudence such as Diamond v. Diehr and the slew of court decisions that followed it, software suddenly became a subject for patent eligibility which consequently, a lot of patents for software were issued worldwide. Some innovators were uncertain to innovate in this field for fear that they might infringe a certain software patent claim. Is over-patenting in a field of technology hinder innovation?

There is no over patenting (meaning overlapping claims in many patent claims) in Japan because JPO's examination guideline is too strict that claims are made narrow (not broad, unlike in the US where patent claims are made broad). I think patenting in software patents should be encouraged more in Japan. However, the Japanese examination guidelines is too stiff when it comes to assessing inventive step of software related patent claims. So there is no way that over patenting is happening in Japan. I think Japanese companies really rely on their software patents.

Research Questions II.

How do ICT/Software patents are infringed in Japan and what are the behaviors of patentees/software users to infringement cases?

I think infringement happens depending on the how the claims are drafted. Sometimes, the source code is reversed engineered to see if the patent is really infringed. The solution to infringement varies: avoid the design of the patents (designing around), invalidate the patent (must provide prior arts) or just pay for the damages.

II-1. How patent rights, especially software patent rights, are asserted in Japan? How disputes are settled/negotiated?

Same answer. To add, also forming an alliance with the patent holder is a good option.

II-2. Is 'designing around' to a dominant software patent is the best solution to avoid a potential patent infringement? What steps would you take in case when the demanding party has wider scope of claims than yours?

Yes. Agreed. If this patent is a perfect patent, then there is nothing one can be but to avoid the patent. However, if the patent claims have wider in scope, then perhaps one should provide prior arts to invalidate the wider scoped patent.

II-3. Is patenting the software innovation is the best option for IP protection? Is copyright provides enough protection for software innovation?

Yes, it is the best option. But there are other options like, trademarks, patent design etc.. As I said, copyright does not provide enough protection.

Research Questions III.

How has Japan Government supported innovation in ICT and what will the most important IP support for ICT in the next stage?

Prime Minister Abe has created many committees to support innovation for Japan and have budgeted programs that goes along with this strategy. One support would be is by creating SEP licensing guidelines and making this guidelines known to Japanese society. Sometimes, patent protection may not be good but sharing innovation is. First SEP standards or guidelines should be established. Patents produced in SEP should be compensated first. These patents create benefits to the Japanese and other societies in the world and they will become the technical base for the creation of technical standards. Then, an IoT/AI examination guidelines should be created based on these two.

III-1. Software inventions are patentable in Japan. However, some critics say that software innovations cover many overlapping ideas in the software patents that were issued over time. What should the government do to prevent it from issuing patents whose claims scopes are broad and over-reaching? Should there be a Post Grant Review in the Patent Office?

In this area, JPO is doing well in producing patents with claims that are not over reaching. Japanese patents are not broad in fact, their claims are too narrow. Sometimes,

it is good not to put too much restriction in assessing inventive steps. Yes, in fact there exist an PGR and invalidation systems in Japan. It is better to have than nothing.

III-2. The IoT (Internet of Things) is the next big thing in Japan. IoT is mostly based on software applications that are used to control and connect smart devices and share the data of these devices for processing through the internet. Interoperability of these devices is the key to make IoT devices to work. What is the impact to IoT device owners if the software being used is already IP protected, e.g., software patent? What challenges will the government encounter in providing IP protection for these new and emerging technologies?

The impact is injunction and paying damages. That is why companies conduct prior art search first to detect if there is possible infringement.

The challenge of promoting and making the SEP standards is one. Government agencies will not have to bother of getting licenses from standards like IEEE, ITU etc. because the SEP standards has been established. Innovations can be patented based on these standards. IP protection by itself is not enough. There is a need for a technical standards, especially IoT technologies.

III-3. Data sharing is one of the backbone in the implementation of IoT. However, some of these data are mostly personal data. How can a data be protected considering it is shared in the IoT? Should there be separate law on how to protect these?

Yes. This is already on the way. These issues are under discussion at a committee, discussion is underway on how confidential information should be managed and trade secrets were utilized. This is a delicate subject matter, example, health data should not be shared. Personal data should be protected under a special law. Under the law, people may opt out to be anonymous because companies can access public health databases. People may opt out not to reveal their names, addresses etc.

[End of document]

Appendix III: Interview with member of the Japan Patent Attorneys Association (JPAA)

Date and time: 1:00 – 2:00 PM, December 13, 2017

Venue: 2/F, Meeting Room, Benrishi-Kaikan

3-4-2 Kasumigaseki, Chiyoda-ku, Tokyo, Japan

ATTENDEENDEES

Interviewees:

Mr. Teppei Nakamura, Vice Chairman of Patent Committee, JPAA / Patent Attorney, Vice President, Qualified to Represent in IP Litigation, Minami Aoyama Patent and Trademark Attorneys

Mr. Manabu Suzuki, Member of Patent Committee, JPAA / Patent Attorney, K. Ito & Associates

Rico Collado, Researcher

Dr. Yorimasa Suwa, Supervisor

Ms. Reiko Madrene, Interpreter

QUESTIONS AND ANSWERS

Research Question I:

How has the ICT, especially software patents, assisted innovation in Japan?

1. *Is protecting software inventions support innovation in Japan*

Yes. Because we are patent attorneys.

Starting 2000, JPO had changed the system, in that computer program becomes patentable so it was a major amendment as a result filing software related inventions jumped up.

Plus when it comes to software computer programs, they can be protected by copyrights, but when it comes to finding direct protection for IT is and how it operates, protecting thru patents is indispensable so in that regard, we think that software patents are absolutely necessary to promote innovation by way of providing various incentives.

In Japan most of the software invention application filings are done by big electronics companies. And within these companies, they have really good Employees' Invention Systems, in which researchers and inventors are encouraged to file patent applications, and so they have in-house incentive schemes where inventors and researchers can get remuneration as a result of their patent filings and that will contribute to the increase to the number of software filings.

Normally, with big companies, under contract employees' patents are owned by the company.

2. *Is open source software support innovation in Japan? Can a software patent and open source software licensing create a collaborative environment for innovation? In what way?*

Since we are patent attorneys working at patent firms, we might not be well versed about Open Source Software. It is because we handle prosecutions and filing of patent applications. Whereas, attorneys who work for big companies are well-versed on this matter.

But generally, Open source software is not a strategy choice for Japanese companies but rather inventions are preferred to be protected and not open.

Software Patent and Open source software cannot work for a collaborative environment. One example of such collaboration is GPL (General Public License). However, this is not a trend in Japan, so companies do not pursue this.

3. *Is there patent thicket issues exist in the area of Software patents in Japan? When do patent thickets are good/bad?*

Yes. Patent thicket issue exists in Japan.

For good the aspect, rather than allowing a small number of patent holders to monopolize the patent (field of technology), if there is a patent thicket that promote sound competition, so these small number of patent holders will not be able to monopolize and exclude their competitors in their field. So, companies, big or SME, they need to be on the same field and competing soundly against each other. Sound competition is good for everybody that is involved.

But at the same time, there are negative aspects as well, because if there are very complicated relations between various different patents for similar technology field, companies who are entering that particular field, it will be very difficult to accurately grasp the relations between all the patents existing in the thicket and that becomes a huge hurdle for entering that particular field. So it is like a barrier and that is the negative aspect.

If you look at the global market, litigation between Apple and Samsung is a very famous case. In Japan there is a famous litigation case in this new field. Two years ago, in a particular case that involved a FRAND or a standard issue patent, the Japanese judicial decision that was handed was more advantageous for the licensee, which means disadvantageous to licensor or the patent holder. As a result, it makes it easier for new comers to enter into the field and I think in Japan the general trend is moving toward that situation.

4. *Is patent troll (Patent Assertion Entities) activities affect software innovation in Japan?*

We can't think of any patent troll that is active in targeting Japanese market right now. However many Japanese companies operate in the US and other parts of the world. And for these companies, the IP personnel are struggling to deal the troll activities there than start innovating. In that way, patent trolls affect the Japanese software innovation overseas.

I looked at the statistics, from 2012 to 2015, cases that involve issuing warnings against patent trolls in Japan are 1 to 2 cases annually, or at most 5 cases. So there are little instances that patent trolls attack Japanese firms. One major difference between Japan and the US is that the compensation damages are very small in Japan. Therefore patent trolls are less inclined to attack here in Japan.

Of course, Japanese companies here are aware that patent trolls may land in Japan in the future. So companies device counter measures to deal with trolls, which are operated by the organizations so called "Defensive patent pools" or "Defensive patent aggregation", i.e. LOT Network <http://iotnet.com> in the former case and RPX Corporation <http://rpxcorp.com/> in the latter.

Research Questions II.

How do ICT/Software patents are infringed in Japan and what are the behaviors of patentees/software users to infringement cases?

1. How patent rights, especially software patent rights, are asserted in Japan? How disputes are settled/negotiated?

In cases of infringement, the same procedure is applied to all technologies; there is no special procedure for cases involving software patents. Normally, written warning is sent to infringing party first and the case is lodged to the court.

Obviously, there is little infringement cases here in Japan than in the US. Normally, companies avoid litigations; instead they try to resolve the controversy through cross licensing. It may have something to do with the Japanese culture of avoiding conflicts.

In terms of number of software patent infringement litigations, there are only 10 or 20 per year.

In many cases, companies undergo out of court settlements.

However, if the litigation continues up to a decision, the decision does not always favour the patent holder, that is, the court always finds no infringement happened.

Based on my experience as patent attorney, if an infringer admits to violating the patent right, the next step is to assess the actual amount of damages. An infringer will have to pay very huge amount of money which means attorney fees and the actual damages. In that case, the judge will just recommend an out of court settlement. That is why there is a lot of out of court settlements in patent infringement cases in Japan.

2. Is 'designing around' to a dominant software patent is the best solution to avoid a potential patent infringement? What steps would you/attorney do in case when the demanding party has wider scope of claims than your client's?

Normally, people opt to invalidate the patent rather than designing around.

It's really case by case. It depends on in what phase of product development the product is in. If it is still at the initial phases, and there will be changes in composition of the product if it is designed around, then designing around is an option so that you can avoid infringement. But if you cannot achieve your initial purpose even if you designed around, then invalidation is the best option and the holder will not be able to exercise the right.

Looking at the recent trends, patent grant ratio continue to rise while patent invalidation ratio continue to decline. So it is more and more advantageous for the patent holders here in Japan.

The background to that trend is that, in the past 10 years or so, the criteria for the inventive step have been lowered so to speak. So it is becoming more difficult to win in an invalidation trial against a patent which have already been registered. Even if you conduct a very thorough prior art search, and you come up with a prior art A and a prior art B, and combine them together and still the inventive step argument is more difficult to use because the criteria of inventive step result has become lower, so that the situation has becoming more difficult compared to 10 years ago and so it is also extremely more difficult to continue providing the services by avoiding the patent holder's execution of rights thru the invalidation process.

Research Questions III.

How has Japan Government supported innovation in ICT and what will the most important IP support for ICT in the next stage.

1. Software inventions are patentable in Japan. However, some critics say that software inventions cover many ideas and therefore cover many protections. What should the government do to prevent it from issuing patents whose claims scopes are broad and over-reaching? Should there be a Post Grant Review in the Patent Office?

As explained, we have invalidation trial system. In addition, two years ago, for the first time in 10 years, post grant review system is re-introduced. So it becomes easier to correct the scope of patent rights which are too broad. However, success ratio of post grant review is still very low in Japan, so the situation where patent holders are stronger has not changed in that regard.

Basically, when it comes to the scope of right of software patent, it should NOT exceed the scope of what was disclosed in the specification (disclosure requirement). That is the most desirable situation. But sometimes in some findings, the expression or the terminology used in the claims is ambiguous and it is very hard to understand what device it is talking about or what kind of web services it is talking about just by reading the content of the claim, the scope of claim in that situation is very broad. But even if it is the case, sometimes, depending on the substantive examiner, they allow that. And if it

is allowed, then one can cite the support requirement. But ideally, what is described in the claim and what is described in the specification should be matched. The examiner should make sure that these two matched.

Recently, when it comes to the interpretation of the scope of right (in an invention) by the judges at the court, even if the wordings in the claim is seemingly broad, if carefully follow the content in the specification in the prosecution history then they try to interpret the scope of right by narrowing it down to more reasonable degree and then the judges will try to make decision as to whether it constitute an infringement or not, so, there are many cases in which the scope of claim is seemingly broad but in reality, it is not that broad. Just because the scope of claim is broad, it does not automatically mean that that is a problem from the point of view of the court.

Does the JPO produce patents that have narrow claims?

The JPO examiners have to fully understand the contents of the specification and base on that, try to interpret the meaning of the words and expressions in the claims and then make the decision to grant or refuse. It does not mean that the scope of claims of patents granted by JPO examiners is narrowed. However, sometimes JPO examiners grant broad claims.

The interpretation of the claims in the high courts is much narrower than the interpretation in the JPO.

2. The Internet of Things (IoT) is the next big thing in Japan. IoT technologies rely on interoperability between smart devices in a network and may get into inventions which have been patented before. What challenges one may encounter in patenting these technologies? What should the Patent Office do to address these challenges?

The JPO is trying to include more IoT related examples in their examination guidelines and they are trying to implement more measures that would encourage IoT related patent filings.

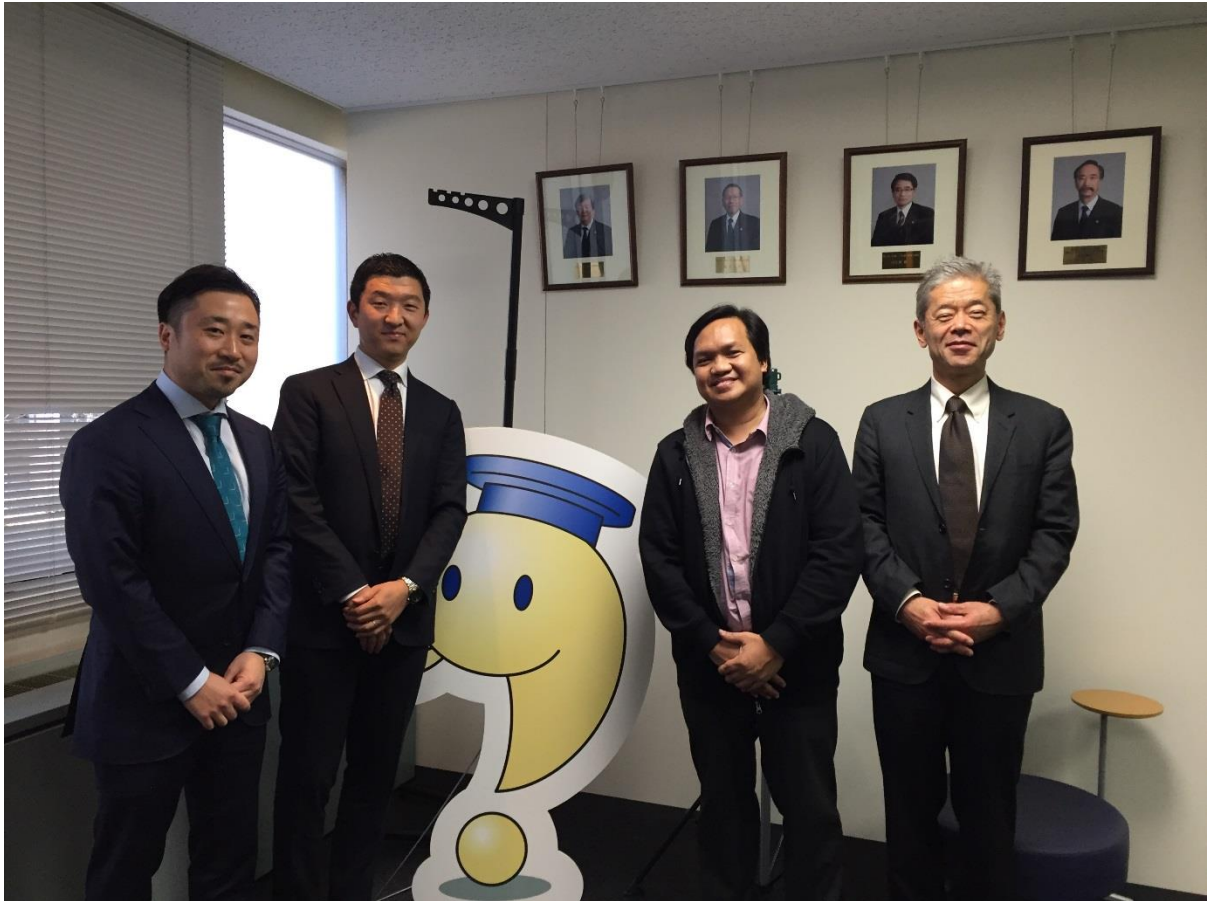
For possible challenges they will face in the future, some challenges has already been happening, for example, in the past, if an application filed is in electronics field, then the electronics examination division will deal with it, however, if the application is an IoT application, not only will the electronics division will examine the case, but it may

involve other fields like biotechnology, agriculture etc. in the examination of the said application. In the case like that, examiners who had been specializing in biotechnology or agriculture do not have the expertise of software related invention and in that case there is this question whether examination can be conducted in the most optimum and appropriate manner, therefore, from now on, it more necessary to involve intra-divisional examiners, meaning examiners transcending to other technologies. This already happening in the JPO.

When it comes to IoT, currently especially in the field of AI and Machine Learning, countries like the US and China are taking the initiatives, and it is said that Japan is lagging behind; however, Japan is strong in the field of IoT devices such as sensor or sensing machines. So in terms of core technologies required for AI and Machine Learning, for example the peripheral devices, which are indispensable for the development of IoT, needs to be strongly protected. So this strong protection can be the core of future patent strategies and this is a crucial aspect in an IoT strategy.

When it comes to AI or Machine Learnings, it encompasses many technologies and also, AI or Machine learning can be applied to other sectors such as agricultural farming, forestry, food and beverages restaurants etc., so it is very likely that somebody who have been working as an examiner in the field of fisheries is all of the sudden are required to perform substantive examination based on his expertise as well as on AI/Machine Learning right away. This could happen. The question now would it still be possible for them to always conduct uniform quality examination. So it is important to have an examination system where the quality of examination is the same or uniform.

I am not an expert about SEPs, but we already talked about patent thickets, for example, telecommunication devices used in vehicles, it sensed something that data is processed, and in case like that, it is possible and feasible to obtain patent for each single technology involved but it is made up of quite a few so you will end up creating patent thicket. And it is not easy to use patent like that and that is why standardization is required so that you avoid various disputes. And in Japan, we heard many standardization organization have already been set up for example, TOYOTA work together with Panasonic, they jointly made a move to standardize sensing technologies evolved for vehicles automatic drive technology for vehicles (Ref. Japan Automotive Software Platform and Architecture <https://www.jaspar.jp/en>) . So there are moves toward standardization.



[End of document]