

## Patenting of Computer Software: Status and Approach\*

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(Received 19 September 2001)

Computer software, as literary work, is protected in accordance with the Berne Convention, 1971. Accordingly, it is protected in India under Copyright Act, 1957 (as amended up to 1999). Some developed countries like USA, UK, Japan, etc. have allowed patenting of certain type of computer software related inventions by defining it in their own ways, e.g. "technological arts". This has generated debate whether such patenting of computer software in India would have positive economic and technological impact as the country is moving ahead to be an important global player in the area of computer software and services.

This paper is an attempt to analyse the current global scenario of software patenting, various reasons advocating software patenting in India and equally strong points discouraging software patenting. With this backdrop, the Indian scenario has been presented which indicates that *prima facie* the existing situation may be maintained in India except provisioning for a few extreme cases. Patent protection being territorial in nature ; all S/W export units may have to use the S/W patenting provisions in USA, our major market of S/W and services.

With the growth of the software industry came a growing interest in intellectual property rights (IPR); the

rights bestowed by the State upon an author or inventor in recognition of his/her 'ownership' of the creation from the mind in the form of mostly intangibles. As per WIPO<sup>1</sup>, "Intellectual property refers to creations of the mind: inventions, literary and artistic works, and symbols, names, images, and designs used in commerce". During the Uruguay round of world trade negotiations, the issues of protection of IPR became the most controversial area of contention between the developing countries and industrialised nations. Whereas, the countries of the North argued that entrepreneurship and innovation could never be encouraged without proper protection of IPR, those from the South contended that the rights of the patent-

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\*Views expressed are personal views of authors and not that of their organization

holder or inventor needs to be circumscribed by his/her obligations to the rest of society and the world at large.

### **TRIPS and Computer Software**

World Trade Organisation Agreement on "Trade-Related Aspects of Intellectual Property Rights" (TRIPS), the details of which were finalised in the concluding Uruguay round in 1994, specifies some minimum standards that must be adhered for protection of Intellectual Property (IP) by the member countries. Eight types of IPRs including patents, copyrights, trademarks, etc. have been specifically mentioned in the provisions of the TRIPS Agreement. The objectives of the TRIPS Agreement have been clearly spelt out in the Article 7 of the Agreement that the protection and enforcement of IPR should contribute to the promotion of technological innovation. It should also promote the transfer and dissemination of technology, to the mutual advantage of the producers and users, in a manner conducive to social and economic welfare. It may also be noted that India is a signatory to TRIPS Agreement and so it is obligatory to implement the same.

Article 27 of TRIPS lays down that for any invention, whether product or process, patents can be granted, provided the invention is new, involves an inventive step and is capable of industrial application. Further Article 10 relating to Computer programs and compilations of data specifically lays down that computer programs whether in source or object code, shall be protected as literary works under the Berne Convention 1971, which

relates to protection of literary and artistic works. It also lays down that compilations of data shall be protected as such, without any prejudice to any copyright subsisting in the data or material itself. Hence it is difficult to conclude from the TRIPS Agreement whether computer programs are to be predominantly protected under the copyright law and not under the patent law.

It may be stated that making claim to objects such as computer S/W as patentable items according to TRIPS Agreement is a debatable issue. One view is<sup>2</sup> : that Article 27 of TRIPS requires Member Governments to grant patents on "any inventions, whether products or processes, in all fields of technology, provided they are new, involve an inventive step [or are non-obvious], and are capable of industrial application." Yet this does not authorise patents on obvious products or processes, or on things that are not "inventions." Article 1 of TRIPS authorises members to "implement in their law no more extensive protection than is required by this Agreement." This might be read to permit patents, trademarks or copyrights on anything whatsoever, whether or not new, obvious or original. Yet such a reading could have aberrant consequences, and does not conform to the commonly understood definitions of patents, copyright, or intellectual property. The only other section of any WTO Agreement to mention patents, is Article XX(d) of GATT 1947, which authorises members to take measures "necessary to secure compliance with" patent laws. Yet it is

not "necessary" to issue an invalid patent, nor does doing so secure compliance with the patent laws (and Article XX(d) applies only to goods, not services). It thus seems possible that WTO Member Governments can ask the WTO to rule that an obvious patent issued by the US (or possibly other countries) violates GATT 1947 or GATS. Also, the term "invention" in TRIPS Art.27 should arguably be construed, as it would have been understood when TRIPS was adopted in 1994. At that time, many thought that relatively "pure" software patents were not "inventions" at all, but algorithms that were "discovered". A WTO member might therefore ask the WTO to rule that many US software or other patents violate Art. II.4 of GATT 1947 or Art. XVI.2 of GATS on this basis as well.

The other view contends that software is patentable subject matter as per TRIPS<sup>3</sup> in light of the exceptions in Art.27(3) of TRIPS, since it may not appear enforceable to construe the term "inventions" in Art. 27(1) differently on a country-by-country basis, by using the different legal definitions in the individual Member States. Article 27(3) specifies definitely those areas of invention that a Member can exclude from patentability. The attempt to expand artificially, the areas of exclusion permitted by Art. 27(3) by using a "national" legal definition of the concept of the "invention" to exclude from patentability subject matter that is actually to be patented pursuant to Art. 27(1), may thus represent an attempt to

evade Art. 27(3) and may lead to a conflict between the provisions of Art. 27(1) and (3).

It may also be mentioned that TRIPS intends to "harmonise", as it was always called, not to "uniformise" the systems of various countries. It also intends to allow the coexistence of diverse systems while minimising frictions that could arise from regional protectionism. The method of implementation of the provisions of the TRIPS Agreement has, therefore, been left to the Member States.

#### **Computer Software: Copyright vs Patent**

Majority of the TRIPS countries, including India, protect computer software only under the Copyright Act. However, in some developed nations like USA, UK, Japan, etc. some computer softwares are also an item of patentability. Some of the fundamental differences between copyrights and patents, with reference to Indian Copyright Act, are listed below:

- A copyright protects an original work in the tangible, fixed form in which it has been set down and not the idea behind the work. Patent protects the creation of inventive concepts as well its reduction to practice.
- In order for a work to be copyrighted, it must be original and fixed in a tangible medium of statements. In order for an invention to be patented it must be novel, non-

obvious and useful/must find and industrial application.

- In India, a copyright lasts for the life of the author, plus 60 years, whereas tenure of a patent may last for 14 years from the date of application until new Amendment to Patent Act extends it to 20 years in line with the recommendations of TRIPS.
- For a copyright to be infringed, the work itself must have actually been copied beyond “fair use” (either wholly or partially)/distributed/performed or displayed. Whereas, a patent confers a statutory monopoly to the independent developer of patented invention that prevents others from using or selling creations based on the ideas of the owners of the patents.
- A work is automatically copyrighted as soon as it is created even though it has not been registered. Even to register the Copyright, the paper work is much less complicated, the cost is minimal and processing of the case takes hardly 6 to 9 months or so. A patent, on the other hand, has to be processed and granted by the Patent Office of the Member State. The patent application process is more complex, usually requiring the services of a registered patent agent to draft and prosecute the application, adding to the cost both on part of the inventor as well as on part of the Government and is time consuming on account of needed “Search Services” based on global knowledge base.

### **Legal Status of Software Patenting in Different Countries**

*China:* China enacted its patent law in March 1984. It does not provide any patenting provision to computer programs. China has preferred to protect software primarily under the 1990 PRC Copyright Act rather than patents.

*Europe:* Patentability requires a specific technical application in European Patent Convention (EPC). Article 52(2)(C) of EPC specifically excludes “programs for computers as such” as patentable inventions. However, if a computer program brings about, or is capable of bringing about, a technical effect which goes beyond the “normal” physical interactions between the program (software) and the computer (hardware) on which it is run, is patentable under the Technical Board of EPC guidelines.

*India:* Computer software is protected under the provisions of the Indian Copyright Act, 1957. Major amendments to the Copyrights Act were introduced in 1994, which has made the Indian copyrights law one of the toughest copyright laws enacted in the world. The amendments include the definition of computer program, the rights of copyright holder, position on rentals of software, the rights of the user to make backup copies, etc. Heavy punishment and fines have been imposed on infringement of software copyrights. It also allows fair use of the work like for non-profit research. The Copyright Act Amendment, 1999 brought forth a few changes in the

“fair use” provision pertaining to computer software. In this regard, it added three new provisions in the Act in Section 52(1) (aa). The new provisions read<sup>16</sup>:

"(ab) doing of any act necessary to obtain information essential for operating interoperability of an independently created computer program with other programs by a lawful possessor of a computer program provided that such information is not readily available;

(ac) observation, study or test of functioning of the computer program in order to determine ideas and principles which underline any elements of the program while performing such acts necessary for the functions for which the computer program was supplied;

(ad) making of copies or adaptation of the computer program from a legally obtained copy for non-commercial personal use".

Thus, the amendment permits decompilation or any other act required to achieve interoperability of an independently created computer program with licensed programs in the absence of ready availability of such information. Further, it explicitly permits other modes of reverse engineering by permitting observation, study or test of functioning of the computer program to determine the ideas and principles underlined in the program. But, this freedom is limited by

the words "while performing such acts necessary for the functions for which the computer program was supplied". Making of a back up copy from a legally obtained copy for a non-commercial purpose is also permitted by the new amendment. Thus, these changes would definitely dilute the erstwhile legal position regarding reverse engineering, compatibility and research<sup>17</sup>. These provisions will enhance the overall creativity by various S/W developers. The Indian Patent Act, 1970 does not contain any specific provision regarding the protection of computer programs<sup>14</sup>.

Also India has initiated some policy decisions to curb software piracy and illegal copying. Import tariffs on software were removed right in 1997-98 budget. An increased vigil on software pirates by NASSCOM and, with government support, it has resulted in curbing piracy progressively.

*Japan:* The Japanese statutory definition<sup>6</sup> of invention is “a highly advanced creation of technical ideas by which a law of nature is utilized”. There are specific guidelines<sup>8</sup> by the Japan Patent Office in 1997 that both process or product patents can be granted for software related/implemented inventions in the following cases:

- i. Control of hardware resources or processing operation associated with control
- ii. Information processing based on physical property or technical property of an object

iii. Processing by utilizing hardware resources

In the above cases it should also satisfy the following conditions:

- The technology has application
- There is novelty in the invention
- There is an inventive step
- Law of nature is used

In Japan, conventionally, a business method does not come under a statutory invention on the ground that it utilises a commercial experimental rule or an economic rule mainly, so is not an advanced creation of technical ideas and does not utilise law of nature.

*USA:* The US Patent Law<sup>4</sup> says that “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent.” The only exceptions are – Laws of nature, natural phenomena and abstract ideas. The US patent office has issued specific guidelines in 1996 that the examiner should not exclude an item from being patented just because it includes a mathematical algorithm. The guidelines<sup>5</sup> says “The utility of an invention must be within the "technological" arts. A computer-related invention is within the technological arts. A practical application of a computer-related invention is statutory subject matter. This requirement can be discerned from the various phrased prohibitions against the patenting of

abstract ideas, laws of nature or natural phenomena. An invention that has a practical application in the technological arts satisfies the utility requirement”. It is important to emphasise here that under the above patent office guidelines, business processes /methods are also item of patentability.

*Short Term Patents:* Ireland, Hong Kong, Portugal etc. have introduced a short term protection system for inventions which have a limited life time. Software can be protected under this provision and has a duration of ten years. The inventor submits along with the application the search report and only criterion needed for grant of protection is that it should have an industrial applicability. The protection is generally granted within 12 months of its filing.

### **Issues and Impact of Software Patenting**

Historically, software was protected through a variety of means. Trade secrets and software licence agreements were initially the preferred form of legal protection. However, with the mass distribution of software and the growth of the industry into a multi-billion dollar industry, the use of trade secrets became a less popular option, as it is virtually impossible to maintain the software confidentiality with such a large number of users. Hence, other forms of protection were sought.

As software was increasingly distributed without signed licence agreements, copyrights became to be considered the most suitable form of legal

protection in order to avoid illegal copying. This was also in accordance to the Berne Convention, 1971.

However, the Copyright Act also had presented in past many problems for the software industry. For example, one of the problems faced earlier was what is commonly known as the 'Look and Feel' problem. Copyright only protects statement of the idea and not underlying idea itself. However, with the development of the software the need was felt to protect the idea in producing a particular visual display as this may be of more importance than its expression. This posed a real problem in implementation of copyright law. This, however, was later on resolved in USA by way of the market giants agreeing for 'Standards of Graphic User Interfaces'. The Apple Mac and Microsoft Windows offered good examples of this and became popularly known as 'WIMP' environments, standing for Windows, Icons, Menus, Pointers (e.g. Mouse). Since these platforms became immensely popular to the S/W developers and in the market, use of licensed copy of 'WIMP' enabled the developers to offer S/W products as per these standards without violating the IPR-copyright or patent<sup>19</sup>. The development of a similar product using a different environment, platform, compilers including decompilation/reverse engineering is also an issue of concern. Some people feel answer to the above may be in making the software invention an item of patentability. They contend that patent protects the creation of inventive concepts as well as the reduction to the practice. Whereas, the copyright protects

a product from being copied, a patent would prevent anyone, who created a similar software product independently from exploiting that product for the period for which a patent holds (14 years as per Indian Patent Act 1970 with First Amendment 1999 allowing for mail box provisioning and 20 years when it becomes conformant to TRIPS Agreement). The above contention so far has not been fully true. As in general, a S/W world over is protected under copyright. Court cases in such events have demonstrated that in case second developer of a typical S/W has also invested comparable in terms of personware effort and money as the first one for the development of a similar S/W independently without anything (the structure, environment, compilers, etc.) being copied then there is no copyright infringement. This has accelerated production of up-to-date, cost effective S/W solutions and made the S/W industry a vibrant industry globally in the past.

It is also important to point out here that reverse engineering in many cases is a developmental need, which will not be possible under patent regime. Reverse Engineering with respect to software, is the process of decompilation of a computer program with a view to analysing its operation. It is an important concept for those developers trying to create software compatible to many tools used for its creation. By decompiling a program and studying its structure, organisation and function, it is possible to create a new program compatible with the former, which may have used other tools

as a necessity. Reverse engineering is also required for following other purposes<sup>17</sup>:

- (i) To obtain interface specifications necessary for the development of an attaching product or to develop a competing product;
- (ii) To obtain information about the capacity and performance characteristics of a program;
- (iii) To debug and adopt the program for user's own environment;
- (iv) A firm may reverse engineer its own program when it does not fully comprehend the operation of the software either due to the person who developed the program left the firm or due to lack of documentation.

Whereas, the Indian Copyright (Amendment) Act, 1999, legally provides legal recognition to reverse engineering of computer software, Patents as such, prohibit exploiting features of existing software, thereby restricting incremental growth<sup>17</sup>.

Some reasons for advocating software patents are:

- It is reported<sup>8</sup> that in United States which has the greatest experience with patents on computer program related/implemented inventions, the profitability and growth of independent SME software developers has often been to a significant extent dependent on possession of patent rights.

- By inhibiting reverse engineering, patents promote standards. In fact, its benefit goes only to the fore runners.
- In a global market economy, capital investment is the key to development. According to a study (ref: Bruce A. Lehman report, 1999 presented in Dacca Bangladesh) where corporate executives were asked if IPR is important for investment in creating product development facilities. majority was of the opinion that strong IPR in a country is one of the considerations for investment.
- Patent protection may encourage productive use of scientific output, as it permits diffusion of knowledge while protecting knowledge producers' right.
- It is difficult and costly to develop software from scratch whereas the clone software is relatively cheaper and easy to develop. This means S/W patenting will control S/W piracy.
- Giving adequate patent protection to S/W, the Indian S/W industry may transform from low value added services/ body shopping/ data processing, products to development of products with built-in new technologies so that they can move up on the value chain<sup>14</sup>.

However, there are equally strong points discouraging software patenting in addition to inhibiting development as discussed above. Some of them are:



- Some of the patents granted in US, the strongest advocate of software patenting, as per some critiques, may not strictly follow the criteria of invention in computer software oriented patenting. In fact, the number of patent applications filed with USPTO are growing in last few years<sup>10</sup>, mostly for computer-implemented business methods and not for highly pervasive and rare S/W implemented inventions like distributed processing systems, speech recognition/ synthesis, multi processing , CAD, etc. which represent hallmark of new technologies having quantum jumps and not simply the implementations of “Doctrine of Mind”. However, if they do happen, may have a case for patent protection.
  - As per current global practices, a S/W is being protected more by way of copyright, trade secrets and contracts and less by patents and semiconductor layout design of integrated circuits. Providing patent provision may, therefore, allure most S/W developers to apply for Patents which may finally prove to be a wasteful and costly exercise as real inventions based on S/W are scarce in a developing country where R&D being pursued in many times is not in the frontline technologies based on global knowledge base. However, the US Patent Guidelines of 1996 do have a meaning in our system that an invention just because it has a small programmed S/W should not be rejected. With the capability being abound in the country and S/W industry having acquired capability to provide system engineering services, such innovations may be coming forth in future where an instance of an algorithm is gainfully used to tap IT potential for equipments, apparatus, devices, etc. being protected under Patents.
- Patent protection for software related inventions may have a positive commercial impact for the patent holder in particular and the country in general, provided proper provisions are incorporated to safeguard issues that have been discussed in above. However, to exploit such opportunities that may be obtained through computer software patents, it is important to address some serious issues that may arise in the patenting regime.
- In USA, it has been observed that patents have recently been granted to certain inventions concerning financial services, electronic sales and advertising methods, business methods consisting of processes to be performed on the Internet, and telephone exchange and billing methods. Such type of e-commerce patents, may be viewed as important for creating incentives and spurring investment in new technologies. However, this trend has been criticised by those who would stress that a number of such patents concerning business practices and methods reflect familiar ways of doing business which are not

new/novel and non obvious: the only aspect that is different is that they occur in cyberspace. The case of Amazon.com illustrates the point.

A lawsuit filed in October 1999 in which Amazon.com, the Internet bookseller, has sued its rival, barnesandnoble.com illustrates the stakes involved. Amazon.com, in September 1997, started using a “one click technology” to enable its on-line customers to make repeated purchases from its web-site without having to repeatedly fill-out credit card and billing address information. It received a patent for its single-click technology in September 1999 and alleged that barnesandnoble.com’s one click check out system known as “express lane” infringes its patent.

It is concluded that large scopes and claims of patents in software/ business methods potentially exclude emergence of new and novel technological inventions as well as businesses based upon such potential ideas. In fact, very often patent examiners left out search for “prior arts” the real fact of existing modes and methods of conducting businesses or of existing software using at least partially the same methods as being claimed by the applicant. This is largely attributable<sup>14</sup> to a search/examination system designed for examining materially tangible inventions. This is also attributable to the fact that almost all software and related business methods while sharing certain common features, work upon principles and methods that have never been made public.

Interestingly, a large number of software or business methods utilize same or similar rules and principles while the tangible output of these usages, visible as end software products or as certain methods of doing businesses, appear very different.

This has initiated a debate in USA<sup>9</sup>. The USPTO has developed an action plan including hiring of “consultancy services” from market to respond to such issues related to business methods patents<sup>8</sup>. India needs to seriously address this issue of “type of patentable subject matter” in their deliberations on computer software related inventions.

Some of the recent examples of patents that have been challenged are:

- (i) Amazon vs Barnes and Noble single click case,
  - (ii) AT&T vs Excel for an invention containing a computer algorithm,
  - (iii) Priceline.com vs Microsoft Corp over a airline low price ticket package, and
  - (iv) State Streetbank vs Signature financial group for business methods
- Searching for prior art via patent searches is prohibitively expensive. A computer software may have a large number of patentable ideas. The total patent search cost for these ideas can exceed the development cost of the product. Also, patent applications written by the patent lawyers incur huge legal costs.

- Increased cost due to patenting may discourage small and medium-sized enterprises (SMEs) from innovation particularly in poor countries. The cost of patenting and defending a patent through litigation and other (lengthy) legal proceedings may be very high. In practice, the large companies can only afford it. SMEs cannot afford these costs since their financial and legal resources are limited.
- Classification of a software patent is extremely difficult. This may result in patent search being highly unreliable.
- In software industry, large amount of data is undocumented which has not been published anywhere. This makes the prior art citation unreliable.
- USA has more than 4000 highly specialised patent examiners in its patent office. At least 10% of them are Ph.Ds. An examination infrastructure of this magnitude may be beyond the reach of developing societies/countries.
- In software industry, independent development of similar idea is very common. As patent grants absolute monopoly, this may discourage creativity from individuals and SMEs and may lead to unfair competition and may be economically damaging to the country as a whole.
- Software products and systems are constructed from many different pieces of patents. This requires acquisition of a large number of patents, which in-turn may require specialised manpower and large resources.
- Proprietary software companies with financial muscle power can use patenting as a means to stifle innovation and competition. This in turn may hamper development and marketing of products providing similar services. This may promote monopoly of proprietary software companies, and result in increased cost of their products that the consumer has to pay finally. This factor however, may be taken care of once the “Competition Law” is enacted in our country.
- Software marketplace requires constant innovations. It is said that software patenting may hamper innovation as it may give exclusive rights in India to the owner(s) to use and innovate for entire life of 14/20 years.
- Incremental growth is an essential need for the growth of a software industry. As patent will give a sole monopoly to the holder, it will hamper incremental growth.
- In patent regime, software industry may have to face an increased financial/administrative burden due to patent related issues. This may lead to diversion of energy from customer care and services to patent search, licensing, acquisitions, surveillance, maintenance and litigation. This may in-turn lead to large increase in infrastructure and its maintenance cost, which may be

avoided if the software remains primarily under copyright regime.

- Open source software movement is vulnerable to patent infringement lawsuits particularly due to large number of patents granted in software algorithms. This may in turn add to “digital divide”.

### Software Patents and India

Indian software developers have a minimal presence in the area of software patenting. The total number of US patents granted to India in all fields till year 2000 is 743 as compared to 1337045 to USA assignees, which is less than 0.03% of total patents<sup>20,21</sup>. Even in these, drugs and pharmaceuticals are the prime contributors. As regards S/W patents, a patent (US Patent No. 5,987, 513) dt. 16.11.1999 entitled “Network management using browser based technology” by Prithvi Raj *et al*, Wipro limited Cupertino was located having 8 Indian and one Cupertino based Indian as inventors. A few more such patents may be there.

Again, in the case of software, the share of Indian patents filed in the US, or even in Europe is negligible. This is substantiated from the list given below which gives the list of US patents in electronic and IT granted in year 2000 to Indian assignees<sup>18</sup>.

Patent No	Title
206,129,897	Fuel energy saving and pollution control device
356,100,638	Kit for converting lighting units employing flourescent lamps from inductive operation to electronic operation
386,091,804	Device useful as a master/slave clock for transmitting standard time over a telephone network and a telephone network incorporating the device for transmitting and receiving standard time

The existing marginal share of S/W related/implemented patents is also evident from Table 1 that provides S/W related patents statistics of USPTO and Table 2, which gives country statistics for S/W related patents granted in Europe.

**Table 2 — Country statistics for software related patents granted in Europe<sup>22</sup>**

Total number	Per cent	Applicant's country
12550	32.96	USA
11666	30.64	Japan
4831	12.69	Germany
2710	7.11	France
1518	3.98	Great Britain
1201	3.15	New Zealand
770	2.02	Italy
651	1.71	Czechoslovakia
439	1.15	South Africa

**Table 1 — Software related patent statistics of USPTO<sup>21</sup>**

Applicant's country	percentage of total software related patents granted year-wise at USPTO					
	1994	1995	1996	1997	1998	1999
USA	62	64	60	63	60	66
Japan	28	25	22	26	25	20
Europe	7	7	8	6	9	5
Canada	1.5	1.5	2	2	3	4

For India to be global player in area of computer S/W patents, India will have to enhance its R&D investments and bring about a change of mind-set and start developing intellectual property of its own.

The above figures indicate that the Indian scientists are still not in a position to take advantage of patents in area of software. Only when we become somewhat comparable to advanced countries in number of national/international patents filed, the country may gain from S/W patenting provisions in India.

One of the consequences of software patenting may be flooding of foreign software patents in India. This may have an extra burden on our infrastructure and so the requisite infrastructure has to be first in place.

Even in the US, where they have a well-established infrastructure with a large number of qualified patent examiners, many cases are challenged. Software patents may also result in increased litigation in India. The Indian legal system is, at present, in-adequately equipped to handle such highly technological cases. Also, delays in resolving patent related issues due to the legal system being overloaded will defeat the very purpose of patenting software, which has a very short life. In India copyright is normally granted within a year of application. Whereas, as on date, grant of patent (or otherwise) typically in India and in many developing countries may take 5-8 years.

The lack of IPR awareness among the Indian software industry, particularly SMEs is of great concern. This was also reflected in the deliberation of a workshop organised by the Ministry of IT, Govt of India in Bangalore in September 2000. IPR awareness is essential for commercially exploiting benefits out of strong IPR.

The Indian IT industry is, at present, catering S/W services primarily to export markets. In this context, patent being territorial in nature, they will still have to file international patents for IP developed by them. The impact of permitting software patent in India needs to be examined mainly in this context.

### **Infrastructure Requirements for Patenting**

Patent law requires inventions to be new/original and non-obvious. In practice, the American patent authorities are not able to enforce this requirement in total. Part of the explanation is perhaps, that with 20,000 S/W patents issued in 1999 alone, the American patent authorities do not have the necessary capacity to critically examine each application. Extremely rapid technological development in the field of IT has added to the inadequacy of infrastructure for prior art examination. Also, due to small life span of software, grant of patents has to be completed within a reasonable time period. It is necessary that the Indian Patent Office first creates adequate infrastructure so as to grant patents to a select category of S/W implemented/based inventions efficiently and timely.

As, has been discussed above, it is evident that rapid technological development in the field of IT and the associated possibilities, even USPTO have been inundated with large number of S/W patent applications. It has become increasingly difficult to carry out a thorough prior art search and follow the criteria related to "invention" in USPTO. Improvement of Indian patent infrastructure and back-up support needs serious consideration before India starts granting software patents. This is also reflected in Dr R A Mashelkar's (Director General, CSIR, New Delhi) comment<sup>7</sup> "Weak physical infrastructure in terms of inadequate Indian patent offices, is just one aspect ....".

Some of the infrastructure requirements are:

- IPR awareness, reading and writing of patents, avoiding divulgence of confidential information, i.e. maintaining internal secrecy among the employees which is to be enhanced through workshops, seminars and information communication technology<sup>14</sup>.
- Large number of patent examiners with appropriate background essentially for timely and correctly processing the patent applications. At present India patent offices have inadequate strength of patent examiners in almost all areas of technology. This is a serious bottleneck, which needs immediate corrective measures.
- An internationally recognised search centre/collaborative arrangement

with any of existing International Preliminary Search Authority.

- A prior art database has to be created which not only has information about software patents already granted globally but also about all documented and undocumented prior art S&T literature about processes and products developed.
- A legal infrastructure with attorneys and judiciary having adequate technical knowledge to deal with software patent related cases.
- A formation of a jury system and a harmonized examination system where the competitors to a claimed invention can make representations.

There is an intense debate<sup>14</sup> in Europe and Japan as to what extent the laws could be amended to allow for the patenting of the software. While there is a demand for stronger protection of the software by a section of the industry, there is an equally strong 'open source software movement', which believes that making source code available publicly will enable programmers to improve the source code and further develop improved software.

For exploiting the maximum potential of Open Domain Software (ODS) by Indian users particularly SMEs, Ministry of Communications & Information Technology has taken a proactive stance. A project entitled "Electronic Resource for Optimal Choice of Base S/W and Tools for Computer S/W Developers particularly in Category of Small and Medium Enterprises" has been evolved and is being implemented at IISc.

Bangalore. About 300 ODS products in the area of networking and database management have been evaluated and compiled both in terms of their technical capabilities as well as IPR attached to them. A comparison with proprietary S/W is also being done for maximizing the usability of ODS.

### Conclusion

In the above paper attempt has been made to present status and approach related to patenting of computer software. Starting from relevant articles in TRIPS pertaining to computer software, efforts have been made to cover legal status of software patenting in different countries, issues, impact of software patenting, India's current potential covering *inter alia* reasons advocating software patenting and almost equally more strong points discouraging software patenting. Implications of permitting software patents in India and infrastructure requirements for software patents are also covered therein. In the end, it is concluded that while copyright and patent laws have been able to encompass new technologies in the past, the software industry presents a highly different technology and puts forward new challenges with respect to their protection.

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