

PATENTS OF COMPUTER SOFTWARES WHEN JOINED IN PRODUCTS OR EQUIPMENT TO IMPROVE THE PRODUCTION SYSTEMS: NEW DRAWING OF THE ENGINEERING TEACHING

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Abstract. *This work contains an analysis of the development in Brazil of new products or processes when they contain the drawing, engineering and manufacturing computer-aided systems –CAD/CAE/CAM Systems- in several areas of knowledge, in the light of Industrial Property, during the period from January/1999 to December/2003. The purpose of this work is to disseminate the culture of protecting intellectual property in the Brazilian academic and productive environment, as well as to mention its importance to a country. The research started from interviews to specialists that work in INPI-National Institute of Industrial Property, literatures were read and enterprises that use those computer systems were visited. To examine the origin and quantity of the patent requests of new products or processes, a research using the Industrial Property Magazines and INPI data base was done. So, the requests were selected by the areas of knowledge. The countries that request patent in Brazil and others in Latin America were searched using the espacenet's data base to verify if they have done in Japan, United States and German besides Brazil. Considering the results of the research, experts on Industrial Property were interviewed in order to achieve an analysis of the Brazilian scenario. In this way, a detailed result was reached to describe how the matter of the Intellectual Property is being treated in the universities, as well as Brazil's international position. Finally, based on the results and on the experts's commentaries, some recommendations were done.*

Keywords: *Patents, Industrial Property, Technological Teaching*

1. Introduction

Nowadays, new models are seen by enterprises to attend an international market more competitive which has a legal protecting of the technological innovation inside the global economy as a factor to improve products and processes. Therefore, if the enterprises want to remain in the international scenario of production, they must reduce the gap between the invention and the innovation.

The computer technologies are being used to attend those models of production, in view of they have made possible advanced actions to improve the relationship between the head office and the branch, as well as between its several departments, managing the products's life cycle from its conception until its marketing, due to more facility, efficacy and agility are reached to get new products or processes. Thus the multitasks, the development of complex products, the combined decisions in real time, the reduction of "information islands" and repetitive tasks that turn the work onerous are achieved with the automation of the production since products or processes have been added the computer systems.

Several computer softwares are being used to facilitate the tasks in many areas of knowledge, CAD, CAE and CAM can be mentioned because they attend the new production models. However, besides the production they have to attend the global marketing, a legal protection by the use of laws that lead the Intellectual Property must be practiced. So, people or the enterprises that want to use an inventive activity have to ask for permission to the owner of the patent. The owners can forbid anybody to use, to produce or to do any commercial activity without their consent, in this way the technological property is protected for a limited period, generally 20 years. Patent protection means that the invention can not be commercially made, used, distributed or sold without the patent owner's consent. A patent owner has the right to decide who may –or may not- use the patented invention for the period in which the invention is protected. Patents provide incentives to individuals by offering them recognition for their creativity and material reward for their marketable inventions. These incentives encourage innovation, which assures that the quality of human life is continuously enhanced. Once a patent expires, the protection ends, and an invention enters the public domain, that is, the owner no longer holds exclusive rights to the invention, which becomes available to commercial exploration by others.

The production of certain technology in a country can be measured by examing of patent requests. In a country, the several governamental sectors, the enterprises, the research institutes and other entities can use the patent requests to analyze the technological development in the several areas of knowledge. A better position can be reached if a country gain privileges by the application of its inventions. Moreover, the inventions can be concealed if the enterprises do not

use the legal protection that the State offers, and if the creations are not protected they can be lost, consequently the technical knowledge is reduced.

The CAD/CAE/CAM Systems when joined in products or processes and if these systems fulfill certain conditions – novelty, inventive activity, industrial application-, they can be protected by a invention patent.

2. Protection of national value

The drawing, engineering and manufacturing computer-aided systems –CAD/CAE/CAM Systems- when joined in products or processes, in several areas of knowledge, can be protected in Brazil by the invention patent, to ensure the owner's privilege and the development of the technical knowledge. Since 1987, the computer softwares are being protected by the Copyright laws and not by the patent laws. In Brazil, the expression of idea through the machine language is being protected by a Register, which is supported by the Software Law which is a peculiarity of the Copyright. The application of idea, that is, the functional aspect of the computer software, is being protected by a Patent as the Industrial Property Law.

The computer softwares are being protected in other countries like Japan, United States and German by the Copyright through a register and by the Industrial Property Law through a patent, as it happens in Brazil.

2.1. Patents

A patent is an exclusive right which is granted by an invention, which is a product or a process that provides a new way of doing something, or offers a new technical solution to a problem (WIPO, 2004).

A protection to an invention is given to the owner by a patent.

In 1996, on May 14, the president of republic sanctioned the current LPI nº 9279 –Industrial Property Law-, which was announced on the next day in Oficial Union Diary, which was in force in 1997, on May 15 (Di Blasi, Garcia and Mendes, 1998).

In Brazil, by Copyright law a register is granted to the literary and artistic works, the requirement of originality must be carried out. The owner of the copyright in a work can enforce rights administratively and in the courts, by inspection of premises for evidence of production or possession of illegally made ("pirated") goods related to protected works (Andrade,2002).

In Brazil, the Intellectual Property is being led by the Law 9279/96 to get protection for inventions, usefulness model, industrial designs, trademarks and geographical indications. A patent is a ownership given by this Law, therefore the expression of an idea is not considered, only the usefulness application. Thus an invention patent is only given for a product or process if they fulfill certain conditions like novelty, inventive activity and industrial application.

The TRIPS – Agreement on Trade Related Aspects of Intellectual Property Rights, that is an annex of the WTO – World Trade Organization, is being aimed at protection of the computer software in an international scope (Wachowicz et al, 2002).

The compulsory action to allow the concession of an invention patent is given by the TRIPS in any technological area that fulfills certain conditions to get a patent, as well as the place of the invention, the technological area and if the products are imported or manufactured locally can not change the rights of the patents (Epsztejn, 1998).

The TRIPS is considered the landmark between the traditional view of the Copyright and how it is currently considered in the digital environment of the global infrastructure of information. It was the first time that the Intellectual Property was considered in an Agreement on multilateral trade of WTO – World Trade Organization (Afonso, 2004).

In Brazil, by the introduction of the Law 7646/87, the protection for the computer software was recognized according to Copyright. For coinciding with the TRIPS, on February 19, in 1998 , the Law 9609 –Software Law- was created, that decides about the protection of the computer software, its marketing in the country and gives others determinations.

After several seminaries by the INPI Patents Direction was displayed, among other topics, its view about computer software patent, which has decided that equipment –novelty and inventive activity- are subject to be protected by a patent, even if when they are enforced to Article 10, remark III of LPI – Law 9279/96, that is being established that are not considered inventions, among other inventions, the computer software itself (Silveira, 2004).

The identification of emerging technology in a certain area of knowledge, the solution of technical problems, the indication of consultants and research center, the identification of research already done and patented by the others can be identified by the patents - base of patents (SEBRAE-SC, 2003).

Several countries are committed to create and to improve actions, in view of facilitating to get the protection for the invention and its improvement, that are led by technical and scientific evolution, so that the growth and the change of people's necessity are taken into account.

3. Data reached

The quantity of patent requests was first reached by Industrial Property Magazines –RPI’s-, afterwards a search in INPI data base was done, from January/1999 to December/2003. The origin and the areas knowledge of the requests in Brazil were selected; the areas of knowledge were selected with the assistance of INPI’s experts.

The quantity of the patent requests that was published in Brazil is depicted in Figure 1.

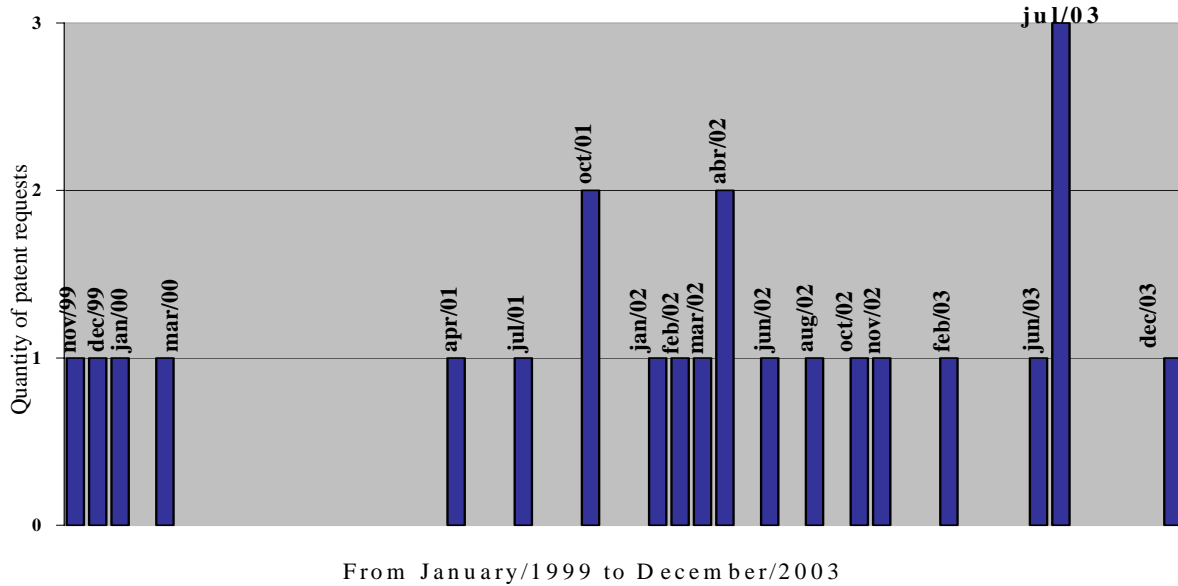


Figure 1. Representation of the CAD/CAE/CAM patent requests published in Brazil

A few quantity of requests that involve the CAD/CAE/CAM Systems is depicted in Figure 1, –23 requests-, this quantity must be considered due to the technical resources that are offered by these systems, thus they add value to the product or the production process.

The areas of knowledge that are being benefited to use these systems in Brazil is depicted in Figure 2.

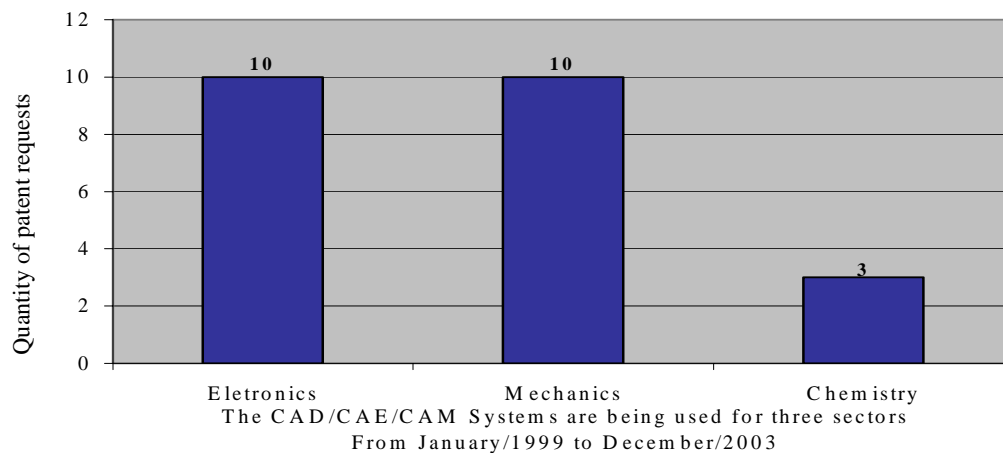


Figure 2. The areas of knowledge that are being benefited to use the CAD/CAE/CAM Systems in Brazil

According to figure 2, those computer systems are being used for only three areas of knowledge, as the requests that were found in the period studied.

The origin of the patent requests that was published in Brazil is depicted in Figure 3.

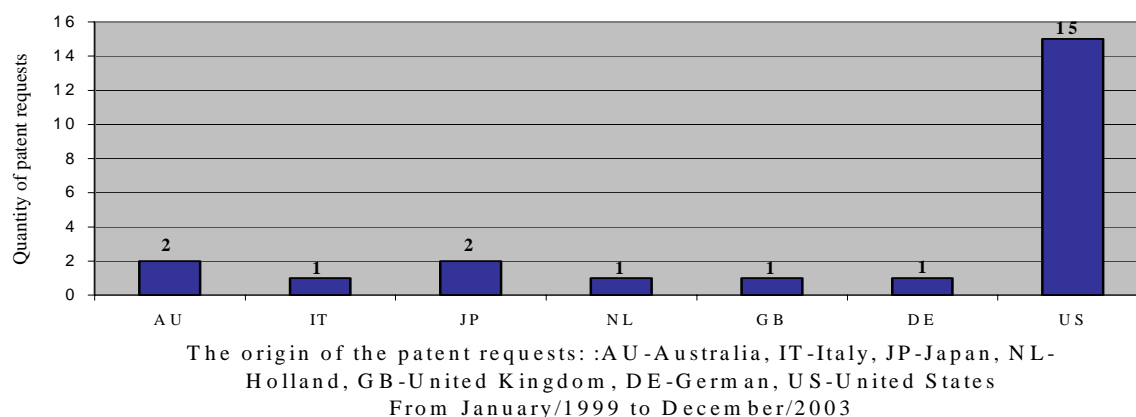


Figure 3. The origin of the patent requests that were published in Brazil

According to figure 3, the patent requests have not been registered by Brazil, that is, no document that represents the legal privilege offered by State to an invention that includes CAD/CAE/CAM Systems was put under the protection of State.

Taking account of the quantity of patent requests is an efficient indicator to measure the participation of factories in the technological development of a country, an expressionless result was depicted, a total of 23 requests during five years.

The origin of patent requests in Brazil was considered to identify Brazil's position in reference to CAD/CAE/CAM Systems. The countries that request patents in Brazil were considered to verify if they requested in the United States, Japan and German. Argentina, Mexico, Uruguay, Venezuela, Peru, Chile, Colombia and Bolivia were considered to verify if they requested patents in the United States, Japan and German, to check Brazil's position in reference to these Latin-American countries. A search was done by the use of espacenet, which data are depicted as their register's date in a worldwide data base. However, if a quantity of registers is more than five hundred only the latest five hundred are depicted to not cause overload.

The data reached in Brazil, United States, Japan and German, through Magazines Industrial Property, espacenet and INPI data base, are synthesized according to table 1, from January/1999 to December/2003.

Table 1. The patent requests of CAD/CAE/CAM Systems in Brazil, United States, Japan and German

| Countries that requested patents: | Quantity of patent requests in Brazil – from January/99 to December/03-: | Quantity of patent requests in United States - from January/99 to December/03-: | Quantity of patent requests in Japan - from January/99 to December/03-: | Quantity of patent requests in German - from January/99 to December/03-: |
|-----------------------------------|--|---|---|--|
| Australia | 2 | 1 | 6 | 1 |
| Italy | 1 | 4 | 3 | 0 |
| Japan | 2 | 276(from March/03 to December/03) 224(From January/04 to August/04) | 500(From March/04 to July/04) | 72 |
| Holland | 1 | 0 | 2 | 1 |
| United Kingdom | 1 | 31 | 24 | 12 |
| German | 1 | 65 | 27 | 320 |
| United States | 15 | 500(From April/04 to August/04) | 394 | 109 |

| | | | | |
|-----------|---|---|---|---|
| Brazil | 0 | 0 | 0 | 0 |
| Argentina | 0 | 0 | 0 | 0 |
| Mexico | 0 | 0 | 0 | 0 |
| Uruguay | 0 | 0 | 0 | 0 |
| Venezuela | 0 | 0 | 0 | 0 |
| Peru | 0 | 0 | 0 | 0 |
| Chile | 0 | 0 | 0 | 0 |
| Colombia | 0 | 0 | 0 | 0 |
| Bolivia | 0 | 0 | 0 | 0 |

According to the quantity of patent requests in the countries that were studied to verify which ones of the CAD/CAE/CAM Systems are being used, the major quantity of patents was depicted by Japan, a total of 15274 requests in Brazil, United States, Japan and German; secondly are the United States with 4937 requests in Brazil, United States, Japan and German, followed by German –total 413-, United Kingdom –total 68-, Australia –10-, Italy –total 8- and Holland –total 4-.

Brazil, Argentina, Mexico, Uruguay, Venezuela, Peru, Chile, Colombia and Bolivia have not depicted any patent request. The technological tree of CAD/CAE/CAM Systems was not considered, so a tendency of these Systems development in Brazil is depicted by this search. Besides it must be desirable and advisable an examination in Brazilian enterprises or the ones that are located in Brazil.

A Brazil's privileged position is not depicted by search, a lack of contribution of those Computer Systems in the inventive actions in several areas of knowledge, fact that can contribute to volatile positions in Brazil according to the international model imposed, that is, the international competitive arena.

The costs and the services to introduce CAD/CAE/CAM Systems in the enterprises, besides there are not many experts that knows these Systems must be considered like factors that interfere in their spread. The Industrial Property knowledge is not much disseminated, which makes possible the inclusion of another collaborator to the national "weakness", besides to contribute that some creations could be lost.

In order to eliminate the factors that are collaborating to the tendency that is depicted in Brazil, taking into account the CAD/CAE/CAM Systems, experts about Industrial Property were interviewed in order to get a solid conclusion of the analysis that is being depicted. Two questions were introduced to experts to analyze the reasons that may have led Brazil to not request patents in its owner territory and in others countries, besides has depicted the least quantity of patent requests about CAD/CAE/CAM Systems when compared with the quantity requested in developed countries, in the period analyzed.

4. Experts' analysis according to Brazil's results

The expert's opinions concerning the Brazil's position about those Technical Computer Systems have been converged on the same idea that practically aims to the lack of knowledge about Intellectual Property, that is, generally there is not culture in Brazil concerning the request patents. Besides, most Brazilians are not being informed that the computer softwares can be patented, maybe for the wrong interpretation of the Article 10, remark III of LPI, that is being established that are not considered inventions, among other inventions, the computer software itself, so usually the most people have thought that the computer softwares are not being privileged by the LPI.

Another comment was done by the experts about the Brazilian position is the lack of threat concerning the inventive production of the CAD/CAE/CAM Systems that is offered by Brazil. As the market law –competition- the protection is requested in countries that can be potent contestants of one technology.

The matter to Intellectual Property are not practically being studied in Brazilian universities, which perpetuate the lack of knowledge about this subject.

So, the expert's opinions that are involved with the protection of products or processes by the Brazilian laws – Intellectual Property- must be considered by the universities and the enterprises to reach an improvement in Brazilian position.

5. Conclusion

This is a pilot study to analyze the development of the drawing, engineering and manufacturing technologies aided by computer from January/1999 to December/2003, and can be used as an indication of Brazilian position.

The experts in Industrial Property's opinions aim that is necessary to disseminate the culture of Industrial Property in Brazil, as well as in the universities and in the enterprises. One of the actions which was suggested by the experts to reduce this lack of knowledge is the insertion of a discipline about this subject in the universities in several areas of knowledge.

The view that is being depicted by the search can be dealt like an indicator of the little knowledge on this matter, as well as the lack of knowledge about patents of computer softwares in Brazil.

This work can be useful for subsequent studies.

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