

Patent protection for software

Protection of computer software is a hot topic, but companies seeking such protection for software could face a multitude of challenges under Chinese law

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The rapid development of information technology and the growing popularity of the Internet have resulted in the widespread application of computer software in various fields and industries. With this rapid rise in the use of the computer software, protection of such software has become a hot topic in the IP field.

Exclusion of computer software from the Patent Law

Under the existing Chinese legal system, computer software is protected by the Copyright Law and the Regulation for the Protection of Computer Software. These legal provisions protect expressions of computer program products in the form of code, text, symbols and charts, but not intellectual concepts and technical solutions.

A prevalent, but erroneous, opinion is that the Patent Law can provide comprehensive legal protection for computer software, protecting both the knowledge and mental processes embodied in such software.

However, the Patent Law explicitly stipulates that “rules and methods for mental activities” cannot be granted patent rights. Computer programs *per se*, algorithms, mathematical methods or game rules are thus regarded as “rules and methods for mental activities”, and thus are unpatentable subject matter. Use of computer software constitutes not only simply executing an algorithm, but driving a machine

or device to perform specific functions in order to solve specific technical problems.

As mentioned, the Patent Law provides different protection for software from the Copyright Law. A patent protects the idea and mental process behind the software, a technical solution with positive effect and practical, useful value which results from application of the software through an apparatus; this is obviously different from “rules and methods for mental activities”.

An early approach was to integrate software into a hardware device and thus enable the filing of a software-related patent application in the name of the piece of hardware. A product patented in such a manner is regarded not as software, but as hardware, because it does not take the form of a computer software product, but rather is integrated into a hardware device. In other words, computer software cannot be directed to these types of product; otherwise it would be fall into the category of “rules and methods for mental activities” and thus be ineligible for patent protection. A typical case is a computer program recorded in a particular medium. Although in some countries it is common to consider the software attached to a particular medium as a patentable object, under existing Chinese practice, if a claim relates merely to a computer software program stored on a computer-readable medium (eg, tape, floppy disk, magnetic disk, optical disk, ROM, PROM, VCD or DVD), it falls within the scope of “rules and methods for mental activities” and does not constitute patentable subject matter as stipulated in the Patent Law.

Patent Law protection of computer software in special form

Following progressive development of internet

“Only when a software-related claim involves a technical solution is the subject matter of the claim patentable”

and software technologies in recent years, the examination of patent applications has also been continuously updated. The examination standards for patent applications including computer software have been strengthened. Based on the Patent Law and its implementing regulations, Part II, Chapter 9 of the Examination Guidelines specifically provides for the examination of patent applications for computer-related inventions, which is an important foundation for examining the patentability of software-related applications. According to the Examination Guidelines, a ‘computer-related invention’ refers to the solution to a technical problem, which is wholly or partly based on a computer program process, which controls or processes external or internal objects of a computer through executing the computer program by the computer. The examination guidelines specify that it is not necessary to include changes to hardware in the computer program-related solution. Therefore, the mental processes that are embodied in the software and realised by execution of the computer program need not be consolidated with the hardware, but instead can be subject to an individual patent application.

However, this does not mean that all solutions pertaining to computer software are patentable subject matter. Only when a software-related claim involves a technical solution is the subject matter of the claim patentable. Specifically, if a computer program that is part of an invention is associated with not only an algorithm or process, but also a technical field and, in addition, if it addresses a technical

problem and can induce a certain technical effect, such program may be referred to as a ‘technical computer program’ and is thus eligible for patent protection. However, patentability also depends on whether the invention patent application involves an allowable object (a patentable invention of this type should usually present a complete technical solution and comply with the Patent Law in terms of practicality, novelty and inventiveness (non-obviousness), among others).

A patent application for a computer-related invention generally involves the following specific computer programs:

- a series of controls in industrial production processes (eg, controlling operations or actions of a machine or device);
- a series of controls in measurement or test processes (eg, controlling the status or response of a measuring or testing device);
- a series of technical processing of information or data (eg, exchange or management of information or data external to a computer); and
- improvements to a computer system’s internal performance (eg, increased system running speed by setting or adjusting configurations and parameters).

In practice, there are more computer programs in real development and application of computer software besides the four types mentioned above. With the deep penetration of computer technology in various fields and industries, increasingly diverse design and software applications have resulted in enrichment and extension of the application range and types of computer program, many of which are used for business management and marketing. However, according to Chinese patent examination standards, patentable computer programs should comprise technical features which comply with the laws of nature rather than man-made rules, such as economic or management rules. In other words, the technical requirements for patentable subject matter in the Patent Law exclude any computer software related to business methods (eg, business concepts, management policies, investment patterns and financial algorithms). Patent applications show that in the case of a patent application containing a computer program, the entire software is not

always granted patent protection; rather, the patentable parts of such an invention are those complying with the practicality, novelty and inventiveness requirements and employing technical means by which to solve a technical problem and achieve a certain technical effect.

Examination guidelines for computer-related invention patent applications

In addition to complying with general examination standards that are applicable to all patent applications, the specifications of an invention application must be drafted in accordance with the Examination Guidelines in order for the related computer software to be protected under the Patent Law.

According to the Examination Guidelines, the descriptions of an application for a computer-related invention should illustrate:

- the design concept and technical features involved in the computer program;
- its implementation to achieve a technical effect; and
- the technical solution of the invention as a whole.

In other words, the object of patent protection for computer software is not the source code, but rather the design concept or, equivalently, the steps, methods and processes for performing the specified functions. Therefore, a patent application for computer software must disclose the design concept of the computer program in its entirety. For example, there should be a flowchart of the computer program or an explanation in plain language describing every step of the computer program control flow in the specification, which forms the basis of drafting and/or amending the claims and is therefore important.

The claim of an application related to a computer-related invention can be drafted as either a method claim or a product claim, such as an apparatus for executing the method. If drafted as a method claim, the claim should provide a detailed description of each function performed by the computer program and the step-by-step method by which to perform these functions. If drafted as an apparatus claim, the claim should include a detailed description of every component of the apparatus and the relationship between

them, as well as a description of which component performs which function of the computer program and how these functions are implemented.

Software-related invention patent application practice

According to the Examination Guidelines, a computer program-related invention can be a technical solution which is wholly or partly based on the process of a computer program. However, the practical examination of an apparatus claim seeking protection for computer software must substantially comply with the criterion for drafting an apparatus claim on the basis of a computer program control flow. According to this criterion, the subject title of the apparatus claim should match that of the relevant method claim. In addition, the respective components of the apparatus claim (eg, a group of functional modules described in a means-plus-function manner) should be drafted in a way that is identical and corresponds to each step of either the computer program control flow or the method claim thereof. The apparatus claim defined by such a group of functional modules should be regarded as the functional module architecture to realise the claimed solution mainly through the computer program described in the specification, rather than an entity to realise the claimed solution mainly through hardware. In other words, the claimed apparatus is not a physical entity, but a virtual entity carried out by computer software programs without a specific structure.

Patent applications (especially Patent Cooperation Treaty patent applications entering the national phase in China) commonly include several sets of claims in order to protect a technical solution in the form of a method, apparatus and computer program product, respectively. Apparently, claims purely directed to a computer program product (eg, computer-readable media, computer-executable instructions) are currently unacceptable. In order to have a computer program-related apparatus claim accepted, the form of the claim is important. For example, if an independent claim is directed to a communication method comprising transmitting and receiving steps, the

independent claim directed to a corresponding apparatus usually takes the form of:

- a communication apparatus comprising a transmitter and a receiver;
- a communication apparatus comprising a transceiver and a processor configured to cause the transceiver to perform transmitting and receiving steps;
- a communication apparatus comprising a processor configured to perform (or cause the apparatus to perform) transmitting and receiving steps;
- a communication apparatus comprising a memory and a processor configured to enable transmitting and receiving steps to be performed by executing computer program codes stored in the memory; and
- a communication apparatus comprising means for transmitting and receiving.

In practice, the claim in the first form above, which defines the apparatus with specific components and structures, is typically regarded as not relating to computer software; only the claim in the fifth form among the remaining forms is considered as the apparatus claim relating to computer programs where the description of functional modules in a means-plus-function manner meets the existing examination standards for a patent application for a software-related invention. The claim in the second form is usually viewed as directed to an apparatus comprising both a physical entity (ie, the transceiver as hardware) and a virtual entity (ie, the processor as software when executing computer program codes for causing the transceiver to transmit and receive), and thus may not be allowed in general. The claim in the third form, which defines an apparatus by steps and/or processes instead of particular structures, is also generally not permitted, because the apparatus claimed in such form would be regarded as a physical entity, and thus the constitution of the apparatus must be specified in the claim. The claim in the fourth form is essentially a claim seeking protection for a computer program product embodied as computer program codes stored in the memory, and is thus unacceptable.

Naturally, claims in the second to fourth forms can be amended as apparatus claims

reflecting computer programs according to the Examination Guidelines if operations or functions performed by the apparatus can be carried out by executing the corresponding computer program. However, an amendment to an invention patent application that neither discloses any computer program control flow in the original descriptions nor includes a method claim reflecting the computer program control flow will likely be rejected, on the grounds that the claim cannot be supported by the descriptions or the amendment goes beyond the application's original disclosure. Even if there is a specific definition regarding the computer program control flow in the initial descriptions or claims, according to the Examination Guidelines, the applicant must draft the apparatus claim in a way that seeks to protect a virtual entity driven by software instead of a hardware entity.

The drafting requirements and the interpretation of a claim (especially an apparatus claim) involving computer programs are strict. Although it would be convenient to define and recognise an apparatus claim directed to a computer software product, the scope of protection defined by such overly standardised apparatus claims runs contrary to the practical application of software. Typically, improvements to the prior art presented by many inventions involving computer software include a combination of both the hardware and software components. However, the existing examination standards do not permit a product claim that includes both hardware and software components (eg, being defined in a way that a processor executes computer-readable program codes stored on a memory medium). This is not conducive to effective protection for software products and is a hot topic of discussion in China.

Conclusion

China is still in the early stage of developing and exploring patent protection for software. With the increasingly widespread application of computer software and the development of e-commerce, China will no doubt be confronted with more challenges regarding patent protection for software resulting from the emergence of diverse computer software. ●●●●●

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