

“SOFTWARE PER SE” VS. “SOFTWARE INVENTION”

AN ANALYSIS ON SOFTWARE PATENTABILITY IN INDIA

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ABSTRACT

In the current digital era, knowledge and innovation is the key to all kinds of industries. In other words, the technology has now become the backbone of the digital economy. With the change in technology at much faster speed, it is inevitable to maintain a balance between the law and technology for promoting and providing a competitive market vis-à-vis the growth in innovation. Software is one of the fastest growing technology in the field of innovation. Indeed, it has become a reliant and an evince for growth and development of any economic sectors worldwide. However, the protection to software under IPR is one of the most argumentative issues because of numerous factors involved and one of the major reasons behind the controversial status of software patenting is the ambiguity in the patent law that's does not allow software protection as such or per se. this is the core base of this paper. Thus, to understand the controversial aspect of software patentability, this paper analysed what comes under the purview of “software per se” and how the “software invention” is distinguished from it. Also, the paper has further analysed the emergence and extent of software patentability in India with the help of judicial precedents.

Keywords: Patent law, software patenting, software per se, software inventions, computer programs, copyrights in software

WORDS SPEAK

INTRODUCTION

In the current digital era, knowledge and innovation is the key to all kinds of industries. In other words, the technology has now become the backbone of the digital economy. With the change in technology at much faster speed, it is inevitable to maintain a balance between the law and technology for promoting and providing a competitive market vis-à-vis the growth in innovation. Software is one of the fastest growing

technology in the field of innovation. Indeed, it has become a reliant and an evince for growth and development of any economic sectors worldwide. Thus, it certainly has significant implications on Intellectual Property laws.

Software enjoys dual protection under Intellectual Property law regime. For instance, the software code or programmer's code is protected under Copyright whereas, the Patent grants to the owners of software, the rights to protect their invention from being used by others, even if the others developed the same independently and without copying the same from the protected owner. In other words, Copyrights and Patents are two primary forms of protection for computer software under Intellectual Property laws. However, the protection to software under IPR is one of the most argumentative issues because of numerous factors involved. One of the factors is to decide upon which law would provide the strategic advantage over the other. For instance, as stated above that the copyright law protects the programmer's code however, it is also correct that it does not protect the ideas behind that code nor does it prevent anyone from recreating the similar function with different code. Thus, considering the economic significance of computers and its programmes, their patenting over the protection under copyright law has become the preferable choice of the inventors or the applicants. Indeed, the same is also one of the major reasons behind the controversial status of software patenting. The other significant reason behind the controversial or argumentativeness of software patentability is that the patent law does not allow software protection as such or per se which is the core base of this paper. Thus, the question arise is whether the software cannot be protected under the patent law. The answer to this question is indisputably in negative, because the inventions related to software is patentable except when the it is just a software or in legal term it is a software per-se. Thus, to understand the controversial aspect of software patentability, this paper will analyse what comes under the purview of "software per-se" and how the "software invention" is distinguished from it. Also, the paper will further analyse the emergence and extent of software patentability in India with the help of judicial precedents.

WHAT IS SOFTWARE & SOFTWARE PATENT?

The first and foremost question is what is software? The term software is not defined in the Indian Patent Act, 1999. Also, it is not explicitly defined in the Copyright Act 1957 however it defines the term "computer" as to include any electronic or similar device having information processing capabilities. It further defines "computer program" as to mean a set of instruction, expressed in words, codes, schemes or in any other form, including a machine-readable medium, capable of causing a computer to perform a particular task or achieve a particular result.

In simple words, software is an instruction to the computer program expressed in a source code or it is a written expression of a source code. It is a program and other operating information used by a computer. According to Cambridge Dictionary, software is the instructions that control what a computer does or simply a computer program. According to technopedia.com, software is a set of instruction or programs instructing a computer to do specific task. It is a generic term used for describing computer programs that run on computers, laptops, mobile phones, tablets or other smart devices. It further defines it as a term which often used to describe all the functional aspects of a computer that do not refer to its physical components that is hardware. Everything that runs on the aforesaid devices such as video game, diagnostic tools, graphics, apps can be defined as software. Britannica.com defines software as instructions that tell a computer what to do. It comprises the entire set of programs, procedures, and routines associated with the operating of a computer system. It says that the term software was coined to differentiate the aforesaid instructions from the hardware or physical components of a computer system. Similar definition is provided by Wikipedia. However, it further explains that in computer science and software engineering, a software means all information processed by computer systems which includes programs and data. It includes computer programs, libraries and related non-executable data such as digital media or online documents. Software cannot be used on its own like computer hardware, that means, both the software and hardware require each other for fulfilment of the desired purposes, aim and objectives. A suggested definition of software patent has also been proposed by the Foundation for a Free Information Infrastructure (FFII). It states that that a patent on any performance of a computer realized by means of a computer program. It is patents which cover software ideas, ideas which can be used in developing software according to Richard Stallman, the co-developer of GNU-Linux operating system. The software is something originates from intellectual capacity of human mind.

In short, the term software has not been defined precisely even by the software industries. However, it can be use to describe all the different types of computer programs such as application programs and operating system programs. From the aforesaid, it can be said that the computer program and software terms can be used in synonyms and the software patent is a patent of any performance of a computer realised by means of a computer program in terms of rules and procedures prescribed in law. It is a intellectual property right which protects software or computer programs or any legally accepted software innovation.

SOFTWARE IN INDIA - COPYRIGHT VS. PATENT LAW

Before analysing the patentability aspect related to software, it is pertinent to understand what is and why is, of the preference of patent law over protection rights under copyright law in relation to software.

The copyright law worldwide including in India, provides protection for original literary works that includes computer programs and thus, a software is protected under literary work. In this regard, a landmark judgment was passed by the Delhi High Court in Microsoft Corporation vs. Yogesh Papat. In this case, the court held the defendant liable for copyright infringement. The court awarded damages to the plaintiff on the basis that the defendant had infringed the copyright protection of the plaintiff by loading the copyright protected software on the hard disk of other computers on sale without license. Similarly, the Canadian Supreme Court also acknowledged the software as literary work and thus protected under copyright laws in Apple Computer, Inc. vs. Makintosh Computer Ltd.

In India, the software and computer programs get the copyright protection as soon the work is created. They do not need mandatory registration under copyright laws unlike patent law that needs mandatory registration to avail the protection rights prescribed in the patent law. However, it is undeniable fact that the inventors (or the stakeholders) prefer patent protection over copyright protection. The primary reasons from various studies and analysis clearly reveals that the copyright laws grant a very limited protections as compare to that of protection under patent law. For instance, copyright can be enforced only when the source code of software is literally copied only however, it does not protect the invention as a whole whereas, the patent law grants broader protection. It protects the invention from manufacturing, using or selling, transferring or utilizing it in any other way by others. The rights under patent law promotes the inventor to explore commercially.

There is a conceptual difference between the copyright and patent in software. The same can be broadly understood in the manner that the software is protected as work of literature under copyright laws and in terms of Berne Convention wherein, the written software gets copyright protection automatically without registration. It prevents the direct copying of the software but it does not prevent others from writing their own embodiments of the underlying methodologies. In other words, it does not protect the idea behind the work. It protects the expression only. Whereas, the patents give their owners the right to prevent others from using the claimed inventions by preventing them from using the underlying methodologies of the claimed invention i.e., the technological ideas underlying computer programme. In brief, the patent provides a monopoly status of the owner in the business sector in the manner prescribed in patent law.

In nutshell, these two concepts of IPR regime are distinguished from each other broadly on four counts, that are firstly, on the subject matters as mentioned above; secondly, who may claim the right to a patent or copyright; thirdly, what rights could be conferred; and fourthly what are the duration of the protection.

Here, it is relevant to mention that the Article 10 of TRIPS protects the source code and object code as literary work under Berne Convention 1971 that's further creates a dispute or arguments concerning protection of software in copyright or patent right. However, the detail analysis of the same is beyond the scope of this paper. This paper focuses on the patentability aspects of the software. Thus, the fundamental question regarding protection under patent is related to the acceptability and extent of patenting of software in its pure form or for its technical application or for physical manifestation. Software patenting involves quite complex procedure than conferring copyright protection to software. Basically, two major challenges are there while dealing with the software patents firstly, concerning the instrument of patent itself and secondly concerning the nature of software.

At this juncture, it is relevant to note that the studies reflect ambiguity in software patenting laws globally in general and particularly in India. The significant arguments in favour of software protection under patent law are related to promotion of investment being it to be of highly technical nature whereas, the emphasis has been made by the opponents on the negative effects of software patents on various interested persons such as open-source developers, disproportionately on small and medium software enterprises. In Nutshell, it extends anticompetitive impact of software patents in the industry and would lead to high price charges from the monopolist.

SOFTWARE PATENTING RULES AND LAWS

IN INDIAN CONTEXT

Patenting endeavours to achieve a balance between two fundamental aspects of economy worldwide that are firstly, it promotes the creation and secondly, it encourages funding of new products.

The term Patent originate from the term "letter patent" which means open letter. It was an instrument under the King of England addressed by the Crown to public at large conferring certain rights and privileges on individuals. Later on, with the advancement of technology and consequential inventions, the Indian Patents and Design Act, 1911 was enacted to prevent infringement of such rights and to save the interests of the inventors. It was replaced by the Patents Act, 1970 in post-independent era for the first time. It lays down the criteria for granting the patent in India. The Act defines the term patent as means a patent for any invention granted under the Act. It defines New Invention as means any invention of technology which has not been anticipated by publication in any document or used in the country or elsewhere in the world before the date of

filing of a patent application in prescribed manner. The Act clarifies that the subject matter must not fall in the public domain or it must not be part of the state of the art on the date of filing of the application.

It is pertinent to mention here that in the year 2003, the definition of invention was altered vide the Patents (Amendment) Act 2002 under Section 2(1)(j). The amended definition states that invention means a new product or process involves an inventive step and is capable of industrial application. The amendment Act, 2002 further defines the inventive steps. According to the Section 2(1)(ja) of the Act, the inventive step means a substantive feature of an invention that involves technical advance as compared to the existing knowledge or it has economic significance or both. It must not make the invention obvious to a person skilled in the art. The definition was amended in 2005.

In India, mathematical or business method or a computer program per se or algorithms are not patentable subject matter as per Section 3(k) of the Patents Act, 1970. However, it does not impose a blanket ban on patenting computer-related inventions in India. The inventions which are more than a computer programs per se means where the inventions contain more than just a computer program may be patentable if they satisfy the basic requirement of novelty, inventive step and industrial applicability.

It is interesting to note that the term “per se” has not been defined in the Act and thus, it has been a contentious issue while deciding on granting of protection to software under patent law. It is clear that the intention of the legislature to fix the suffix “per se” to a computer program was for the reasons that sometimes it includes certain other things which are ancillary or developed thereon. It is clearly expressed by the Joint Parliamentary Committee while introducing the Patents (Amendments) Act 2002 that it is not intended to reject granting of patent if they are inventions however, it was clarified that the computer programs as such shall not be patentable. Thus, one thing is clear that the Indian Patents Act does not provide a patent protection to a mathematical or business method or a computer program per se or algorithm.

In fact, in the year 2004, an attempt was made to amend the provision to the effect that it could cover the software patentability in the manner where a computer program per se has its technical application to industry or it is a combination with hardware. However, the said amendment was rejected by the Parliament. Thus, the uncertainty remains there as it was not made clear whether a software when applied to a computer can be patented or not.

Later on, some clarity was brought on statute's rules through the Patent Office Practice and Procedure manual, 2011. It states that: "If the claimed subject matter in a patent application is only a computer programme, it is

considered as a computer programme per se and hence not patentable. Claims directed at computer programme products are computer programmes per se stored in a computer readable medium and as such are not allowable. Even if the claims, inter alia, contain a subject matter which is not a computer programme, it is examined whether such subject matter is sufficiently disclosed in the specification and forms an essential part of the invention.”

Further clarification to the patenting of software came in June 2013 in the form of draft guidelines issued by the Indian Patent Office for the examination of Computer Related Inventions. The guidelines provide the method of analyzing the merits of a software patent application. It categorized the claims for computer related inventions as follows: (a) Method/process; (b) Apparatus/system; (c) Computer program product and (d) Computer readable medium.

The patent office issued three sets of guidelines relating to CRIs whereby, different tests have been prescribed for the determination of the software patentability. The first was issued in year 2013 namely, draft guidelines for examination of computer related inventions, 2013 wherein, the term “per se” is interpreted as mean “by itself” that is something which is “independently on its own” instead of being “in connection” with something else. Next guidelines were issued in year 2016 namely, guidelines for examination of computer related inventions, 2016. These guidelines widen the issue related to excessive relaxation and offered that the software shall be examined for existence of a conjunction with a novel hardware for patentability. Finally, the guidelines were issued in year 2017 namely, the revised guidelines for examination of computer related inventions, 2017. These guidelines focused on the substance of an invention instead of its claimed form. The amended guidelines delated one of the three steps from the test for patentability by removing the requirement of novel hardware. However, it doesn't mean that the requirement of hardware as such is delated. There shall still be the requirement of some hardware to obtain a software patent in India. Thus, in brief the test provides under the aforesaid guidelines to determine the patentability of computed related invention includes identification of the actual contribution and proper construed claim. The claim outrightly denied if the contribution is only a mathematical method, business method or algorithm. Also, the examiners have to check if the claimed invention is in conjunction with a novel hardware or not.

It is also interesting to note that earlier, in 2015, the Controller of Patents issued guidelines related to software patenting wherein the patent offices in India were prohibited from issuing business method patents while computer programs could be patentable on the fulfilment of certain conditions. However, the same was recalled and replaced by the fresh guidelines subsequently in February 2016 and the earlier position altered to

the extent that even patents on computer programs could not be granted unless the inventor could show that the invention includes a computer program in conjunction with a novel hardware. The fact remains that the business methods continued to remain non-patentable under the 2016 Guidelines whereas it cleared the legal ambiguity related to software patenting in India. However, it is also matter of record reflecting from recent trends that software patents particularly business method patents are routinely granted by Indian patent offices, such as four business method patents have been granted in India in 2017 including one granted to Facebook on a method for generating dynamic relationship-based content, personalized for members of the web-based social network. Also, the revised guidelines 2017, which were based on 2016 guidelines have not expressly lay down any specific tests, indicators or determinants on the software patentability and have also removed the illustrations on non-patentable and patentable claims given earlier. However, as it is apparently clear that the revised guidelines have taken a more favourable approach towards software patentability as compared to the past. In short, the revised guidelines states that the computer software which is new, useful and non-obvious process or product combined with a physical device or physical element used to process, operate, or implement a function can be patented in India. There are various types of software related patents granted in India such as method to compress or process data, video, image or audio, an equipment-controlling system, method of improving a machine or memory operation or improving physical, chemical, biological or electric properties of an object. It can be a graphical user interface controlling system or a mobile unit positioning method. However, an invention which is obvious and comes under the ambit of an abstract idea, computer programme or code, arbitrary arrangement, mathematical formula or an algorithm cannot be patented in India.

SOFTWARE PATENTING WORLDWIDE

In United States, the software or computer implemented processes are patentable as long as they are unique, in combination with a machine and depict an identifiable instrument. USA has adopted the Alice or Mayo framework according to which the patent examiner or the judicial authority as the case may be, is required to scrutinise various questions about an invention such as the inventive step involved and the subject-matter. If the subject matter falls under the three judicial exceptions of patentability that are, laws of nature, abstract ideas and physical phenomena. The query is also need to be verify about whether the invention adds any significant to the status quo than simply a judicial exception. From the various US precedents, it is clear that the USA has largely relaxed its laws for software patentability and is no more sticking to the traditional concepts and approach. The relevant cases laws shall be discussed under the heading of judicial intervention

and precedents. However, in brief, the US patent and trademark office (USPTO) has traditionally not considered software under patentable ambit because by statute patents could only be granted to processes, machines, articles of manufacture, and compositions of matter. The USA patent's office also cannot grant patent where subject matters is per se such as scientific truths or mathematical expressions. USA has a constitutional mandate of innovative culture, thus in USA the software patentability does not have much ambiguities. Under Section 101 of U.S.C., an invention required to be useful, new and unobvious.

The UK Patents Act, 1977 does not extend patent protection to computer programs as such. It is almost similar to what Indian patent laws provides for software patenting. However, The Patent Office in UK assesses software patentability on the grounds of novelty and the existence of technical contribution only. However, the EU guidelines and decision of EPO has a persuasive authority for examining patents in UK under the statutory provision of Section 130(7) of the UK Patents Act. There are five grounds emanated from the decision of judicial precedent being followed by the patent office therein till date. The said five grounds are related to technical effect on a process, the independent effect of produced of the data being processed, results of technical effect in the computer in operating in a new ways, speed or reliability of the computer, and whether the perceived problem is overcome by the claimed invention or not.

Like USA, the patentability trends over the years in UK clearly show that more and more patents are being granted to software and computer programs in UK due to noticeable reduction in the rigidity of law concerning patenting of abstract ideas developing better innovation in the field of software development.

At this juncture, it would be apposite to mention the various software patent related multilateral treaties such as TRIPs agreement, European Convention computer programs and the Patent Cooperation Treaty (PCT). According to Article 27 of TRIPs Agreement, patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced. The Patent Cooperation Treaty (PCT) provides a unified procedure for filing patent applications to protect inventions.

Similarly, within European Union member states, the EPO and other national patent offices have issued many patents for inventions involving software. For instance, Article 52 EPC excludes the programs for computers from patentability to the extent of the computer program as such.

WHY NO TO SOFTWARE PATENT IN INDIA?

Promoting innovation is the primary logic behind denying patents for software per se in India. For instance, if the software per se could be allowed to be patented, undoubtedly, majority of the software inventions would be owned by a minority of giant firms and such situations would have caused serious impact on the freedom of programmers in developing countries such as India to innovate and develop better software codes or programs as the same required open-source software.

Section 3(k) of the Patent Act, was enacted in line with the aforesaid spirit and thus, it does not allow software patents without hardware applicability. However, it is also pertinent to note that the provision does not cast a blanket ban on the software patents in India, it only barred the computer programs per se from the purview of patentable inventions. Previously, Indian patent has been granted for software programs such as Google's Location History Filtering patent, Oracle International Cooperation's A System and Method for Preparing Commending Blogs, and Microsoft Corporation's Disaggregated Secure Execution Environment. Also, for instance, the method for detecting malicious software, the software for hyper linking names, the method for enhancing ad features to increase competition in online advertising have all been successfully granted patents.

The other reasons for reluctance in granting software patents could be considered from the viewpoint that the term of 20 years does not apply to software patents as the innovation cycle of the software patents is very less. Also, as a matter of fact, the software patent requires more patenting not in terms of innovation or novelty but in different aspects and, thus if the same is allowed without check and balances, the software patenting would merely increase the number of patents instead of actual innovation and novelty. Therefore, it is firmly believed that the strict check on software patent application is necessary and the need of hours especially in developing countries like India. Thus, the software having technical effect and or have technical contribution must only be considered within the ambit of software patentable.

However, even after the development of the legal position on software patentability, the situation still remains highly uncertain. The reluctance in upholding the patentability of software is logically woven. Even after fulfilling all the required tests including that of hardware involvement and technical contributions in multiple foreign jurisdictions various applications have still been refused patents in India due to ambiguity created due to lacuna concerning what actually falls under Section 3(k).

In nutshell, to make a software patentable, there needs to be something more than a mere computer programming. In other words, inventions which relate to a computer must be more than mere technical effect by software. There needs to have a tangible element which interacts with the software. The factors that influenced or can be called as deciding factors for software patentability include, the invention to be consist

of patentable subject matter; it must be capable of industrial application; it must be new and must have involved a non-obvious inventive step; and it must meet certain formal and substantive standards prescribed in law. The same is also evident from the three factors that are as prescribed in the Guidelines for Examination of Computer related Inventions (CRIs). The aforesaid three factors are novelty, inventive step, and industrial applicability also known as triple test.

Novelty is the fundamental factor for determining the patentability of any invention. The parameters which identified the inventive steps includes, identifying inventive concept in the patent, common general knowledge in the state of art on the date of priority, difference in the invention claimed and cited inventions, and to find whether the difference constitutes steps which would require invention or is obvious with the existing state of art. As per the manual, it is mandated that before granting the patent in all the fields of technology it is very important to ascertain whether method or process relates to the technological field or not.

JUDICIAL INTERVENTION AND PRECEDENTS

The mention of judicial intervention and thereof the precedents of the adjudicative authorities worldwide related to the software patenting is relevant because it will show that how the judiciary has been into exploring and expanding the scope of the software patenting by following the liberal approach. Few of the landmark precedents are stated herein below.

First software patent application

First application for software patent was filed in British patent office. It was entitled as "A Computer Arranged for the Automatic Solution of Linear Programming Problems". That invention was related to efficient memory management for the simplex algorithm, and may be implemented by purely software means. Which was granted on August 17, 1966 in British patent application and that was first software application which was filed and granted as well.

In MERRILL LYNCH'S APPLICATION, the Patent's Court held that a data processing system for making a trading market was not a patentable subject matter on the ground that there was nothing novel and inventive in the programme. In the appeal, Fox LJ held that an the application was excluded since it was no more than a method foe doing businesses. However, in Gale's application Nicholls LJ applying the VICOM rules states that, if an intellectual discovery which contains of a practical application associated with a technical process that can be subjected to patent protection. Thus, the UK position is, if software addresses a technical problem either external to the computer or a technical problem in the functioning of the computer can be patentable.

Tata Consultancy Services v. State of Andhra Pradesh (271 ITR 401)

Supreme Court considered software to be good, further stating that irrespective of the IP of software, computer software can be considered as 'goods' and is liable for taxes. It was held in the case of In Tata Consultancy Services v. State of Andhra Pradesh (271 ITR 401)

Tele Fonaktiebolaget LM vs intex

In this case the plaintiff was filed suit for the infringement of eight registered patents for seeking permanent injunction coupled with damages against the defendant. In order to succeed the plaintiff was required to prove that the source code which was used by the defendant in his products is the same source code which is already patented on the name of plaintiff. Here defendant's contention was that the patent which was granted to the plaintiff was invalid on the grounds of being a computer program per se.

Further court said that mere reference to the usage of a 'procedure', an 'algorithm' or a 'method' in an apparatus that also consists of network or hardware elements, so as to bring about a technical effect, does not put the claimed invention in the category of "computer program per se". So in this case Delhi High Court imposed penalty on Index Technologies Ltd to pay 50 % of the royalties within four weeks to the Ericsson for infringing their eight Standard Essential Patents that are part of Ericsson's portfolio.

Viacom systems inc.

In this case the court held that a patentable invention based on conventional patentability criteria shouldn't be regarded as non-patentable merely because computer programs have been used for the implementation of the said invention and further court said removing the anomaly and elucidating the true meaning of Section 3(k), computer program that makes a significant contribution to a technical art is a patentable invention and is not struck by the Section 3(k) of the Patents Act, 1970. In this case it was held an image processing method which involved mathematical method for the handling of data representing an image to achieve the technical effect of an enhanced quality of image was a patentable invention.

Ferid allani vs union of India and ors.

The Delhi High Court held that an invention must be examined to check whether the invention results in a 'technical effect' or a 'technical contribution'. If the invention demonstrates a 'technical effect' or a 'technical contribution', it is patentable even though it may be based on a computer program.

Software patentability in United States

The following case laws can be referred to understand the approach adopted by the judiciary in granting software patents in the US patent.

- **Tli communications llc v. Av automotive** in this case it was held that a mere claim for a patent for a method of recording, administration and archiving of digital images from a mobile phone over a cellular network does not satisfy the test of patentability of software.
- **Diamond v. Diehr** in this caes also court held that patent was granted to a method of operating a rubber molding press through a software using an unidentified mathematical equation, for the process brought about a change in the physical state of things. The patent was granted because it more than an abstract idea and is responsible for bringing actual change to the status quo.
- **DDR holdings, llc v. Hotels.com, I.P** the Court granted patent to a method for creating and displaying a hybrid webpage, having aesthetic elements from one website and the content from a third-party website. The Court held that the software resulted in improvising customer retention in an unconventional manner and hence, qualified the requirements of software patentability test.

After analyzing all cases from US, we can say that the courts pay much regard to practical utility rather than category or form of claim. So we can conclude that patent protection for software related inventions is limited to those on recordable medium, not to computer programs per se. This evinces that US has largely relaxed its laws for software patentability and is no more sticking to the traditional brick and mortar approach.

Software patentability in United Kingdom

The decision of granting patents is taken majorly on the basis of the following five grounds, as have emanated from the decision of High Court in the matter of AT&T knowledge ventures lp and cvon innovations ltd. V. Comptroller general of patents– on the basis of this case these measures

- Whether the claimed technical effect has a technical effect on a process which is carried on outside the computer;
- Whether the claimed technical effect operates at the level of the architecture of the computer; that is to say
- whether the effect is produced irrespective of the data being processed or the applications being run;
- Whether the claimed technical effect results in the computer being made to operate in a new way;

- Whether there is an increase in the speed or reliability of the computer;
- Whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.

There are some more examples in which court grant patents as below:

Google Technology Holdings Llc in this case court granted patent for A Method for Indexing Documents and an Information Retrieval System Thereof in 2011.

Samsung Electronics Co Ltd in this case court granted patent for A System and Method for Data Delivery in Conjunction with a Hybrid Automatic Retransmission Mechanism in CDMA Communication Systems in 2013.

In the **Apple Inc.** Case Court granted patent for Unlocking a Device by Performing Gestures on an Unlock Image in 2014.

Oracle International Corporation in this case court granted patent for Dynamic Call Characteristic Control on a per Call Basis in 2016

CONCLUSION

From the analysis of various laws, rules, guidelines and precedents it is apparently clear that the patent protection is also advanced to the field of software technology. However, the invention of software per se is not patentable for the valid reasons. The author believes that the freedom for innovation is equally important as the protection to owners of software inventions and undoubtedly, the software innovations need open sources especially for the developing countries such as India. Therefore, allowing all sort of software invention without any limitation would not only create the monopolistic approach by few of the minority giant firms in India but it also reduced the innovation processes and development in the country. Thus, the author believes that the restriction on patent concerning computer programs or software per se is in the larger public and economic interest of the country.

The judiciary has been playing an active and positive role in expanding the scope of ambit of the patentability in the field of software or the computer programs. However, this cannot be the permanent solution for streamlining the issues in relation to the software patenting. The present era is techno era and the

software is the basis of almost all the kind of business and economic activities thus, it is pertinent to remove the hurdles in protecting the inventors' rights as well as to balance the growth of innovation and development in the field of software in larger public interest. Therefore, the author believes that the lacuna in the provisions under patent laws in India is creating ambiguity, vagueness, delaying and arbitrariness in the proceeding with the software patenting. The author believes that the same need to be look into by the legislature with prompt notice and in the line of the liberal approach being followed by the developed countries in USA and UK. A robust software patentability law for India is the need of the hour to eliminate all the potential ambiguities and other challenges that has been facing by the inventors and other stakeholders on one hand and the public interest at large on other hands.

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