Practical Tips for Obtaining Effective Patent Protection for Computer-related Inventions

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I. Introduction

Patents offer the potential for substantial competitive advantage. For computer-related inventions, in particular, the patent laws have never been more favorable to patent owners. Some patents create barriers to entry, while others carve out an attractive niche or serve as bargaining chips. In some cases, however, a patent may be barely worth the paper on which it is printed. Among the keys to obtaining effective patent coverage is a basic understanding of the patent laws and the process for obtaining patents. An appreciation of the real scope and value afforded by a patent is also important. Finally, you should be cognizant of the pitfalls that can result in forfeiture of your patent rights, and the heightened risk of forfeiture for computer-related inventions. Patents are not cheap, and it pays to develop a strategy for protecting your investment and maximizing your return. With a proper background and perspective, you can leverage patents to shut down competitors and add value to your business.

II. The Law

Once analyzed, the patent laws are probably no more complex than other areas of the law, but they are highly specialized and not widely known. In essence, patent law begins with sections 101, 102, and 103 of Title 35, which set the basic requirements for patentability, and ends with section 271, which provides a cause of action for patent infringement. The United States Patent and Trademark Office (PTO) applies the *patentability* requirements of sections 101, 102, and 103 in examination of a patent application, determining whether to issue an allowance or a rejection. The courts apply the same requirements in assessing the *validity* of patents issued by the PTO in a suit for infringement under section 271.

A. U.S. Constitution

The basis for the patent statute stems from Article I, Section 8, of the Constitution which provides Congress with the power to "promote the progress of the useful arts and sciences." The theory is that patents encourage innovation by providing inventors with limited exclusivity for a finite period of time. To receive a patent, however, the inventor must uphold his end of the bargain. In exchange for the right to exclude others from making, using, selling, offering for sale, and importing the patented invention, the inventor must provide the public with a description of the invention sufficient to enable manufacture and use by others (following expiration of the patent term). Moreover, the patent laws encourage prompt disclosure to expedite public knowledge of the state of the art.

B. Section 101

1. Eligible Subject Matter

Section 101 specifies those inventions for which patent protection is available, and requires that such inventions possess *utility*. Per section 101, patentable inventions include any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof. Because an invention must satisfy other sections of the Patent Act, including sections 102, 103, and 112, some have referred to section 101 as defining not *patentable*, but *patent-eligible*, subject matter. Interpretation of section 101 has evolved. Until recently, for example, business methods were not considered to be among the classes of subject matter eligible for patent protection.

2. Utility

The requirement of utility simply means that the invention must serve a useful purpose and actually work to some degree when constructed according to the patents. For most electrical-, mechanical-, and software-related inventions, the utility threshold is very low. Likewise, a computer-related invention such as a business method will almost always satisfy the utility requirement if it is capable of practical application. One exception is an invention that serves an illegal or immoral purpose, e.g., a method for organizing arms distribution for systematic terrorism. This sort of invention would lack utility because it would not serve a *useful* purpose in the eyes of society.

C. Section 102

1. Novelty

Section 102 is multi-faceted and sets forth the basic requirements of novelty, and a number of conditions for forfeiture of patent rights. According to section 102, an invention is unpatentable if it has been known or used by others prior to conception of the invention by the patent applicant. An invention that has been known, used, or put on sale more than one year prior to the filing date also fails to meet the requirements of section 102. In each case, the invention lacks novelty because it was already in the public domain. Section 102 also precludes the grant of the patent in the event the applicant derived the invention from another person, or another person conceived the invention earlier and did not abandon, suppress, or conceal it, i.e., the other person eventually published or marketed the invention.

2. Statutory Bars

Some of the conditions set forth in section 102 for forfeiture of patent rights are referred to as bars to patentability. Notably, an applicant's own conduct can create a patentability bar. In particular, the public disclosure or use of the invention more than one year prior the filing of a patent application can result in forfeiture of patent rights. An example is the presentation of a paper at a conference by either the applicant or a third party. In either case, the invention is no longer novel for purposes of the patent laws.

Sale or offer for sale of the invention more than one year prior to filing of patent application also can derail an applicant's patent rights. A sale or offer for sale could arise, for example, in the context of the offering of a product at a specified price to a customer, or simply the marketing of

a product at a trade show. As a matter of policy, the one-year "grace period" that follows a disclosure or sale strikes a balance between the public interest in early disclosure of inventions and the inventor's need to assess the commercial and technical viability of the invention. In most countries outside of the United States, there is no such grace period.

D. Section 103

1. Obviousness

Section 103 of the Patent Act places the standard for patentability above the level of trivia, requiring that the invention be nonobvious. According to case law, the nonobviousness determination involves analysis of the scope and content of the prior art, the differences between the invention and the prior art, and the level of skill of those persons working in that art. With this foundation, the patent examiner (or the court considering validity) determines whether the invention as a whole would have been obvious to those of ordinary skill in the art at the time the invention was made.

In this manner, section 103 adds to the novelty requirement of section 102 a degree of separation between trivial, incremental improvements and those refinements that would not readily occur to those skilled in the art. Still, the nonobviousness standard does not necessarily require Newtonian brilliance, having long ago replaced the "flash of genius" doctrine as the ultimate standard for patentability in the United States. Outside of the United States, the requirement of "inventive step" is analogous to nonobviousness.

III. The Patenting Process

A. The Patent Application

The first step in the process of obtaining a patent is the preparation and filing of a patent application. The patent application provides a detailed description of the invention and a set of claims that define the metes and bounds of the coverage sought by the applicant.

1. Detailed Description

The detailed description, in the context of computer-related inventions, often will include one or more block diagrams of a system or system architecture for implementation of the method, and several flow diagram illustrating operation of the method. A written description accompanies the drawings and should provide sufficient depth and detail to enable others to use the method (again, once the patent term has expired). In some cases, the detailed description may refer to specific hardware and software envisioned for implementation of the inventive method. The detailed description must provide support for the features set forth in the claims.

2. Claims

In drafting the claims, the patent applicant seeks to define the invention as broadly as possible, but must differentiate the invention from the prior art. For this reason, consideration of prior art is a key step in preparing the application. Often, the inventor is aware of the most pertinent prior art, ordinarily in the form of prior patents, publications, or product brochures. In many cases, however, a prior art search is advisable. The prior art search can be effective in uncovering material prior art of which the inventor was not aware.

The claims define the scope of the invention for both patentability as determined by the PTO, and patent validity as determined by a court in an enforcement, i.e., patent infringement, action. The scope of the claims also serves as the measure of infringement. To be an infringer, a competitor must practice each and every feature, or a substantial equivalent, set forth in the claims. The applicant is permitted to submit a variety of different claims. Notably, the claims may span different statutory classes of patent-eligible inventions. For a method of routing field service technicians to service calls, for example, the applicant would be permitted to claim the method per se, a system that implements the method, and perhaps a computer-readable data storage medium storing program code executed by a computer to perform the method.

When selecting the type of claims to submit, the applicant should consider the manner in which the competitors are most likely to infringe. In some instances, action against the company practicing the method, e.g., a financial services provider, may be most desirable. In that case, the financial service provider may be a direct competitor. In other instances, the primary target for enforcement may be a company that distributes software for implementation of the method by its customers. Enforcement against parties who contribute to or induce infringement can be obtained. However, a claim that directly applies to a key player, like a software distributor, is usually most desirable. Aside from enforcement actions, claim variety can be useful in licensing to define the breadth of a royalty base and leverage additional royalties from licensees.

B. Prior Art

It is essential that the patent attorney have the most pertinent prior art available so that the detailed description and claims can be drafted in a manner consistent with the requirements of novelty and nonobviousness, both of which are determined based on the prior art as discussed above. Importantly, if the applicant or anyone else involved in seeking the patent is aware of material prior art, it must be submitted to the PTO for consideration. Although there is no obligation to conduct a search, it is in the interest of the applicant to have the claimed invention examiner against the best prior art. The resulting patent typically will be more resistant to a validity challenge if tested against the most relevant prior art.

C. The PTO

Upon filing, the patent application ordinarily languishes in the PTO for several months. It is not uncommon for patent applications to lie dormant for a year or more prior to PTO examination. Issuance of a patent often can take two to three years. Examination delay is a function of the PTO backlog, and can be a significant problem for inventions with short commercial lifespans.

If the invention is commercially relevant for only three years, for example, a patent that takes three years to issue is of little value. In the business method area, in particular, the PTO is adding examiners in an effort to reduce the backlog. To date, however, applicants have observed little improvement in the timeliness of examination. For this reason, applicants should strongly consider product lifespan when making patent filing decisions.

1. Examiner Qualifications and Experience

Once the PTO examiner picks up the application for examination, he or she refers to the claims to ascertain the scope of coverage sought by the applicant, and initiates a prior art search. The examiner is armed with a classification index and a substantial body of prior patents and publications. The typical examiner assigned to examine computer-related inventions may have an electrical engineering or computer science background, and often little industry experience. An examiner may develop significant expertise in a technology area over a period of years of PTO employment, but typically enters directly from college with minimal applied knowledge. The PTO tends to experience a great deal of turnover, and must staff inexperienced examiners on a large number of applications. Although junior examiners are subject to internal review, the sheer number of applications pushed through the PTO can limit the depth of oversight and training. Moreover, junior examiners must learn both the patent laws and the pertinent technology simultaneously, creating a significant learning curve.

2. Examiner Workload

In view of the burdensome workload, the primary measuring stick for examiner performance tends to be the number of applications processed by the examiner per unit time. Indeed, each examiner carries a bi-weekly quota that must be met for satisfactory performance, and exceeded to qualify for performance bonuses. As a result, timing and speed can be significant motivating factors in the examiner's handling of an application. Productivity factors, in combination with a non-exhaustive prior art collection and lack of technical understanding, can unfortunately result in the issuance of a few "suspect" patents, i.e., patents of questionable validity. This is particularly the case in the business method field, which creates a convergence of all three factors: heavy examination workloads, limited prior art, and new, emerging technologies. A fourth factor is simply the relative newness of some computer-related inventions such as business methods as patent-eligible subject matter.

IV. Obtaining Effective Coverage

A. Patent Value

The value of a patent, whether directed to a computer-related invention or otherwise, is often overestimated. For purposes of infringement and patentability, the measure of patent scope is the claims. The claims define the invention for the patentability determination made by the PTO examiner during examination, and analysis of infringement in both the litigation and licensing contexts. If the claims are drafted too narrowly so as to require certain features, and thereby exclude methods that do not incorporate them, the patent will not cover those methods. Although the claims may be initially very broad at the time a patent application is filed, they may

be narrowed during patent prosecution in view of prior art cited by the examiner. In other words, the prior art may reveal that the initial claims are too broad, requiring refinement of the definition of the invention set forth in the claims.

B. New Forms of Patentable Subject Matter

Be aware that computer-related patents are available for a wide range of processes that may not be familiar patent fodder. For example, patent protection potentially may be obtained for ecommerce processes, often referred to as "business methods," involving: auctions, incentive programs, insurance, taxes, banking, electronic payment, investment, real estate, retail, transportation, security, human resources, agriculture, advertising, scheduling, project planning, advertising, and delivery. It is important to understand that the platforms for such processes may take the form of not only Internet- and software-based systems, but also telephone, mail, and even pen and paper. Of particular note, the present state of the law suggests that methods embodied in the format of a written contract should be patentable.

C. Expense

Patent procurement can be an expensive process. Legal fees associated with a typical ecommerce application are in the neighborhood of $10,000. PTO filing fees and additional legal services necessary in navigating the PTO examination process can cost another $10,000. In the event you elect to file counterpart application in other countries, the overall cost of a single patent family can approach $100,000. To obtain value-added patent coverage, you need to exercise foresight and reasoned judgment. You should appreciate the true scope of a patent and a number of strategic points that can reduce cost and increase value at the end of the day.

D. Support Your Business Objectives

Link your patent objectives with your business objectives and reflect them in your claims. Patenting should not be an academic exercise, but rather an effort to support your business objectives. Are you offering an online service such as advertising or information management? Are you licensing a format or protocol, or acting as a service bureau for transaction processing? What sort of revenue stream do you envision? Will revenues be derived from end-user flat fees, transaction-based fees, license fees from platform adopters, click-based fees, or retail sales? In each case, you should fashion your patent coverage to account for the commercial reality of your business.

1. Target the Infringer

If you have invented a process that, in general, is executed by the end user, you should understand that a lawsuit against thousands of end users (and potential customers) is highly undesirable and impractical. Instead (or in addition), you ought to pursue claims directed to software or processes implemented by your competitors to facilitate execution of the process by the end users. In this way, you will be able to more effectively pursue your competitors for direct infringement. An analog in the software industry is pursuit of claims directed to physical media containing the program code that is executed by the end user to run a patented process. It

is ordinarily more desirable to pursue the distributor of CD-ROM's and the like, rather than the end user.

2. Anticipate Change

Also, it pays to think ahead about the migration opportunities and potential side-applications presented by your invention. If you envision migration from conventional to wireless platforms, from distributed to centralized processing, or from one industry to another, you should draft your patent and claims accordingly. Linking a potentially broad-ranging business concept to a particular technology platform with a limited lifespan could cost you millions. In contrast to other technology areas, such as chemistry, many computer-related inventions present not only alternative applications but alternative platforms for implementation, and those platforms evolve over time.

If your web-based payment process may have application for Bluetooth-enabled devices, for example, it would be wise to contemplate delivery of service via both wired and wireless devices, as well as both networked and point-to-point methodologies. There is no requirement that you actually practice your invention at the time of patent application filing. In other words, you do not need to have a working implementation in hand at the time you file your patent application. So, it pays to think ahead and consider supplementing the patent application with alternative but realistic implementations and uses.

3. Protect What is Yours

Another problem that can trip up some companies in the patent game is their devotion to "open" platforms and protocols as a basic tenet of its business practices. Some companies avoid patenting altogether in view of the notion of open platforms. What they must realize is that securing patents is not entirely inconsistent with an interest in developing open standards. While patent enforcement may derail development of open standards, the procurement of a patent per se does not. In other words, ownership of a patent is at least one step removed from actual enforcement. Whether you believe in open platforms or not, it is nice to have a patent or two in your pocket to save for a rainy day. The decision to enforce the patents is an entirely different matter, and so long as the open platform develops as planned, you may elect never to enforce them. If one or two key players break away from the pertinent "club" and undermine the open development plans, however, the availability of patents at your disposal could save the day. Therefore, your support of open platform initiatives and procurement of patents need not be mutually exclusive.

E. Know the Prior Art

1. Strengthen the Presumption of Validity

Use your best efforts to become familiar with the technology area in which you are working and, in particular, the pertinent prior art. For many computer-related patents and, in particular, business method patents, the concern for the patentee is not whether the claims will have sufficient scope, but whether they will stand up to scrutiny in court in view of the prior art.

Many have predicted that invalidity will be the downfall of many of the early business method patents being issued by the PTO, and they may be right. In litigation, the defendant will be highly motivated to uncover prior art to invalidate your patent, as invalidity is an absolute defense to patent infringement. A patent is afforded a presumption of validity that can be very helpful in litigation. By apprising the examiner of the most material prior art, you can significantly strengthen that presumption.

2. Draft Your Claims in View of the Prior Art

If you can find the best prior art early in the process, draft your claims to steer around it, and then present the prior art to the PTO examiner during examination, you will have a much better chance of combating the defendant's (or licensee's) invalidity arguments. Again, a patent is presumed to be valid. This presumption is very difficult to rebut when the PTO examiner has already considered the prior art on which the defendant relies in court. So, to produce a more robust patent, it is best to present to the examiner as much of the best prior art as possible. This notion is not universally shared by all patent practitioners, some of whom choose to avoid a search and, hence, knowledge of material prior art. The examiner simply will not find the best art in many instances, and sorely needs your assistance. Although the notion of helping the examiner do her job may be counter-intuitive, it will result in a stronger patent for your company. Specifically, it pays to "test" your claims against the art within the PTO, before the defendant has the opportunity to test them in court.

F. Make Your Portfolio Manageable

You do not need to get all of your coverage in a single "gulp." It is often useful to cut up your business portfolio into more manageable pieces, and pursue separate patent applications for each one. This approach has a number of advantages over the filing of a "jumbo" application encompassing your entire business. For example, prosecution within the PTO often can be made manageable and efficient. Also, the more concise patents resulting from the strategy are more easily digestible by the court and jury. The patents can be isolated from one another to avoid contamination. In addition, the multiple patents can facilitate licensing of the separate inventions to different parties if necessary. These advantages may increase up-front costs to some degree, but pay dividends later in terms of ease of success in prosecution, enforcement, and licensing endeavors.

1. Streamline Patent Prosecution

As for the first advantage, an examiner appreciates an overblown, overly complex, patent application even less than the court. It is wise to simplify and reduce the number of issues to be considered by the examiner in order to promote efficient prosecution and prompt issuance. In many cases, the examiner may require division of the application into several applications anyway via a so-called restriction requirement.

2. Make Your Portfolio Jury-Friendly

The value of the second advantage should not be underestimated. Juries and courts, like anyone, work best when the issues are simple and few. Also, as a practical matter, juries and courts (and even some unsophisticated licensees) may be impressed by the larger number of patents held by a patent owner. To facilitate presentation of your case, consider breaking your patent portfolio into bite-sized pieces, aiding judge and jury digestion.

3. Isolate Your Inventions

The third advantage involves isolation of different inventions to prevent prosecution delays in one application from affecting early procurement of coverage for all of your inventions, as well as to preclude attribution of prosecution history estoppel, inequitable conduct, and other unsavory events from affecting their validity, scope, or enforceability.

Prosecution history estoppel refers to remarks made by a patent applicant essentially against its interest, and in relation to claim scope or prior art. The effect of prosecution history estoppel ordinarily is a limitation on the scope of the claims.

Inequitable conduct refers to the applicant's failure to submit to the examiner all material prior art of which the applicant is aware, or otherwise conceal facts or mislead the examiner during prosecution.

The strategy of separating your patent portfolio into multiple patent applications, rather than a single omnibus application, is somewhat similar to the use of various bulkheads in the design of the Titanic to make it unsinkable. For those few who are unfamiliar with the James Cameron movie (or the real-life event), the Titanic employed multiple bulkheads in series along the hull of the ship. The bulkheads separated the ship into multiple compartments. If one compartment ruptured and filled with water, the bulkheads sealed the other compartments to theoretically keep the ship afloat. Like the Titanic's bulkheads, the filing of a number of separate applications is not fail-safe. Nevertheless, this strategy can increase the odds that most of your patents will survive fatal errors or problems in other patents.

4. Promote a Licensing Program

As for the fourth advantage, although field of use limitations are effective and widely used in carving a single patent into pieces for the grant of licenses to different parties, the filing of discrete applications can make the process even easier. This is particularly the case if the division of patent applications reflects a predetermined licensing strategy. Moreover, whereas a single application may have a unifying concept that binds the various inventions, several individual applications permit variation in their contexts and breadth. For example, a short-range wireless protocol useful in a system for payment of goods may have individual components, such as a combined data and voice interface, which have broad-ranging appeal outside of that context.

In summary, in your approach to patent protection, it is important to compare your patent activities to your business objectives. Once you have a coherent plan for protection, you should make every attempt to shore up patent viability and value by entering the examination process with ample awareness of the prior art. At the same time, you should avoid fixation on a

particular platform, such as the one you envision at the time of filing. You should not be afraid to extrapolate the invention to the point of the "pie-in-the-sky" or impractical as an exercise to find the outer bounds of practical coverage. Finally, filing multiple applications can protect at least some of your inventions from the dents and scratches suffered by others during the PTO prosecution phase, and better support a licensing strategy.

V. Avoiding Pitfalls

Despite the measures described above for enhancing the value of your patent rights, there are acts that you can commit well in advance of filing and in the course of patent prosecution that can result in absolute forfeiture of your patents.

A. Inventorship

In the United States, patent applicants must identify the inventor or inventors of the claimed invention. Indeed, the inventor or inventors must execute a declaration or oath to that effect. The declaration or oath indicates whether inventorship is sole or joint with others. The so-called inventive "entity," i.e., those named as inventors can have an important impact on patentability and enforceability.

1. The Law

According to the Court of Appeals for the Federal Circuit, the inventorship determination is nothing more than determining who conceived the subject matter at issue. The determination of conception is made, however, relative to the elements set forth in the claims. Those named as joint inventors all must have contributed to conception of claim elements, but need not contribute to every claim nor make equal contributions. Conception is the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention.

2. Reduction to Practice is Not Conception

Although a technician may be extremely important in improving or commercializing an invention, his contributions often will not arise to the level of inventorship. Again, the emphasis in the inventorship determination is on conception, and not reduction to practice of an invention conceived previously by others. Thus, as a matter of law, many important members of your design team routinely will be omitted from the inventor list for purposes of patent filing. Likewise, manager, directors, and company owners cannot be added as inventors simply by virtue of their status within the company. Their contributions must involve conception of the claimed invention.

B. Ownership

At law, the inventor of a patented invention presumptively owns all patent rights. Moreover, joint owners each own an undivided interest and may dispose of the patent rights without accounting to the others. Therefore, you should ensure that the inventors execute an assignment document that transfers all of their patent rights to you. The assignment document should be

"back-stopped" by a general employee agreement or consulting agreement that requires transfer of patent rights and execution of assignment documents. As with all forms of property, your enjoyment of the property rights generally requires ownership (or lease or license). Cover this detail very early in the process, and preferably before any inventions are even conceived.

C. Duty of Disclosure and Inequitable Conduct

The PTO Rules require that the patent applicant apprise the PTO of all prior art that is known to the applicant and deemed material to patentability. This requirement applies to any individual associated with prosecution of the patent application. Moreover, the applicant has a general duty of candor and good faith when dealing with the PTO. Inequitable conduct requires both materiality and intent in the course of withholding or mischaracterizing information. Failure to observe these duties may amount to inequitable conduct, which renders your patent unenforceable. Accordingly, you must take these duties very seriously, as a challenger will seek to characterize even inadvertent omissions as acts of inequitable conduct.

D. Offer for Sale/Public Use or Disclosure

Section 102(b) precludes patentability for inventions that were described in a printed publication or in public use or on sale more than one year prior to the filing date of the patent application. For these reasons, prompt filing of patent applications should be a high priority. In most countries outside of the United States, there is no "grace period" following a public disclosures. Rather, an applicant may forfeit his patent rights in many foreign countries immediately upon any public disclosure. For this reason, it is advisable to file your patent applications in advance of any public disclosure if you envision a worldwide patent filing strategy.

VI. Conclusion

If you want to join the "run on patents" for computer-related inventions, you should understand that computer-related patents are not so different from patents obtained in other areas over the years. It is important to recognize some of the distinguishing characteristics, however, such as potential shortcomings in the PTO examination process and the heightened impact of the onsale bar. Do not sell your technology short from a patent standpoint just because it is not of the conventional and familiar type patented in the past. In addition, you should try to cut through the rhetoric surrounding the business method patenting phenomenon, and understand that patents are simply here to stay and your competitors are out seeking them.