

January 2, 2006



PATENT PROTECTION FOR COMPUTER SOFTWARE RELATED INVENTIONS

This paper has been prepared by the AIPPI Special Committee Q132 with the participation of:

- for Europe:
 - Michel de Beaumont (France),
 - Stephan Freischem (Germany),
 - Fernand de Visscher (Belgium),
 - Jürgen Betten (Germany),
- for the United States:
 - Erwin Basinski,
 - Ronald S. Laurie,
- for Japan:
 - Yoshikazu Tani
 - Mishihito Miyasaka,
- others:
 - Jose Antonio Faria Correa (Brazil),

and with the help of the Reporter General team of the AIPPI.

* * *

The object of this paper is to give an overview of the current situation as regards patentability of "computer implemented" or "computer software related" inventions and to review some of the economic advantages of patent protection.

After some general remarks, this paper will:

- summarize the situation in the United States, Japan and Europe,
- compare these situations and recall the AIPPI position,
- present some economic arguments.

1. GENERAL REMARKS

The patentability of computer software related innovations has been the subject of lively debate among intellectual property users and information technology experts for the past 40 years. This discussion is very similar to earlier discussions in connection with the recognition of patent protection for new, important fields of technology such as the extension to medical substances (approx. 100 years ago). A similar debate exists as regards biotechnology.

The economies of the industrialized countries are increasingly dependent on the tertiary sector (service industry), which includes the financial services sector. New developments in service enterprises are generally new working methods very often implemented through the use of computer networks such as the Internet with the aid of computers. The question of the existence of patent protection for computer programs or business methods thus becomes a question of applying the known protection system to the economic sector with the strongest growth.

Initially, patent protection for computer software related inventions was not granted in most patent systems but gradually the scope of patent protection has been extended. The attempt by the European Union to clarify and harmonize the standards for patent protection of computer software related inventions failed after a very agitated dispute over the extent of patent protection to be granted to such inventions and the dangers and benefits resulting from patent protection. In India, proposals to overhaul the patent regime applicable to computer software related inventions suffered a similar fate. This dispute intensified with the development of the open-source/free software community. The subsequent introduction of computer implemented business methods appears to have magnified the dispute as banks and other financial services industries became concerned with these patents in the U. S.

Computer software related inventions or computer implemented inventions are inventions the implementation of which involves the use of a computer, computer network or other programmable apparatus, at least one feature of the invention being realised by means of a computer program. In most cases such inventions are directed to a new functionality to be executed by means of a computer or other programmable device.

Computer software related inventions penetrate almost all fields of technology. Some examples of such inventions are:

- data transmission methods that speed up wireless communication;
- methods for encrypting data that make data communication more secure;
- vehicle drive control, such as modern fuel injection methods or control of a hybrid drive system;
- detection of dangerous conditions when driving an automobile and automatic reaction to such conditions;
- GPS applications combining position data with trip data and updated mapping data for detouring traffic and providing travel instructions meeting the needs of the driver;

- promotional methods on digital data networks and methods of optimising business information and financial information using the sources available on the Internet;
- Automated teller machines for dispensing cash at world-wide locations.

The patent eligible matter in such innovations is the new apparatus with the embedded program and/or the method, i.e. the new mechanism for reaching a specific, practical, concrete and useful goal and not the implementation of a specific computer program. The source code of the computer program is protected by copyright and not by patents. Copyright protection only protects the specific expression of the program (i.e. the listing or specific code) against copying whereas patent protection protects the features of a new method (i.e. the functionality) independent of the specific code implementation into a program. The protection provided by copyright law and the protection provided by patent law, although applied to the same software product, cover completely different aspects of the product and should not be confused. Copyright provides strong protection against simple multiplication (i.e. direct copying or unauthorized use) of a software product. The patent protects against copying of the apparatus and methods which may use a computer program. Also copyright and patent rights are of a different nature. In practice, an expression of an idea is copyrightable from the mere fact that it is a creation, i.e. the expression of any original computer program is protected by copyright. On the contrary, to be patentable, an invention must be new and non obvious and this condition is not so easily fulfilled by a software product. For example, a computer program that merely implements a given specification is not patentable if only normal programming techniques are used for the implementation. Only the new and non-obvious subject matter of the specification and/or new and non-obvious functional implementation of the specification can be inventive and defined in a patent claim.

In this document, we will study whether computer software implemented innovations are eligible for patentability. It should be kept in mind that among these patent eligible innovations, only a small number will be patentable: those that are novel and non obvious.

2. CURRENT SITUATION

2.1. U.S.A.

In the United States, computer software patents and business method patents are covered by the same rules that apply to all inventions. An invention is entitled to patent protection if it satisfies these requirements: utility (35 USC § 101), novelty, non-obviousness, and clear written description.

The statutory requirements of 35 USC § 101 are: "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof ...".

The language of the statute suggests a liberal interpretation and the U.S. congress has stated that Section 101 should include “everything under the sun made by man” (Diamond v. Chakrabarty). In fact, U. S. courts have recognized that Section 101 should be liberally applied to new technologies, regardless of whether congress predicted the technological advance. This is perhaps the reason why the principles behind this language have remained virtually unchanged for over 200 years in the U.S.

Although the U. S. courts construe Section 101 broadly, they have recognized three judicially created exceptions to patent eligible subject matter: laws of nature, natural phenomenon, and abstract ideas. This last exception, abstract ideas, has posed historical problems for software and business method inventions.

The current test that the U. S. Court of Appeals for the Federal Circuit uses to determine patentable subject matter is whether the claim recites a useful, concrete and tangible result, and in performing this test, the focus is on practical application that equates to practical utility. The Federal Circuit has stated that an abstract idea by itself never satisfies the requirements of 35 U.S.C. 101. However, an abstract idea when practically applied to produce a useful, concrete and tangible result satisfies Section 101 (State Street Bank & Trust Co. v. Signature Financial Group, Inc.).

A review of Federal Circuit cases since the U. S. Supreme Court decision in Diamond v. Diehr (450 U.S. 175 (1981)), including both the State Street and AT&T cases, provides insight into the types of inventions that the Federal Circuit has and will continue to find patent eligible. These cases reveal that claims that have recited machines, machine manipulation, or processes within machines have all been found to recite statutory subject matter. Similarly, claims that have recited a physical transformation or generation of data have also been found to recite patentable subject matter. On the other hand, claims that have recited abstract ideas by themselves (i.e., as such) and claims that have recited only steps performed by a human have been found to not recite statutory subject matter. Thus, attempts to claim abstract ideas by themselves or methods performed only by a human may risk Section 101 invalidity problems.

Summary

In U.S. practice, any useful invention made by man is eligible for patent protection, including any new and non-obvious computer software and business method.

2.2. JAPAN

In Japan, computer software related inventions are patentable if they satisfy the requirements of the Japanese Patent Law that apply to other inventions, i.e. statutory invention (Sections 2(1) and 29(1)), novelty, inventive step, description requirements. As for business-related inventions that use software, they are examined in the same way as software-related inventions.

In order to address the unique examination issues presented by these types of inventions, the Japan Patent Office released Examination Guidelines for software-related inventions. The Examination Guidelines explain with specific examples what kind of software-related inventions satisfy the requirements, including statutory invention and inventive step.

A statutory invention is defined by Section 2(1) of the Japanese patent law as “a (highly advanced) creation of technical ideas utilizing a law of nature”.

Since a law of nature has to be utilized, not all inventions constitute statutory inventions. For example, a law of nature itself, natural phenomena, man-made rules such as laws of economics, business schemes/methods, abstract ideas, pure mathematical algorithms, arbitrary arrangements, mental activity, mere presentation of information, and computer program listings do not constitute statutory inventions.

As for a software-related invention, according to the Examination Guidelines, unless it is a non-typical one such as an invention controlling an apparatus (e.g. washing machine, engine, hard disk drive), whether or not it constitutes a statutory invention is judged by whether or not information processing by software is concretely realized using hardware resources (e.g. CPU, memory).

In other words, a software-related invention has to be described in a claim such that software and hardware resources are working in a cooperative manner. Mere recitation of hardware resources (such as CPU, ROM) is not sufficient.

As for a software-related invention including steps performed by a human, it usually does not constitute a statutory invention, since an invention as a whole has to utilize a law of nature.

If a software-related invention constitutes a statutory invention, it is patentable in the form of an apparatus, a method, a program or a computer-readable storage medium storing a program.

However, this invention must imply an inventive step. According to the Examination Guidelines, for example, 1) application of prior art to other fields (e.g. medical information retrieval to commodity information retrieval), 2) implementation of functions by software which were implemented by hardware in the prior art, and 3) systematisation of transactions which were performed by humans in the prior art, usually do not involve an inventive step.

When assessing the inventive step of a computer implemented invention, the person skilled in the art that should determine whether an inventive step exists is considered to have knowledge in the field of the software application (e.g. financial field) and in the field of computer technology. This seems to imply that the inventive contribution can also be

made in the non-technical field (e.g. financial field) as long as the claimed product satisfies the aforementioned criterion of statutory invention.

Summary

In Japan, software inventions and even software implemented business methods are eligible for patent protection, if a specific interaction with a hardware resource is defined in the claims.

2.3. EUROPE

The legal basis is Article 52 European Patent Convention (EPC):

- (1) European patents shall be granted for any **inventions** which are susceptible of **industrial application**, which are **new** and which involve an **inventive step**.
- (2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1:
 - a) discoveries, scientific theories and mathematical methods;
 - b) aesthetic creations;
 - c) schemes, rules and **methods for performing mental acts**, playing games or **doing business**, and **programs for computers**;
 - d) presentations of information.
- (3) The provisions of paragraph 2 shall exclude patentability of the subject-matter or activities referred to in that provision only to the extent to which a European patent application or European patent relates to such subject-matter or activities **as such**.

This means that "programs for computers" and "methods for doing business" are excluded "as such" from patent protection.

However, it is still a matter for discussion and not really clear what, for example, a "computer program as such" means. It is most likely a computer program without technical character or a computer program that does not solve a technical problem.

To be an "invention" is a prerequisite for the requirements: industrial application, novelty and inventive step.

According to the tradition in Europe, an "invention" within the meaning of Art. 52(1) EPC must have a technical character.

According to the case law of the Boards of Appeal of the EPO the technical character

- a) can lie in the underlying problem, or

- b) in the means (technical features) forming the solution to the underlying problem, or
- c) in the effects achieved by solving the problem, or
- d) can be present if technical considerations (or technical knowledge) are required in order to realize a computer program.

In fact, for most computer implemented inventions, it is possible to draft a patent application and a set of claims complying with this technical character criterion. Therefore, in particular to exclude business method inventions, the EPO has developed, since about 2000, the "technical contribution" theory and used the inventive step condition to reject non-technical inventions. The EPO used the following problem-and-solution approach to determine whether there is inventive step:

- 1) identification of the technical field,
- 2) identification of the closest prior art,
- 3) identification of the technical problem,
- 4) determination of the technical features of a claim which contribute to the solution (the "technical contribution"),

Once the presence of a technical contribution has been ascertained, then the inventive step is assessed taking the claim as a whole. If the contribution provided by the invention as claimed is non-technical, e.g. lies in the field of economics, it is not taken into account in the assessment of inventive step (PBS Pension Benefits) and the invention is not patentable.

"State of the art" according to Art. 54 EPC means "state of technology" and does not extend to the state of the art in commerce and business methods. Automation of a business method using conventional hardware and programming methods must be considered obvious to a skilled person (Order management/RICOH).

If a software-related invention has technical character and makes a technical contribution, it is patentable in the form of an apparatus, a method, a program or a computer-readable storage medium storing a program.

The Commission and the Council of the European Union made an attempt to harmonize the protection concerning computer implemented inventions throughout the European Union. Their proposal for a directive was rejected. The national practice in the member states of the European Union continues. The German and the French case law generally follow the EPO case law. The latest case law in the U.K. (Oracle decisions), although expressed in a slightly different way in also in line with the EPO case law.

Summary

The European Patent Office grants patent protection to software related inventions, including software related business methods, provided they have technical character and make a technical contribution.

3. POSITION OF AIPPI AND COMPARISON

3.1. POSITION OF AIPPI

AIPPI has adopted two Resolutions on this matter. Resolution Q133 was on the subject of "Patenting of computer software". Resolution Q158 covered the subject of "Patentability of Business Methods".

AIPPI's position in both Resolutions lies between the US position of patenting any new, non-obvious and useful development and the European position of restricting patent protection to technical fields. The AIPPI Resolutions were voted almost unanimously after thorough discussion. There was no discrepancy between the three families of the AIPPI (members of industry, attorneys and barristers). That is, the AIPPI position clearly shows the position of international IP experts and users of the patent system as regards patentability of software related inventions.

In Resolution Q133, AIPPI resolved that patents should be granted without discrimination in all areas of technology, including that of computer software, such as programs, and that all computer software meeting the patentability requirements should be considered patentable in the same manner and treated equally, with no distinction being drawn between the different types of computer software and applying the same rules as in other fields of technology. Further, according to Resolution Q133, computer software should be inherently patentable in any medium in which it can be commercialised.

In Resolution Q 158, AIPPI resolved that "business methods" should be entitled to patent protection provided that the invention as defined in the claims has a technical content. According to resolution Q158, if such an invention as a whole has a technical content, that should be sufficient for patentability even though the point of novelty and inventive step (non-obviousness) does not lie in the technical content. Further, the protection of such inventions by patents should be assessed by or based upon the same criteria as other inventions, and no new or special criteria should be applied. Merely transforming a known method into software form does not give rise to a presumption that such an invention has an inventive step.

Thus, AIPPI's formulation requires technical content as a prerequisite for patentability, and recognises as sufficient the technical content of an invention implemented in a technical system (which is always the case for computer software), even if the inventive contribution does not have a technical character. According to AIPPI, new and inventive business methods and other non-technical innovation should be patentable if implemented on a computer.

3.2. COMPARISON OF THE VARIOUS SYSTEMS

The different positions of the major patent offices and AIPPI can be summarized by the examples in the following table:

Example of invention		patentability			
		US	JP	EU	AIPPI
1.	Computer program implementing a new time variant injection cycle for the fuel of a car engine for consumption and emission optimisation.	yes	yes	yes	yes
2.a)	Method of calculating the daily net revenue of an investment fund based on updated tax data and updated information from the stock exchange.	yes	no	no	no
2.b)	Method of 2.a) implemented in a computer system or a computer program	yes	yes*	no**	yes

*if the claims are drafted to define a specific interaction between the software and a hardware resource.

**unless the implementation makes a technical contribution.

As the table shows, the most receptive jurisdiction to computer software patenting is the United States and the most restrictive is Europe. The position of Japan, as also of the international experts of the AIPPI, is in the middle.

4. ECONOMIC BENEFITS OF PATENT PROTECTION FOR SOFTWARE RELATED INVENTIONS AND BUSINESS METHODS

4.1. UTILITY OF PATENTS IN GENERAL

The question of whether patents in general are useful for society has been debated for decades. A brief review of this debate is necessary to address the question relative to computer software and business method patents. But generally the answer is - YES, it is economically useful for society to provide an incentive to inventors.

In most European countries, modern patent systems were introduced in the course of industrialization towards the end of the 19th century. At that time, the potential benefits and pitfalls of such a system for the interest of society were discussed at length. It can be observed that while technically advanced countries decided to adopt a patent system, countries with a low level of industrial development decided not to grant patent protection. Industry in those latter countries initially profited from the possibility of using the inventions of others. However, after domestic industry in these countries began to catch up and to develop their own innovations, patent systems were introduced to foster and protect these innovations.

Two recent and very comprehensive reviews of the U. S. patent system were performed by The U.S. Federal Trade Commission (FTC), "To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy", 2003 and The Board on Science, Technology and Economy Policy, National Academies of Science (NAS), "A Patent System for the 21st Century", 2004. Both of these reviews have concluded that although there are numerous practical reforms necessary to make the U.S. patent system function more effectively, in general patents have an important role to play in the modern economy. The NAS Report states explicitly that: "Continuing high rates of innovation suggest that the patent system is working well and does not require fundamental changes."

In summary, the standard economic justification for patents in general, is that a patent gives the inventor a better chance to recover his investment in developing the invention and thus he has an incentive to build a better mousetrap. This social value justifies a temporary, exclusive right to exploit his new mousetrap.

4.2. UTILITY OF COMPUTER IMPLEMENTED INVENTION PATENTS

Until the second half of the 1980's the question of the economic implications of computer software related inventions was not seriously discussed since computer software and automated business transactions did not constitute a significant part of the global economy, and since there was no perceived economic injury from such IP protection. This has greatly changed with the introduction of PCs, of mobile communications and telephones, with the digitalisation of most electronic systems (audio and video recordings, radio, TV, machine and engine control, online-banking, -brokering and -vending, etc.). With the advent of computer networks and the Internet, the tertiary sector is rapidly increasing in all industrialized countries, whereas the secondary sector (production industry) has moved to less developed countries.

In the pre-PC-age, business methods were usually treated as trade secrets and were passed on from experienced businessmen to their successors in a lengthy training procedure. Now, business methods have become purchasable computer software products such as accounting programs, IP administration programs, online selling systems, rebate systems, online customer survey software, financial services, securities, etc.

The above mentioned FTC Report states that, in the software field, problems remain, most notably those related to the issuance of low-quality patents in the computer software and Internet fields. However, neither the FTC nor the NAS proposed abolishing or severely curtailing the availability of computer software patents. At the same time, the NAS Report reviewed the history of the expansion of U.S. patent law to new and diverse technological frontiers (including computer software) and identified this as one of its chief strengths.

It can be observed that the large number of computer software patents granted by the USPTO, the EPO and the JPO in the past 10 years has by no means decreased the speed of innovation in the field of software. Similarly, recent studies of innovation in the Financial Services Sector show that such innovation has seen no slow down since the State Street Bank case in the U. S. affirmed the patentability of such innovations if they otherwise qualify.

This incentive for innovation drives the frontiers of all science, including those that depend on computer. Indeed, a study ("The Economic Impact of Patentability of Computer Programs") conducted by the Intellectual Property Institute of London on behalf of the EU Commission in March 2000 found that "the patentability of computer program related inventions has helped the growth of computer program related industries in the United States, in particular the growth of SMEs and independent software developers into sizeable indeed major companies."

The financial services industries appear to be highly innovative. In the area of traded securities alone, it is estimated that, in the 1980–2001 period, the securities industry generated between 1,200 and 1,800 new types of securities. Innovation in securities occurs to fill gaps in available instruments. New securities are constantly being devised to shift risks in ways not otherwise possible and to provide payoffs for outcomes that current securities do not cover (what financial economists call "market completeness"). Recent studies show that such innovations require substantial amounts of labor and capital to develop. For example, it is estimated that developing a new financial product requires an investment of \$50,000 to \$5 million. This investment includes (a) payments for legal, accounting, regulatory, and tax advice; (b) time spent educating issuers, investors, and traders; (c) investments in computer systems for pricing and trading; and (d) capital and personnel commitments to support market-making. In addition, investment banks that innovate typically pay \$1 million annually to staff product development groups with two to six bankers (Tufano, Peter. 1989. Financial innovation and firstmover advantages. *Journal of Financial Economics* 25 (December): 213–40). Tufano finds that investment banks have in the past attempted to recoup these investments through reduced costs in the market for innovative financial products.

Accordingly, the significant investments in both labor and capital in these new financial related instruments and systems demand property rights to provide some measure of assurance that these investments will be recovered, if such innovations in this financial sector is to continue.

4.3. ADVANTAGES OF PATENTS FOR SME

It is frequently argued that patents are advantageous to large business entities and threaten small and medium enterprises (SME) or individual inventors. However, it must be considered that most of the largest computer software enterprises gained a quasi monopoly in specific branches of the computer software industry in an almost patent free environment 15 to 25

years ago. The large enterprises are able to sustain their dominance exclusively on the basis of their market power. They can (and sometimes do) take over new computer software developments from SMEs and integrate them into their existing standard products. A user of such standard products will then most likely use this integrated feature instead of additionally buying the computer software product from the innovative SME. This practice puts the SME out of business and can only be prevented by patent protection for such new development.

The recent court cases in the U.S. show that patents are mainly used by SMEs to defend their interests against large corporations. Patents guarantee an adequate return on investment for the inventors. For example, in the United States, many universities earn per year about one billion dollars on patent licenses which is similar to the annual license income of IBM. A patent, further, helps a young company to find investors; it shows that the company is innovative which helps to receive orders from larger companies or organizations or to win a call for tender.

4.4. OPEN-SOURCE SOFTWARE AND COMMERCIAL SOFTWARE

As technical developments and related commercial computer program development opportunities arose in the late 1970's and early 1980's, universities began to study and teach basic principles in computer architecture and computer program design, and to train computer programmers in these arts. This led to the development of the open-source/free software movement, which began to provide free or at least cheaper versions of existing popular commercial computer programs to compete with the commercial computer software developers (Erwin J. Basinski, "A Brief History of Software", BNA international Inc., World E-Commerce and IP report, April 2005, Vol. 5, Nr. 4, p. 24). For example, these developments spawned much free software – BSD (from Bill Joy at UC Berkeley – an early version of UNIX in early 1980s), GNU computer programs (from Richard Stallman et al at MIT in 1983), LINUX OS (from Linus Torvalds in Europe in 1991) and the Apache server and MOSAIC browser (from NCSA (National Center for Supercomputing Applications, University of Illinois) in the mid 1990's).

The open-source community originally comprised of these academics, students and independent programmers, developed software largely without commercial investment or affirmative IP protection. These groups had no need for patents. The cooperative nature of that development had no need for licenses to gain access to other's technology. Similarly, because these early open-source developers did not generally depend on outside equity investment to any significant degree, they had no significant development costs to recover by selling their products. They could provide the products to whoever wanted them at little or no cost.

These early open source developers concentrated on software infrastructure programs like operating systems (Linux and GNU-Unix), servers (Apache), database systems (MySQL), browsers (Mozilla). Similar commercial

programs from the computer hardware manufacturers and commercial software developers were sold for hundreds of thousands of dollars. When Linux OS, the Apache server and other free computer software became more promoted by academics, small developers and small users, its free availability became more attractive to user business's IT managers, all of whom faced the usual annual budget pressure to reduce the "total cost of computing" (i.e. computer hardware costs + software costs + maintenance costs). For these users there was/is still fear of free software regarding who could/would maintain it, who could be held accountable if it didn't work, who will indemnify it. Ultimately a business (Red Hat 1994) developed to maintain and "guarantee" a version of free OS/Linux. The Apache server was embraced by the Apache Foundation in 1999 to support it more robustly. The hardware manufacturers, led by IBM saw an opportunity to tout the "low total systems cost" of their computer hardware systems by embracing their own version of Linux OS and Apache and providing them for free while charging for the maintenance, backup and guarantee. IBM & Red Hat announced a Linux Alliance in 1999, and in 2002 announced a global multi-year alliance to deliver enterprise Linux solutions. Note that these "enterprise Linux solutions" could well be applications made up of free software combined with IBM patented applications.

Hewlett Packard (HP), Sun and other primarily hardware vendors have followed IBM in embracing and providing free versions of Linux OS and other free software, which work with their hardware, in order to remain cost-competitive with IBM and with each other. Sun has even provided an open-source version of its Solaris (UNIX) operating system in order to keep the total cost of computing as low as possible. This has not prevented IBM, HP or Sun from continuing their vigorous patenting programs.

Today few people are aware that many, if not most of the major contributors to commercially successful open-source projects such as Linux OS, are paid programmers who are working directly or indirectly for a commercial entity (Red Hat, IBM, HP, Novell, Sun, Intel). Thus the open source patent issue must be viewed in the context of open-source crossing into the commercial mainstream and being financed in a manner roughly consistent with how software development is typically financed. IBM or HP, for example, is neither a pure "commercial" provider of software nor a pure "open-source" provider. They have merged the two models together. Similarly, Red Hat could be said to embrace both models. So it now appears that most significant commercially used "open-source" computer software is actually being written by programmers paid by the same corporations that maintain some of the largest patent portfolios in the world. Nevertheless there also remains a large open source community of academics, students and independent programmers who are developing free versions of applications programs which are attempting to compete with the commercial software community.

It therefore appears that the open-source/free software community is learning to live within a world of computer software patents. The major computer hardware manufacturers, who are also owners of the largest

portfolios of software patents, have indicated that they have no intention of suing the open source developers for using software on which they may hold patents, nor are they interested in suing their customers. Otherwise, society and governments will have to mutually agree upon rules (market driven or social welfare driven or otherwise) under which benefits to the common interests of the users, the commercial software developers and the open source computer software developers are optimized. And it may be that different rule sets may be needed for the different contexts of the complex commercial relationships described above. What seems clear is that the commercial market forces will continue to foster innovation and competition in the development of software and software related products. History appears to show that these phenomena are enhanced by patent protection, and that all groups have grown and prospered in such a patent environment.

CONCLUSION

The earlier AIPPI positions on computer software patents (Q133) and on business method patents (Q158) are consistent with the present analysis and should be reaffirmed.

SUMMARY

The current rules on computer-implemented inventions in the major patent systems are as follows:

- In U.S. practice, any useful invention made by man is eligible for patent protection, including any new and non-obvious computer software and business method.
- In Japan, software inventions and even software implemented business methods are eligible for patent protection, if a specific interaction with a hardware resource is defined in the claims.
- The European Patent Office grants patent protection to software related inventions, including software related business methods, provided they have technical character and make a technical contribution.

AIPPI former resolutions Q133 and especially Q158 require a technical content as a prerequisite for patentability. The AIPPI recognises as sufficient the technical content of an invention implemented in a technical system (which is always the case for computer software), even if the contribution of the inventor does not have a technical character. According to AIPPI, new and inventive business methods and other non-technical innovations should be eligible for patentability if implemented on a computer.

The European Union (EU) attempted an harmonization of the rules concerning computer software related inventions through a European directive. The EU-directive was rejected in July 2005. Major points of discussion during the legislative process within the EU were related to the existence of economic benefits of patent protection for software related inventions and whether patentability would be a bar to creativity and progress.

Two recent and comprehensive reviews of the U. S. patent system have been performed by the U.S. Federal Trade Commission (FTC), and the National Academies of Science (NAS). Both have concluded that although there are numerous practical reforms necessary to make the U.S. patent system function more effectively, in general patents have an important role to play in the modern economy. The NAS report states explicitly that: "Continuing high rates of innovation suggest that the patent system is working well and does not require fundamental changes". Also, the extensive consultations performed by the EU in preparation of the proposal for the Directive seemed to go in the same direction.

However, coexisting with the commercial computer software industry which profits from the patent system is a large and growing open-source community, which develops software largely without commercial investment. Those who work in that community may have little or no need for patents. However, the economic framework of open-source software is changing. Hardware manufacturers such as IBM have embraced open-source software and provide free versions of Linux OS and other free software, which work with their hardware, in order to stay cost-competitive.