

# A COMPREHENSIVE STUDY OF SOFTWARE PATENTS IN TODAY'S WORLD

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## ABSTRACT

*In this research paper, the author seeks to dynamically analyse the scope and nature of software patents. The research paper discusses the need for patent protection for software-related inventions and analyses whether pure software patents are permissible. It looks at the legal regime in India regarding Computer-related-inventions (CRIs) as well as the development of software patents around the world. Finally, the author also puts forward reasonable arguments against and in favour of software patents.*

**Keyword:** Computer-related-inventions, (CRIs), Software-Related Inventions, Patentable Subject Matter, Patent-eligible, Apple, Microsoft, PC Revolution

## 1. INTRODUCTION

In the 21st century, each and every facet of human life is highly technologically driven, thereby enabling us to significantly expand our horizons to limits that were earlier perceived as unimaginable. Over the course of human evolution, there have been inventions and innovations that have completely changed the course of human life. The explosion of Information Technology has created a knowledge-based economy wherein the technology involved is digital.

The term 'Information Technology' encompasses the whole gamut of inputting, storing, retrieving, transmitting and managing data through the use of computers and various other networks, hardware, software, electronics and telecommunication equipment.

The development of software as a field of innovation is one of the greatest technological developments of the 21st century. Software refers to the programming code/instructions which are stored and run by the hardware of the system. The exponential growth of information technology along with rapid advancements in computer software has resulted in the massive development of CRIs which have completely altered the very way in which a society function.

Technological advancements like access to big data, progress in machine learning and improvements in computing hardware are invigorating research and commercial interest in software. The exponential increase in the value and relevance of the ICT sector can to a great extent be attributed to the development of software products and services. As an entire industry has grown

around the development, implementation, and distribution of software, protecting this valuable new form of intellectual property has become paramount to the health of continued innovation.

## 2. LEGISLATIVE PROVISIONS

In today's information era, software has gained so much importance due to the fact that it is a general-purpose technology that is useful in almost every arena of human life. Its application is not limited to the software industry alone but has percolated into our daily lives as well. They are prized assets with high economic and strategic value. The capacity of algorithms to optimize and automate increasingly complex tasks has led to a surge in productivity in some traditional industries and radical disruption in others.

Mobile phones, medical imaging technology, aircraft navigation systems, car safety features such as ABS, and Blu-ray technology are examples of inventions which are implemented by software. Moreover, the presence of software in domestic appliances like washing machines, refrigerators and vacuum cleaners enhance the functionality and efficiency of these devices. Inventions which are based on data processing technologies have become indispensable not only for the software industry but many other sectors like healthcare, government/public sector services and defence.

Thus, there exists a pertinent need to have laws regulating the scope and extent to which these software-related inventions can be patent protected. It is because the copyright protection which is generally afforded is not sufficient to protect the functionality of a software or the

high economic value attached to it. The consequence is that the functionality of the software or the code can be copied without directly copying the code thereby causing huge economic loss to someone who invested his time, effort and resources in developing it.

### **3. ARE SOFTWARE PATENTS PERMISSIBLE PATENT LAW?**

At the very forefront, it is very important to note that patent protection is not available for pure software in India and in most of the other countries in the world as well. Thus, pure software patents are outside the scope of the Patents Act, 1970 as enumerated in Section 3(k) of the Act. It provides that mathematical or business methods, computer programs per se and algorithms are excluded from patentability.

Thus, a software which is merely a collection of computer programs or algorithms is placed outside the scope of a patent. It is in these circumstances that one needs to understand the scope of patent protection for CRIs in which software is the primary element. In India, the IPO can grant a patent for a CRI provided it satisfies the conditions laid down under the guidelines published and the provisions of the Patents Act, 1970.

The scope of the definition of the term 'Computer-Related-Invention' is very broad since it includes:

"Inventions which involve the use of computers, computer networks or other programmable apparatus and include such inventions having one or more features of which are realized wholly or partially by means of a computer programme or programmes."

Thus, in addition to the tangible commodities or the hardware, the software which is embedded in those tangible computer-readable media can also be allotted the status of a CRI. Different countries have varying standards for determining what it considers a CRI. It is to be noted that 'other programmable apparatus' in the definition is broadened to include various smart devices.

The uncertainty and confusion concerning CRIs are associated with computer software and the scope of intellectual property protection for the same. While countries like the USA, India, Japan etc., employ the term 'Computer-Related-Invention', the European Union uses the term 'Computer-Implemented-Invention' which is defined as an invention whose implementation involves the use of a computer, computer network or other programmable apparatus with features realized wholly or partly by means of a computer programme.

The definitions of the abovementioned terms point to the fact that they are the same. However, the distinction lies in the level of standards applied in these differing jurisdictions. The definition of the term 'software' is more ambiguous and distinguishable from CRI/CII. Software is defined as the implementation of an algorithm in source or object code, but without distinguishing between technical and non-technical processes.

In a nutshell, it can be concluded that software-related-inventions are considered as CRIs/CIIs by the patent offices across the globe primarily due to the continuous innovations in the field of software development. Thus, inventions relating to software, mobile applications, apps in smartphones and latest technological innovations like the Internet of Things, blockchain technology, artificial intelligence comes within the ambit of CRIs and can be patented so as to protect the innovative aspect of the inventions.

### **4. SCOPE OF PATENT PROTECTION FOR SOFTWARE RELATED INVENTIONS**

For a long time, there was great uncertainty on whether patents could be granted for computer/software-related inventions. Under Article 27.1 of the TRIPs Agreement, patents can be granted for inventions in all fields of technology, provided they are new, involve an inventive step and are capable of industrial application. The phrase 'all fields of technology' opened up the scope for the patentability of computer software, since it was not specifically excluded from patentability.

Patents for the CRIs offer more secure protection than that offered by either copyright or trade secret. It can protect the idea or functionality of the software implemented invention. It is very crucial to realize that patents are not granted for purely software inventions. They are granted for the "CRIs which have a technical character, are new and involve an inventive technical contribution to the prior art".

Patents clearly specify the precise boundary of the patented software because of the claims laid down by the patentee. Like other inventions, CRIs must be new, non-obvious and industrially applicable. The difficulty arises because software is much more complex than any other conventional technology. Unlike other products, a software product contains a large number of inventions. Moreover, unlike the conventional industry, which generates a new product in a very long span of time, the software industry product changes its generation much

faster, which often negates the application of the patent regime.

## 5. DEVELOPMENT OF SOFTWARE RELATED PATENTS

A look at the jurisprudence relating to patent protection for the CRIs, specifically software-related patents, reveals that the USA has been at the forefront in this regard, followed by the EU and other jurisdictions. In 1962, a British patent application concerned with efficient memory management for the simplex algorithm, and could be implemented by purely software means was filed. The patent was granted on 17th August, 1966, and seems to be one of the first software patents.

The USPTO has since then granted many patents which may be referred to as software patents. In *Gottschalk v. Benson*, the United States Supreme Court ruled that a patent for a process should not be allowed if it would “wholly preempt the mathematical formula and in practical effect would be a patent on the algorithm itself”. Almost a decade later, in 1981, the Supreme Court stated that:

“A claim for grant of a patent cannot be ruled out simply because it uses a mathematical formula, computer programme, or digital computer.”

Also, a claim is patentable if it contains:

“A mathematical formula and implements or applies the formula in a structure or process which, is performing a function which the patent laws were designed to protect.”

With more land decisions, the patentability of software was well established by the 1990s and in 1996 the USPTO issued the Final Computer Related Examination Guidelines which clarified that “a practical application of a computer related invention is statutory subject matter”.

The position regarding the patentability of software inventions was settled in the USA through the SC decision in *Alice Corporation Pvt. Ltd. v. CLS Bank International*, where a patent claim for a computer-implemented scheme for mitigating a ‘settlement risk’ was rejected by the Court. It was held that the inclusion of the generic computer in a claim cannot transform a patent-ineligible abstract idea into a patent-eligible invention. The method does not improve the functioning of the computer itself, nor does it affect any improvement in the technology.

As for India, the law relating to CR inventions is very new and ambiguous, as a result of which there is great uncertainty as to what extent these inventions are likely

to be protected. A computer programme by itself is not patentable in India. However, if it is in conjunction with novel hardware, then it could be eligible for a patent. The evolution of the law relating to CRIs depicts India’s complex approach to IP rights.

A look at the patent applications filed with the IPO shows that there has been a steady increase in the applications for CR inventions. From a share of 36 percent in 2011–12, the share of patent applications for CR inventions filed in India has increased to 40 percent in 2015–16, which clearly shows the increasing significance of patenting of CR inventions.

The position regarding the scope of software-related inventions in India was somewhat settled by the Delhi High Court in December 2019 in the case of *Ferid Allani v. Union of India and Ors.* The writ was filed against the rejection of a patent application for a “method and device for accessing information sources and services on the web”. The Court went into the jurisprudence of Section 3(k) of the Act and held that that the words ‘per se’ were incorporated with the intention to ensure that genuine inventions which are based on computer programs are granted patents.

It laid down that an invention which demonstrates a ‘technical effect’ or a ‘technical contribution’ is patent-eligible even though it may be based on a computer program, and ordered the patent office to reconsider the application. It termed such rejection as ‘retrograde’ considering the fact that many technological computer innovations such as artificial intelligence, blockchain and other computer programs are inventions ‘based’ on computer programmes and not just ‘computer programs per se’.

## 6. ARGUMENTS AGAINST SOFTWARE PATENTS

Granting of software patents will have a huge impact on the growth of the software industry. It is not possible to categorically summarize whether they are good or bad. There are strong arguments on sides of the spectrum. In such a scenario, what is necessary is to find a fine balance between the conflicting interests, so as to provide patent protection without stifling innovation.

One argument against the patentability of software-related inventions is that unlike promoting innovation in case of other inventions, patent protection stifles innovation in the software industry by creating a minefield for the programmers. Moreover, innovations in the software are incremental in nature and the reason for

the rapid technological developments in the software industry has been mainly due to the free exchange of information between the programmers in the earlier days.

The software industry is market-driven which implies that any software company that does not produce new and innovative products will simply run out of customers in due course of time. This will keep the software industry an innovating industry even in absence of the patenting system. The fact that the software industry is technologically dynamic implies that current software technology rapidly becomes obsolete so that the concept of 20-years protection seems at odds with the behaviour of the industry.

Another negative effect is that it could lead to undue monopolies on interface standards that are magnified by network effects. In the software industry, 'doing it right' rather than 'doing it first' or 'doing it differently' achieves success. It is the better implementation of already existing ideas, which makes a product unique and useful. Thus, it might not always be the inventor which develops the best way to implement or market it and granting patents could inherently affect the business philosophy on which the software industry thrives.

Moreover, granting patents could greatly jeopardize the growth of open-source software, which is called "the most innovative development of past decades". The mechanism of open-source software is hugely responsible for the level of software development as we see today because it enabled developers to build on each other's work and share the source code. However, the patents for software would massively hinder open-source innovation.

A rather liberal approach to granting patents could lead to the tragedy of the anti-commons, in which too many patent rights granted to too many actors threaten innovation and the development of technology by bogging down the system with a profusion of patent disputes and litigation. It could also mean a significant reduction in consumer choice either by impacting the interoperability between different software platforms or by blocking types of user interfaces, thereby reducing the social benefit of software products. Additionally, there is a great difficulty in searching for prior art in case of patented combinations of algorithms and techniques.

## 7. ARGUMENTS IN FAVOUR

There are strong points made for increasing the patentability of software inventions as well. One viewpoint is that patents would encourage more investment in the research and development, which will ultimately result in greater innovation on part of the competitors in the market, so as to remain relevant in a rapidly changing technological environment.

Patents on software-related inventions must be considered as a reward for the investment of time, money and efforts put in by the researcher in his endeavours. It would enable companies to recover their R&D cost during the period of exclusive rights so that they can further invest in research. Another reason in favour of patents is that it would create opportunities for small and medium enterprises in the global market by protecting their IP. Otherwise, it would be very difficult for them to create a space for themselves in the software market. The strong patenting system will help to curb software piracy, which results in huge losses of revenues to software companies every year.

## 8. CONCLUSION

To conclude, it is evident that software-related inventions are one of the most important technological advancements of the 21<sup>st</sup> century. Their importance cannot be restricted to any one sector owing to the fact that software is a general-purpose technology. With the transition towards an IT-based society, the growth and development of software inventions are bound to multiply by leaps and bounds. Owing to this fact, it is necessary to have a clear and unambiguous patent regime concerning computer-related inventions. The guidelines for the examination of CRIs from 2017 and the **Ferid Allani judgement** have brought some clarity and stability regarding the scope of patentability.

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