Computer Software Patents

Anything Under the Sun Made By Man

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As of March 29, 1996, patents on computer programs are considerably easier to obtain from the U.S. Patent and Trademark Office. Newly implemented guidelines(1) for the examination of computer-related inventions provide that software, when stored on some type of computer-readable medium (such as random access memory or RAM, read-only memory or ROM, CD-ROMs or magnetic discs), is patentable. Not all software is patentable simply because it is stored on magnetic media. Music, text, other literary works and simple data compilations are not protectable subject matter under the patent laws as currently construed by the Patent and Trademark Office.

Earlier decisions by the courts and the appellate tribunal in the Patent and Trademark Office(2) had generally held that the mathematical formula must be intrinsically tied to a machine(3) or the claimed invention must include language linking the invention to a significant post-solution activity.(4) The courts and the Patent and Trademark Office appellate tribunal either invalidated patent claims or refused to approve proposed claims in a patent application as being "not directed to statutory material" in a variety of situations. In the past, claims covering methods of doing business,(5) pre-empting of mathematical formulas,(6) describing simple data gathering steps linked to mathematical formulas(7) or containing insignificant post-solution activity coupled with mathematical algorithms(8) have all been declared "non-statutory" under 35 U.S.C. §101 of the patent statute.(9)

To be patentable under the new guidelines, the software must provide some type of function to the computer. This software feature is described in the examination guidelines as "functional descriptive material" set forth in the patent claims in contrast to music and textual material which is identified as "non-functional descriptive material." Functional descriptive material consists of data structures and computer programs which impart functionality to the computer when encoded on a computer-readable medium (RAM, ROM, CD-ROM or disc). A patent claim for a computer-readable medium encoded with a data structure or computer program defines structural and functional interrelationships between the data structure and the medium which permit the data structure's functionality to be realized. According to the guidelines, these functional data structures are patentable under 35 U.S.C. §101 of the patent statute.(10) Non-functional descriptive material includes "music, literature, art, photographs and mere arrangements or compilations of facts or data which are merely stored so as to be read or outputted by a computer without creating any functional interrelationship, either as part of the stored data or as part of the computing process performed by the computer."(11)

The guidelines provide that Office personnel should be "prudent" in applying the tests to identify non-functional descriptive material. Non-functional material may be claimed in combination with other functional descriptive material to provide the necessary functional and structural interrelationships to satisfy the requirement of §101 and hence make the claim patentable under that portion of the patent statute. The guidelines give an example of a program which reads musical notes from memory and, upon recognizing a particular sequence, causes another defined series of notes to be played. The guidelines state that such a computer program defines a functional interrelationship among the data which renders the claimed program patentable as a statutory process even though the program stores music in the magnetic media.

The patent examiner is directed to read the written description of the invention in the patent application because that description provides the clearest explanation of the applicant's invention. The examiner must (a) determine what the programmed computer does, i.e., the functionality of the programmed computer; (b) how the computer is configured, i.e., what elements constitute the programmed computer and how those elements are configured and interrelated; and (c) the relationship of the programmed computer to other devices, materials or processes outside the computer.

The claims in a patent define the property rights provided by the patent(12) and the goal of claim analysis is to identify the boundaries of protection sought by the applicant.(13) Claims can be generally broken down into certain categories, i.e., (a) claims relating to a process and (b) claims relating to an apparatus, device, or a product. For process claims, the words in the claim, called claim limitations, define steps or acts to be performed. For devices or products, claim limitations define discrete physical structures which may be hardware or a combination of hardware and software.

To determine whether a claimed invention falls within protectable statutory class of invention under §101, the patent examiner should classify each claim into one or more statutory or non-statutory categories.(14) Even if the examiner finds that a claim falls into a non-statutory category, this is only an initial finding and the examiner should continue with the examination process and determine whether the claimed invention complies with the novelty requirement, the non-obviousness requirement and the enablement requirement set forth in 35 U.S.C.§§102, 103 and 112. "If the invention as set forth in the written description is statutory, but the claims define subject matter that is not, the deficiency can be corrected by an appropriate amendment of the claims. In such a case, Office personnel should reject the claims drawn to non-statutory subject matter under §101 but identify the features of that invention that would render the claimed subject matter statutory if recited in the claim."(15)

In addition to the determination that the claim is patentable under §101, the patent examiner must determine whether the subject matter sought to be patented is a useful process, machine, article of manufacture or composition of matter, i.e., the invention must have a practical application.

Also, the software must be new, compared with all other computer programs and computer systems (the novelty requirement under 35 U.S.C. §102) and must be different enough from pre-existing programs and systems such that the differences are not obvious to computer programmers or other persons skilled in the particular field of technology (the

non-obvious requirement under 35 U.S.C. §103). The Patent Office recognizes that computer related inventions normally involve more than one field of technology. For example, a computer program to improve the efficiency of an automated car wash involves applications of computer related technology and automated car wash technology. The patent examiner must assure him or herself that the patent application and patent claim(s) are novel, non-obvious and are fully explained such that the skilled artisan in the computer arts and the artisan in the selected or targeted field of technology understands the invention.(16)

The Patent and Trademark Office has been wrestling with these examination guidelines since October, 1995. The initial proposed guidelines(17) were quite generous in their treatment of computer programs. However, after public comment and a review by various government agencies, the guidelines were revised to narrow the scope of protection for computer patents and to better reflect current law expounded by the U.S. Supreme Court and the Court of Appeals for the Federal Circuit.(18)

Natural phenomena such as energy, magnetism and electricity are not patentable.(19) Neither are mathematical formulas or algorithms(20) such as $E=MC^2$, Einstein's theory of relativity. However, the guidelines state that a patent claim directed to a practical application of those principles is patentable under the law. Claims specifying physical characteristics of forms of energy, its frequency, voltage level or the strength of a magnetic field, define energy or magnetism per se and as such are non-statutory natural phenomena. "However, a claim directed to a practical application of a natural phenomenon such as energy or magnetism is statutory."(21)

The guidelines provide that when a product claim encompasses any and every computer implementation of a process, when read in light of the patent specification, the claim should be examined on the basis of the underlying process.(22) When Office personnel have found that the claim is not limited to a specific machine or article of manufacture, the burden shifts to the applicant to demonstrate why the claimed invention should be limited to a specific machine or manufacturer.

If a product claim does not encompass any and every computer-implementation of a process, then it must be treated as a specific machine or article of manufacture. Generally, a claim drawn to a particular programmed computer should identify the elements of the computer and indicate how those elements are configured in either hardware or a combination of hardware and specific software. "A claim limited to a specific machine or manufacture, which has a practical application in the technological arts, is statutory."(23)

In describing statutory process claims, the guidelines provide that these process claims must (1) result in a physical transformation outside the computer for which a practical application in the technological arts is either disclosed in the specification or would have been known to a skilled artisan or (2) be limited by the language in the claim to a practical application within the technological arts.(24) Further, "the claimed practical application must be a further limitation upon the claimed subject matter if the process is confined to the internal operations of the computer."(25)

In the past, courts have approved patents on computer programs that measure heart beat or cardiac activity in order to predict the vulnerability to ventricular tachycardia (a cardiac abnormality) after a heart attack,(26) on systems that display CAT scan information in a certain way,(27) and an electronic analysis of seismic waves.(28)

The guidelines take this analytical process a step further in that the Patent Office indicates that the following are patentable subject matter: controlling the transfer, storage and retrieval of data between a cache and a hard disk storage device such that the most frequently used data is readily available; controlling parallel processors to accomplish multi-tasking of several computing tasks to maximize computing efficiency; word processing programs which change the state of the computer's arithmetic logic unit (the CPU) when program instructions are executed; and, removing noise from a digital signal by subtracting a correction signal from the digital signal. The guidelines state that these types of claims are "limited to a practical application of the abstract idea or mathematical algorithm in the technical arts."(29)

Not everything in the guidelines supports the broad concept that "anything under the sun made by man"(30) is patentable. In cautionary language, the Patent Office states that the guidelines are not formal Patent Office rules and, hence, do not have the force and effect of law. If a patent examiner does not follow the guidelines, the examiner's decision is neither appealable nor petitionable to the Commissioner of Patents. Further, and more importantly, the Patent Office has indicated that the examiners may still rely on an older analytical framework established in case law dating back to 1978.(31)

Although the new examination guidelines propose a better analytical framework for determining whether a computer program for a mathematical formula, for example, is patentable, in view of the disclaiming language in the introductory portion of the guidelines, it is uncertain whether every examiner in the Patent and Trademark Office will adhere to the guidelines. A recent district court case(32) decided three days prior to the effective date of the guidelines did not follow the progressive theories proposed by the Patent and Trademark Office. Further, the court criticized the exemplary "patentable" claims in the guidelines as being "helpful .... only when referring to particular cases [cited in the guidelines]."(33) Ultimately, patent practitioners in this field expect the Court of Appeals for the Federal Circuit to weigh in and rule on the analytical framework established by the guidelines. The Federal Circuit has indicated a willingness to defer to the Patent Office in at least one case involving a computer program.(34)

About the Author:

Robert Kain is member of the Miami law firm of Cesarano, Kain & Van Der Wall, P.L. He has been involved in the computer law and intellectual property law (patent, trademark, copyright and trade secret) fields for almost 20 years as a registered patent attorney with the U.S. Patent and Trademark Office and as a member of the Florida, New York and Washington, D.C. Bars. He has prosecuted over 500 computer related patents before the Patent and Trademark Office.

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1. *Examination Guidelines for Computer-Related Inventions*, 61 Fed.Reg. 7478, March 29, 1996, effective date March 29, 1996.

2. The Board of Patent Appeals and Interferences initially reviews decisions of the patent examining corp. 35 U.S.C. §134. Subsequent appeals are available to the Court of Appeals for the Federal Circuit under 35 U.S.C. §141 or *de novo* review in the U.S. District Court for the District of Columbia under 35 U.S.C. §145.

3. *Arrhythmia Research Tech. v. Corazonix Corp.*, 958 F.2d 1053, 22 USPQ2d 1033 (Fed. Cir. 1992).

4. *Diamond v. Diehr*, 450 U.S. 175, 209 USPQ 1 (1981).

5. *Ex parte Murray*, 9 USPQ2d 1819 (Bd. of Pat. App. 1988) (a program for computing expenses is not patentable because it is a method of doing business).

6. *Gottschalk v. Benson*, 409 U.S. 63, 175 USPQ 673 (1972) (converting a number into a different format is not patentable).

7. *In re Gelnovatch*, 595 F.2d 32, 201 USPQ 136 (CCPA 1979) (computing one set of numbers from another set of numbers is not patentable).

8. *Parker v. Flook*, 437 U.S. 584, 198 USPQ 193 (1978) (updating alarm limits for the catalytic conversion of hydrocarbons is not patentable because of insignificant post-solution activity).

9. The patent statute provides "[w]hoever 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 therefor, subject to the conditions and requirements of this title." 35 U.S.C. §101. "The term 'process' means process, art, or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. §100(b).

10. *Guidelines*, 61 Fed.Reg. 7478, 7481.

11. *Id.*

12. 12. *Fromson v. Advance Offset Plate Inc.*, 720 F.2d 1565, 219 USPQ 1137 (Fed. Cir. 1983).

13. *Guidelines*, 61 Fed. Reg. 7478, 7480.

14. *Guidelines*, 61 Fed. Reg. 7478, 7481.

15. *Id.*

16. *Guidelines*, 61 Fed.Reg. 7478, 7486.

17. *Proposed Examination Guidelines for Computer-Implemented Inventions*, 60 Fed.Reg. 28,778 (June 2, 1995). The Patent and Trademark Office also issued a supporting legal analysis for the proposed guidelines on October 3, 1995.

18. The Court of Appeals for the Federal Circuit is the designated appellate tribunal for all patent related cases from the U.S. District Courts. 28 U.S.C. §1295(a). The U.S. District Courts have original and exclusive jurisdiction over all patent related matters. 28 U.S.C. §1338.

19. *Guidelines*, 61 Fed.Reg. 7478, 7482; *O'Reilly v. Morse*, 56 U.S. (15 How.) 62 (1854) (a patent claim to the telegraph was so broadly written that it covered a basic theory of magnetism and hence did not constitute statutory subject matter. Other claims to the telegraph were upheld as being directed to machines).

20. *Guidelines*, 61 Fed.Reg. 7478, 7485; *Parker v. Flook*, 437 U.S. 584, 198 USPQ 193 (1978) (a claim for updating alarm limits was held to be not patentable); *Gottschalk v. Benson*, 409 U.S. 63 (1972) (a claim for an electronic method of converting a binary number to a decimal number was held to be not patentable as a mathematic formula).

21. *Guidelines*, 61 Fed. Reg. 7478, 7482, citing *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 114-19 (1854).

22. *Guidelines*, 61 Fed. Reg. 7478, 7482.

23. *Id*. at 7483.

24. *Id.*

25. *Id.*

26. *Arrhythmia Research Tech. v. Corazonix Corp.*, 958 F.2d 1053, 22 USPQ2d 1033 (Fed.Cir. 1992).

27. *In re Abele*, 684 F.2d 902, 214 USPQ 682 (CCPA 1982).

28. *In re Taner*, 681 F.2d 787, 214 USPQ 678 (CCPA 1982).

29. *Guidelines*, 61 Fed.Reg. 7478, 7484.

30. The Supreme Court held that Congress chose very expansive language in the patent statute, 35 U.S.C. §101, such that "anything under the sun that is made by man" is patentable subject matter. *Diamond v. Chakrabarty*, 447 U.S. 303, 308 - 09, 206 USPQ 193, 197 (1980) (an oil consuming bacteria, classified as a life form, is patentable).

31. *In re Abele*, 684 F.2d 902, 905 - 07, 214 U.S.P.Q. 682, 685 - 87 (CCPA 1982); *In re*

Walter, 618 F.2d 758, 767, 205 USPQ 397, 406 - 07 (CCPA 1980); *In re Freeman*, 573 F.2d 1247, 1245, 197 USPQ 464, 471 (CCPA 1978).

32. *State Street Bank and Trust Co. v. Signature Financial Group Inc.*, 38 USPQ2d 1530 (D. Mass. 1996).

33. *Id.* Footnote 7, p. 1539.

34. *In re Trovato*, 60 F.3d 807, 35 USPQ2d 1570 (Fed. Cir. 1995).