Protection of Computer Software and its Impact on Software Industry in Japan and India: Empirical and Comparative Study (*)

Invited Researcher: Ravindra CHINGALE (**)

In 2013, Indian Patent Office (IPO) came up with guidelines for computer related inventions. Although there were some steps mentioned in the manual of patent office practice and procedure, this is the first time that the IPO specifically drafted guideline for such inventions. The second set of guidelines was published in 2015. Further, it has undergone rounds of discussion till it was finalized in the month of February 2016. However, the same was criticized. On June, 30, 2017 the Patent Office of India streamlined and modified the earlier guidelines and published on its website. Japan Patent Office also has guidelines to examine patent applications for computer software related inventions. It is seen that various patent offices in different countries have their own examination guidelines. These guidelines are important not only for the patent examiner but also for patent attorneys and software engineers (developers). However, it is observed that there is no uniformity in the guidelines and method of examination in various countries. Thus, these differences in approaches and opinions inter alia affect protection of software or computer related inventions, which ultimately affect the software industry. Considering the abstract and fast changing nature of software, it is important to have uniform method for examination. The jurisprudence of software patent is constantly evolving. In USA after the Alice case (2014) US Federal Circuit gave significant decision in McRo case (September 2016) which elaborated the concept of patentability of software patent. After the decision, the response from industry was much positive so as to provide greater stability to US patent system and its digital economy. Software industry in Japan and India has huge potential and they are contributing significantly in their economy. Thus it is important to study impact of protection of computer software on software industry in Japan and India in terms of software engineers, patent examiners and patent attorneys etc. so as to come up with harmonize solution to determine uniform criteria for patentability of software related inventions.

I. Introduction

This is 2018 in the 21st century where we have almost completed seventeen years and now in the eighteen. This age is considered as most efficient and called as age of young adults. It has been seen that internet has transformed into the life of human being tremendously and made the world to come closer with everything possible on one click. World Wide Web has celebrated its silver jubilee recently in the year 2016. Though, internet has transformed world the technology behind it has posed various challenges before governments about its policies, regulations, jurisdictions and protections. India has seen exponential growth in the internet and software industry from the beginning of 21st century. Increase in online transactions, use of plastic money,

(*) This is a summary of the report published under the 2017 Industrial Property Research Promotion Project entrusted by the Japan Patent Office.

(**) Patent Agent, Indian Patent Office and Advocate, Supreme Court of India, at our institute over a period of approximately 2 months from September 21, 2017 through November 18, 2017, as an Invited Researcher for the Fiscal Year 2017.

innovative online business methods and many other creative business solutions has promoted young mind for new vision and inventions. India has seen tremendous growth in Indian Software Industry with significant contribution in the GDP.

Software has now become an essential part of any machine or process which involve computer. It has contributed in every field of life may it be medical, mechanical, electrical, civil, chemical and what not. Software is considered as part of property and its protection, either by copyright or by patent, has become an important factor in the growth of the industry. Software/ Business method patent have received a great deal of attention in the industry, judiciary and in academia. This paper will deal with patentability of software and business method patent with comparative approach of US, EU, Japan and Indian judiciary.

It has been observed that various patent offices from different countries have published Guidelines for examination of application relating to Computer Related Inventions. These guidelines are mainly based on the patent laws of the particular countries, judgment pronounces by the Supreme Court or High Court of that country and customs followed by the particular patent office. Though the TRIPS (Trade Related Aspects of Intellectual Property Rights) provide minimum standards in the form of common set of rules for the protection of IPR by expecting the signatory countries to prepare national laws to implement TRIPS provisions, it is observed that the laws formulated by member countries are not same. Some of the provisions of IP laws vary as per the local need of the particular countries. Accordingly it can also be seen in case of patent protection to software related invention. Some countries like India specifically deny patent to such invention as they are come under specific exclusion list of patentable invention. In case of USA or Japan there is no as such specific exclusion list. The criteria to determine patentability also somewhat differs from country to country.

It has been seed that the numbers of patent application relating to software are increasing in counties like Japan, USA and other European Countries. The current patent war in software industry has created issues of protection of technology, enforcement and growth of the industry.

After the decision of U.S. Supreme Court in the case *Alice*[1] it has been seen that there is lot of changes in the policy regarding protection of software patent. The United States Patent and Trademark Office (USPTO) revised its guidelines after the decision of *Alice.* Jurisprudence of software patent is constantly evolving. In USA after the Alice case (2014) US Federal Circuit gave significant decision in September 2016 *McRo* case[2]. It has elaborated the concept of patentability of Software patent. Because of this decision of the Federal Circuit Court the trend of rejecting the

[1] *Alice Corp. v. CLS Bank Int'l*, 573 U.S. _ (2014).
[2] *McRO, Inc. v. Bandai Namco Games America Inc.* (Fed. Cir. 2016).

patent application relating to software innovation have been slightly reversed. Thus the response from industry was much positive so as to provide greater stability to US patent system and its digital economy.

Software industry in Japan and India has huge potential and they are contributing significantly in their economy. Thus it is important to study impact of protection of Computer Software on Software Industry in Japan and India in terms of software engineers, patent examiners and patent attorneys etc. so as to come up with harmonize solution to determine uniform criteria for patentability of software related invention. In this study an attempt has been made to compare the judicial and legal policy of patent law towards software patent law. The comparison between the laws and policy in India and Japan has been carried out by adopting interview and scheduling methodology. In case of India data has been collected from various stakeholders by circulating questionnaire.

Further data has also been collected from the available website of Indian Patent Office (IPO). Due to short span of research in Japan it was not possible to collect the huge data. However, interviews with stakeholders from Japan helps to understand the law and policy in Japan and also got a chance to compare Indian and Japanese scenario.

II. Patent Law in India

In India, before amendment of 2002 in the Patent Act, 1970 there was no specific provision for protection for software or computer programme. In the Patent (Amendment) Act, 2002 section 3(k) was inserted which stated that "a mathematical or business method or a computer programme per se or algorithm" is considered as non patentable invention. In addition to this there are two important provisions in the Indian Patent Act. One, inventive step and another is novelty. section 2(1) (ja) of Indian Patent Act defines 'inventive step' as *"*a feature of an invention that involves technical advances as compared to the existing knowledge or having economic significance or both and that makes the invention not obvious to a person skilled in the art".

Inventive step is an important aspect of the invention. It is nothing but a step towards the value addition which is not commonly observed in the previous invention and can be considered as new innovation. In the Indian Patent Amendment Act, 2005, a new section 2(1) (ja) substituted the existing definition of 'inventive step' to mean *"*a feature of an invention that involves technical advances as compared to the existing knowledge or having economic significance or both and that makes the invention not obvious to a person skilled in the art".

1. IPO and Software Related Application

The research was carried out to understand how IPO has dealt with the application relating to software invention. India is having four patent offices situated at Mumbai, Delhi, Kolkata and Chennai. These offices are having their own territorial jurisdiction. To get the data relating to software related invention from official website of IPO, the Dynamic Patents Utilities section was accessed. The applications were analysed on the basis of published, granted, abandoned, refused and withdrawn after 15 months. The data after 1st July, 2012 can only be made available and thus the data has been collected for the period of July, 2012 to May, 2014.[3] The data is divided into five different categories such as published, granted, refused, abandoned and withdrawn after 15 months. Further classification is done into normal application and national phase application. Applicant wise analysis is also carried out to understand how many individual, Indian and foreign applicants filed patent application relating to software.

The data shows that there is variation in the filing of software patent in different patent offices. It has been observed that highest number of patent application relating to software are filled in Chennai. Most of the foreign companies are also filing there national phase applications in Chennai Patent Office. Inconsistency in decisions or the higher rate of grant of patents by Chennai Office may be some of the reasons for larger filing. But if the rate of pending/ published application to the number of grant is to be calculated the Delhi patent office has higher percentage of grant as compare to the Chennai. In Delhi there were total number of 765 applications were published in the period of July, 2012 to May 2014, and total number of 112 applications were granted. Thus the percentage rate for Delhi office comes to 14.64% and similarly for Chennai office it comes to 5.15%. Thus it cannot be easily concluded that there is more filing because of the lenient approach by Chennai Patent Office. There may be higher rate because Chennai includes software hub like Hyderabad, Banglore, Mysore and Kochi. Thus the comparative table gives complete information of the situation in the patent office from June 2012 to till May 2014.

Considering the guideline for examiner for examination of software or computer related applications, the IPO first time in the year 2013 published guidelines. After that the guidelines were amended for four times and finally on 30 June 2017 final guidelines were accepted.

The main objective behind the guidelines is to bring clarity while examining application of a computer related inventions (CRI) in terms of section 3(k). The guidelines compile terms relating to computer and software from statute such as Information Technology Act, 2000, Patents Act, 1970 and dictionary meaning. Important part of the guideline is examination procedure. The

[3] Dynamic Status of Patent Applications as per field of invention, http://ipindiaservices.gov.in/publicfieldofinvention1/ (Note: all the websites cited by this report was last accessed on January 31, 2018 and this will not be attached hereinafter).

invention relating to computer software is examined on novelty, inventive step[4] and industrial applicability. Further the guideline focuses more on the term 'per se'. As per section 3(k) of the Patents Act Computer Programme Per se is considered as invention which is not patentable. The term per se means by itself. While dealing with this exclusion it was stated that,

"The sub-section 3(k) excludes a mathematical or business method or a computer programme per se or algorithms from patentability. While the judgment of mathematical methods or business methods is comparatively easier, it is the computer programme per se or algorithms related inventions that require careful consideration of the examiner. Computer programmes are often claimed in the form of method claims or system claims with some "means" indicating the functions of flow charts or process steps. The algorithm related claims are even wider than the computer programmes claimed by themselves as a single algorithm can be implemented through different programmes in different computer languages. If, in substance, claims in any form such as method/process, apparatus/system/device, computer program product/ computer readable medium belong to the said excluded categories, they would not be patentable.[5]

Thus, the claims which belong to the excluded category are straight away considered as not patentable. When the invention involving hardware and software is required to be examined it was stated in the guideline that the functionality of the invention is to be judged on the substance of the invention. It is mentioned that the focus should be on the underlying substance of the invention and not on the form in which it is claimed. Attempt of the patent attorney to draft the patent or claim the invention by camouflaging the substance of the claim by its wording is clearly avoided in the guidelines.

III. Evolution of Patent Law in Japan:

As Japan is Civil Law Country the reported case laws are less than the other common law countries. However, substantial cases and case laws have been given importance in case of IP law. IP High Court of Japan publishes almost all reported cases and also publishes English summary of its major cases. The most of the provisions of Japanese patent law are based on the German Patent

[4] As per the CRI guidelines published by IPO 'Inventive Step' is determined by ascertaining following points.

1. Identify the "person skilled in the art", i.e competent craftsman or engineer as distinguished from a mere artisan;
2. Identify the relevant common general knowledge of that person at the priority date;
3. Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;
4. Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;
5. Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of inventive ingenuity?

Guidelines for Examination of Computer Related Inventions (CRIs), Office of the Controller General of Patents, Designs and Trademarks 2017 http://www.ipindia.nic.in/writereaddata/Portal/Images/pdf/Revised__Guidelines_for_Examination_of_Computer-related_Inventions_CRI__.pdf.

[5] *Id.*

Law[6] and are similar to other European Countries.[7] Japanese law requires a software invention to satisfy at least one of the two conditions to be treated as statutory subject matter. First is to use of physical law of nature when processing information and second is to utilization of hardware resources.[8]

Japanese Patent Act defines invention as 'the highly advanced creation of technical ideas utilizing the laws of nature.'[9] The act further defines "computer program" as a computer program (a set of instructions given to an electronic computer which are combined in order to produce a specific result, hereinafter the same shall apply in this paragraph) and any other information that is to be processed by an electronic computer equivalent to a computer program.[10] While understanding the patent act it is important to understand the conditions of patentability enshrined in the Article 29 (1) and (2) of the Act. It mentions various conditions.

Japanese Patent Act defines computer programme as a set of instructions given to an electronic computer or other information processed by electronic computer which are combined in order to produce a specific result.[11] The act does not consider simple submission of information as invention. On the contrary, the presentation of information having technical features is considered as invention.[12]

The Japanese Patent Office examination guidelines for examining patent applications relating to computer software-related inventions covers mainly two categories of invention process and product. When invention is expressed in a sequence of processes or operations connected in time series, namely procedure, the invention can be defined as an invention of a process[13] and when invention is expressed as a combination of multiple functions performed by the invention, the invention can be defined as an invention of a product. Invention of product can be a computer-readable storage medium having a program recorded thereon and a program which specifies a multiple of functions performed by a computer.[14]

Further, the guideline says about the use of hardware resources for processing of information. Software and hardware resources are cooperatively working so as to realize arithmetic operation or manipulation of information. As patentability requirement of the software invention are applied to claimed invention it is necessary to identify the claimed invention based on the

---

[6] John F. Duffy, *Harmony and Diversity in Global Patent Law*, 17 BERKELEY TECH. L.J. 685, 712 (2002).
[7] Masako Kikuchi, *Patent Eligibility and Patentability of Computer Software Patents in the United States, Europe and Japan*, 16 CASRIP NEWSLETTER 3 (2009).
[8] GREGORY A. STOBBS, SOFTWARE PATENTS 511 (2007).
[9] Patent Act of Japan Act No. 121 of 1959, Article 2 (1) "Invention" in this Act means the highly advanced creation of technical ideas utilizing the laws of nature.
[10] Patent Act of Japan Act No. 121 of 1959, Article 2 (4) defines Computer Programme.
[11] Patent Act (Act No. 121 of 1959) Chapter 1 General Provisions, article 2 Paragraph 4 *available at* http://www.cas.go.jp/jp/seisaku/hourei/data/PA.pdf.
[12] Ryoichi Takaoka, *Japan* in 1 SOFTWARE PATENTS WORLDWIDE 1-32 (Gregory Stobbs ed., 2007).
[13] Examination Handbook for Patent and Utility Model in Japan, Annex B, Chapter 1 Computer software related Inventions, 1.2.1.1. Category of software-related invention *available at* http://www.jpo.go.jp/tetuzuki_e/t_tokkyo_e/files_handbook_sinsa_e/app_b1_e.pdf.
[14] *Id*.

statement in a claim.[15] The claimed invention must have a creation of technical ideas utilizing laws of nature. It can be judged by the industrial applicability of the invention, use of information processing equipments such as CPU, storage mediums etc.[16]

On the contrary, the guideline also throws light on the examples when the claimed invention corresponds to nonstatutory invention like economic laws, arbitrary arrangements, mathematical methods, mental activity, mere presentation of information such as image data taken with a digital camera, program for athlete meeting made by a word processor, computer program listings, etc. these are the cases where the claimed invention does not constitute patentable characteristics.[17] The guideline also focuses on the basic concept of non-obviousness and inventive step in the invention.[18] Inventive step is determined on the basis of the reasoning of the invention by a person skilled in the art.[19]

Thus, in Japan, while determining patentability criteria of software patent emphasise is given on the technical use of the law of nature or use of hardware or medium with the software. The examination guideline enlarged the scope of the patent protection for software implemented invention but the invention based on mathematical methods, schemes, rules of doing business methods are not considered as patentable subject matter.

IV. Comparison of Examination Guidelines

After comparing the guidelines published by Japan and India it is observed that there is basic difference in the approach towards such kind of invention. As the Indian Patent Law exclusively disallow patent to inventions relating to mathematical or business method and computer per se or algorithm. In case of Japanese Patent Law there is no as such specific exclusive negative list. Thus the guideline published by Japan Patent Office (JPO) provides categories of software related inventions. It has two categories, one invention by process[20] and second invention by product[21].

---

[15] Examination Handbook for Patent and Utility Model in Japan, Annex B, Chapter 1 Computer software related Inventions, 2. Patentability.

[16] Examination Handbook for Patent and Utility Model in Japan, Annex B, Chapter 1 Computer software related Inventions, 2.1.1. Procedure of determination.

[17] *Id.*

[18] Examination Handbook for Patent and Utility Model in Japan, Annex B, Chapter 1 Computer software related Inventions, 2.2.3. Determination of inventive step.

[19] Examination Handbook for Patent and Utility Model in Japan, Annex B, Chapter 1 Computer software related Inventions, 2.2.3.2. A Person having Ordinary Skill in the Art: A Person having Ordinary Skill in the art of software-related inventions is expected to have common general knowledge both of the applied field of the said software-related inventions and computer technology (e.g., systematization technology), to use ordinary technical means for research and development, to exercise ordinary creative activity in changing design and to be able to comprehend all the state of the art in the field of technology to which the invention pertains. In addition, a person skilled in the art is supposed to be able to comprehend as his/her own knowledge all technical matters in the field of technology relevant to a problem to be solved by an invention.

[20] Software-related invention which is expressed in a sequence of processes or operations connected in time series, namely procedure. These inventions include a process of manufacturing a product. See Examination Handbook for Patent and Utility Model in Japan, Annex B, Chapter 1 Computer software related Inventions, 1.2.1.1. Category of software-related invention.

[21] Invention of a product means inventions which are combination of multiple functions performed by the invention, e.g. a computer-readable storage medium having a program recorded thereon.

JPO guideline emphasises on the clarity requirement as per Article 36(6)(ii) of the Patent Act.[22] In case of detailed description the JPO guideline mention the enablement requirement. It prescribes that the statement and description of the invention must be clear so as to enable person skilled in the art.[23] In the examples given in the guideline it was mentioned that the case where terms are neither academic terms nor technical terms that are commonly used in academic or technical documents and have no definition in the description could amount to violation of enablement requirement. Further it expects that the when the invention is explained with functional block diagrams or general flow charts in the detailed description of the invention it must be sufficiently explained to understand how hardware or software structured.

Guidelines published by JPO referred various kinds of examples, those which are patent eligible and those which violate the requirement of patentability. In case of guidelines by IPO there are no examples. It can be very well seen that the examples become useful not only for examiner but also for patent attorney, software developer or individual innovator and patent attorney. Right examples increase predictability of patent.

V. Opinions of Stakeholders

In this research main focus was on to study the impact of patent law on software industry. When we speak about 'Software industry', it includes mainly four stakeholders. One, software engineers who are involved in the development of the software. Second, patent attorneys who draft patent and help to file it. Third, patent examiners who examine the patent applications. And lastly, IP professors who are considered back bone of the patent system as they critically analyze the patent application and decisions and postulate different theories. The researcher interviewed some of these stakeholders and to collate their views and opinions about law and policy regarding software patent.

Software Developer who are nothing but software engineer working in software company and also key person to develop software or can be said innovator stated that software is creation of technical idea and it should be protected by patent. The respondent told that there is need to aware the software engineers about their IPR. In India, it was observed that in case of small and medium scale companies, there is need to aware the software engineers about the intellectual property rights.

There is threat to application like software invention that these inventions becomes obsolete within short span of life. In this background the respondent engineer expressed that software or hardware without demand from consumer will disappear early from the market. According to

[22] Article 36(6)(ii) of the Patent Act states "an invention for which a patent is sought must be clearly stated."
[23] Article 36(4)(i) of the Patent Act states "the statement shall be clear and sufficient as to enable any person ordinarily skilled in the art to which the invention pertains to work the invention."

respondent the length of period has nothing to do with shelf life. Core software has always longer shelf life. Thus there is no need to change the term of patent in such kind of inventions.

The patent examiner stared that at first it has been understood and specified the claimed invention with the help of examination guidelines. Careful reading of the description, claims and drawings of the patent application is necessary to understand the technical content of the claimed invention. Further the examiner conduct prior art search. The examiner examines the claimed invention in light of the requirements for excluding an invention from the subject of search, such as the requirements for unity of invention[24] and requirements for description[25].

Patent Attorney opined that JPO is much quick in examination. The Japanese patent system and procedure adopted by JPO regarding examination of software related invention is different than US and EU system. In US more emphasis is on involvement of technology and in case of EU focus is on inventive step. In Japan more emphasis is on specificity of the information. Clarity of the claims and enablement requirement are two aspects which are mainly covered while drafting the application.

IP professor stated that the Japanese patent law expects requirement of disclosure. In case of disclosure it is expected that patentee should disclose the invention sufficiently. It was also agreed by the professor that the abstract and complicated nature of software related inventions makes it difficult to find out best and appropriate solution. The professor supported the view and attempt towards harmonisation of laws. He felt that global patent system is more desirable but it is difficult. Though it is desirable it is not practicable.

VI. Harmonization of law and concluding remarks

In Japan discussion on harmonization of laws was going on from 1997. In that year a trilateral meeting was conducted by JPO with USPTO and European Patent Office (EPO) to address the long-term goals of the three patent offices and inter-office cooperation. One of the topics of discussion was to harmonise international practices in patent examination and operation on computer software and biotechnology.[26] Debate on Harmonization is going on. Though it is an ideal and effective solution for patent law and policy it is very difficult to implement in practice. Considering the local laws and aspiration of local communities of different counties it is becoming difficult to adapt the one law one world system. TRIPS also supports for similar law for every

[24] Unity of invention is defined in Article 37 of Japan Patent Act. It states as, "Article 37: Two or more inventions may be the subject of a single patent application in the same application provided that, these inventions are of a group of inventions recognized as fulfilling the requirements of unity of invention based on their technical relationship designated in Ordinance of the Ministry of Economy, Trade and Industry".

[25] Requirements of description is defined in Article 36 of Japan Patent Act.

[26] Patent Abstracts of Japan News, 6 PAJ News 1997 *available at* http://warp.da.ndl.go.jp/info:ndljp/pid/11039947/www.jpo.go.jp/torikumi_e/hiroba_e/paj976.htm.

country but it has also provided some exceptions depending on the situation of the member counties. The concept of harmonization of law is important in terms of trade of goods having intellectual property rights. There is no such concept of worldwide patent. It is accepted practice that patent is country specific and one has to apply in each country wither through PCT (Patent Cooperation Treaty) or through National Phase application. Thus, in case of multinational software companies, it becomes difficult if they get patent in one country and the same is rejected in other country. Considering this it is necessary to harmonize the laws, if not at least there is need to streamline the examination standards to examine such kind of inventions by various patent offices of various countries. It can be insisted to adopt best practices.