



## Patentability of inventions comprising mathematical methods and software programs

IT industry in India has witnessed tremendous growth in past decade, which resulted in inception of large IT companies and multiple start-ups. Creation of software products is the major emphasis of IT industries, and to counter the growing competition in the industry it is a must need to protect the unique innovations of software programs.

Many countries, for example USA, Singapore and Australia, favor the protection for software innovation by complying the Patent Laws. However, many other countries including India and European nations comply stringent Patent laws for protection of software innovations. According to amendments, 2002 of Indian Patent Act, 1970, section 3 and section 4 specify a list of non-patentable subject matters, where sub-section (k) under section 3 states that:

*“Mathematical and business methods, computer programs-per se or algorithms are categorized as non-patentable subject matters.”*

Note: “Every software innovation does not fall under section 3(k), therefore, a wide range of software innovations are patentable in India as well. Protection may be obtained by an applicant in a successful manner if the patent specifications are crafted intelligently by the patentee, e.g. if software innovations or mobile applications are presented to be protected in such a way that they includes a subject matter that is not a computer program.”

While most types of software patents are disallowed, a survey done by Software Freedom Law Centre (SFLC) showed that over 350 patents were granted for software or computer programs innovations in between 2009-2011, in India. Some examples of successfully obtained protections for software innovations are:

Applicant	Patent No.	Title of the patent
Google	252220	Generating user information for use in targeted advertising
Google	252156	Method and system for text segmentation
Google	246911	A method for automatically targeting web-based advertisements
Oracle	245515	Tracking space usage in a database
Oracle	252448	In-place evolution of xml schemas in databases
Ebay	242805	Facilitating micropayments between a plurality of parties



Ebay

239304

Method and system for scheduling transaction listings at a network-based transaction facility

### **History on software patents Guidelines:**

**“On 21st Sep 1962, a British patent application entitled "A Computer Arranged for the Automatic Solution of Linear Programming Problems" was filed. The invention was concerned with efficient memory management for the simplex algorithm, and may be implemented by purely software means. The patent was granted on August 17, 1966 and seems to be one of the first software patents.”**

According to Indian Patent Act, 1970, a clear prohibition was implied on software or computer programs or mobile applications.

In 2002, the patent act was amended and according to these amendments related to the software innovation or computer programs words “per se” were introduced in the clause (k), which means any innovation in computer programs or computer software cannot be protected, in isolation. Software can be patented in combination with hardware, which means software should be in function with computer hardware wholly or partially.

If any company seeking to file a software patent application under Ordinance, 2004, it should ensure that its invention follows the three basic tests:

- Inventive steps
- Novelty
- Usefulness

Further, on February 19, 2016, the Government issued new Guidelines for examination of software patents in India, which specifies that: a new term “technical effect” was introduced in the Computer Related inventions (CRI) Guidelines in order to further explain “technical advancement” under Section 2(1)(ja) of the Patents Act.

1. **Patentability-** A three-step test is recently introduced in the final amended guidelines for determining the patentability of software-related inventions. These steps says:
  - Claims should be properly construed and identify the actual contribution;
  - Claims should be denied, if the contribution lies only in mathematical method, business method or algorithm;



- Claim should be provided in conjunction with novel hardware and should proceed to other steps to determine the patentability with respect to the invention, if the contribution lies in the field of computer programs. The computer program is never patentable in isolation.
- 2. **Inventive step** - The new Guidelines (for interpretation of technical advancement) states that: comparison should be done with the subject matter of invention and it should be found that the advancement is not related to any of the excluded subjects.
- 3. **Industrial applicability** - The new Guidelines state that patent specification must disclose a practical application and industrial use for the claimed invention wherein concrete benefit must be derivable from the description coupled with common general knowledge.

#### **Examples of software patents granted in India:**

1. **Title – “Disaggregated secure execution environment”**

**Application number** – 3803/CHENP/2008

**Grant Date-** 19<sup>th</sup> Sept, 2016

**Priority-** US11/353,675 with PCT Internation Publication Number (PCT/US2007/002322)

**Background of the Invention-** “An electronic device, such as, a computer, which may be adapted for self-monitoring for compliance to an operating policy. The operating policy may specify a pay-per-use or subscription business model and measurements associated with compliant usage. A secure execution environment may measure usage in accordance with the business model as well as monitor and enforce compliance to the operating policy to increase the difficulty of attacking or otherwise disabling the secure execution environment, elements of the secure execution environment may be distributed. The distribution points may include other functional elements of the computer, such as interface circuits, or may even be remotely located over a network. An implementation method for disaggregating the secure execution environment is also disclosed.”

2. **Title – “A system facilitating a computer object access control”**

**Application number** – 247539

**Grant Date-** 18<sup>th</sup> April, 2011



**Priority-** US10/609,104 with PCT Internation Publication Number (PCT/US2004/019987)

**Background of the Invention-** “A system facilitating a computer object access control for controlling access to the computer objects, comprising: a computer display screen, a graphical user interface, a name field indicating a name for the computer object; and one or more access control fields rendered together and indicating plural selectable computer spaces for the computer object, at least one of the computer spaces corresponding to a computer location and at least one of the computer spaces corresponding to access to the computer object for one or more computer users.”

Some other important software patent cases:

✚ ***Intex Technologies (India) Ltd vs. Telefonaktiebolaget LM Ericsson Ericsson***

Recently, Delhi High court gave judgement on a case law of ***Intex Technologies (India) Ltd Vs. Telefonaktiebolaget LM Ericsson Ericsson*** for infringement of eight patents relating to 2G, 3G and Edge technologies used in mobile phones and tablets. The Delhi High court ordered Index Technologies to pay 50% of the royalties within four weeks from the date of the filling such suit, in the favor of Ericsson. Grounds for rejection for appeal of Intex Technologies were position of patentability of computer software clarifying section 3(k).

✚ ***Electronic Navigation Research Institute vs. Controller General of Patents***

On 5<sup>th</sup> July, 2013, Intellectual Property Appellate Board (IPAB) passed a decision that denies a patent applied by **Electronic Navigation Research Institute** for a “Method for calculating Chaos Theoretical Exponent value (CTEV)”. The patent application was denied on the grounds of non-patentable subject matter under Section 3 (k) of Indian Patent Act, especially mathematical methods.

**Background of the invention-** “The Appellant’s invention relates to a system for analyzing a time series signal by a method based on Chaos Theory and calculating a chaos theoretical exponent value (CTEV). The conventional chaos theoretical exponent value calculation systems presumed that it analyses a system of stable dynamic. Thus the temporarily changing dynamics cannot be calculated as a significant value.” Grounds for grant of patent from inventor side-

- inventing a system which makes it possible to calculate a CTEV that could not have been so far processed in a system of temporarily changing dynamics;
- performing the process at a high speed and on a real time basis;
- calculating a CTEV even from a time series signal which includes noises; and
- calculating the average CTEV in a shorter time of two decimal orders or more.



**Controller's decision-** First Examination Report (FER) was issued by the patent office on 11 Jun, 2007 with the objection stating that: "the claims fall within the scope of the clause (k) of section 3 and section 2(1)(j) of the Indian Patent Act, 1970 as it lacks novelty and inventive step." The applicant then filed a response to the first examination report (FER) on 9<sup>th</sup> April, 2008. A hearing was also requested by the applicant along with the submissions. After considering the submissions made by the Applicant, along with the descriptions and claims as on the records, the Deputy Controller held the opinion that the alleged invention still falls under section 3(k) of the Patents Act. Hence a grant of patent was rejected for the above application.

**Allegations of the appellant against the decision of the Controller-** The appellant or applicant then filed an appeal against the Controller's decision before the IPAB. One of the ground for filing such appeal was that the Controller had wrongly negated the 'technical effect' holding incorrectly that the Indian Patent Law does not follow the EPC.

**Held:** The IPAB cited that *"inventive step must be a feature which lies with a patentable subject matter. Otherwise, the patentee by citing economic significance or technical advance in relation to any of the excluded subjects can insist upon grant of patent thereto. Therefore, this technical advance comparison should be done with the subject matter of invention and it should be found it is not related to any of the excluded subjects."*

The IPAB stated that identifiable technical contribution provided by the claimed invention itself came under the excluded subject matter, therefore IPAB justified the controller's decision that a patent cannot be granted for a mathematical method according to the patent law in India and the appeal was dismissed.

Section 3 of Indian Patent act holds a very important position in reference to the grant of a patent. Complexity of this section gives it much more importance in obtaining the grant of a patent. Adopting a problem and a solution approach is the best mode to include inventions containing mathematical method or software programs.