

2006-1816: INTELLECTUAL PROPERTY AND ENTREPRENEURSHIP PROGRAMS: HOW TO HOLD ONTO YOUR WALLET AS YOU TRANSFER TECHNOLOGY

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Intellectual Property and Entrepreneurship Programs: How to Hold onto Your Wallet as You Transfer Technology

Abstract

Entrepreneurship programs present wonderful opportunities to allow students to practice engineering in an exciting and challenging environment. One of the challenges that students in entrepreneurship programs face is how to consider intellectual property rights while technology is transferred to and from entities outside the program. Technology transfer functions in the form of undergraduate entrepreneurship programs present unique and basic challenges such as deciding who owns any developed intellectual property, how should that property be protected, and who should do the protecting. Unfortunately, every situation is likely to be different and no one-size fits all answer can be provided. However, this paper will discuss the various issues to be considered before entering into relationships via an entrepreneurship program.

Specifically, this paper will discuss the various steps that entrepreneurship teams must take in order to protect any intellectual property generated by the team. The U.S. Patent laws as they currently stand allow for grace periods in which to file for patent protection. Given that many entrepreneurship programs occur over the span of many semesters, the expiration of these grace periods may result in forfeiture of rights. The paper will focus on how to preserve these rights in the face of demands made by our legal system

In addition, dramatic shifts in the U.S. intellectual property law landscape will be discussed in relation to entrepreneurship programs. Current legislation aims to eliminate the traditional “first to invent” system of priority in the U.S. with a “first to file” system. This change can have drastic effects on intellectual property rights.

Contract with Society

The U.S. Patent system can be viewed as a contract between society and inventors. Society agrees to grant a limited monopoly to the inventor, but only if the inventor agrees to satisfy various requirements. Even then, society, through the patent laws, agrees to impose certain constraints on the monopoly granted to the inventor.

The basic requirements that society requires is that the invention have utility, the invention is novel, and that the invention is not obvious to those with ordinary skill in the art of the invention. In addition, the inventor agrees to adequately disclose the invention in a timely fashion.

The details that make up these requirements are what make patent law so challenging to patent practitioners and so maddening to inventors. Precisely following these rules for any inventor, including inventors associated with entrepreneurship programs, may make the difference between a successful invention and a failure.

Utility

The utility requirement is likely the most important and, from an engineering perspective, the easiest to define. The engineers working on a project typically know from their design specifications whether they have been successful in creating the proper design. Almost by definition an invention must be useful and thereby have utility.

Unfortunately, the legal standard is not as forthcoming. The patent statute states that “[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.”¹ We must resort to case law to be more definitive about what makes an invention useful.

An inventor will not get a patent if the invention was 1) known or used 2) by others 3) in the U.S., 4) before the inventor conceived the invention. However, we also know from previous case law that to “be known” that knowledge must be publicly available.² Public use by someone other than the inventor, even someone that the inventor disclosed the invention to in confidence, will void the patent by the inventor.

There is an exception to the disclosure rule. An experimental use, even a public experimental use, is not considered a public use.³ To fall under this exception, the inventor must demonstrate that the public use occurred with a bona fide intent of testing the invention’s qualities.

Novelty

The novelty requirement is readily understood from an engineering and legal standpoint: the invention must not have been available before. The patent statute declares that “[a] person shall be entitled to a patent unless the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent....”⁴ Again, we must consult the case law to fully define the terms “known,” “used,” “in this country” and even the word “printed.” However, this portion of the patent law gives the first person to conceive of an invention the sole right to patent the invention.

Even if a second person were to develop the invention entirely independent of the first person to invent, and without any knowledge of the work or developments of the first inventor, the first person would be entitled to patent the invention over the second. The “first to invent” in the U.S. system is unique to patent laws throughout the world, and may give way if proposed major shifts in U.S. patent law currently on the horizon are adopted (see future developments below). Most importantly, this first to invent system is why it is critically important for developers of technology, particularly entrepreneurs, to fully document their technology development activities.

The most effective manner to document technology development activities is with an inventor’s notebook. Preferably this notebook is bound with page numbers printed on the pages. The notebook should be maintained in a methodical and consistent manner and should be used regularly.⁵ This notebook can be used to antedate a prior art reference.

The way this would play out is as follows. An inventor files a patent application with the United States Patent and Trademark office, and the patent examiner finds a prior art reference that would appear as if it would preclude the inventor receiving the patent. If the inventor has kept a detailed notebook and can show that the invention was developed before the prior art reference, the inventor can use the evidence in his notebook to antedate or “swear behind” the prior art reference used by the examiner. The notebook saved the day. Therefore, one of the best ways to “hold on to your wallet” in any endeavor involving inventing, included those in entrepreneurship programs, is to have everyone involved aware of their responsibility to properly record their inventive activity in a properly maintained notebook.

Time Bars

The novelty issue above usually involves a problem that an individual other than the inventor creates. The inventor can also self-inflict an injury. This is done by failing to observe the requisite “time bars” in the contract with society.

The contract with society explicitly allows the inventor to practice with the invention before an application for patent is filed. The contract allows the inventor to publish an account of the invention in a newspaper, in a professional journal, present the invention at a professional society meeting in a PowerPoint presentation, or describe the invention on a web site. The contract even allows the inventor to offer the invention for sale and actually sell the invention. The contract allows all this, but with one major restriction. Within a year of the publication, offer for sale, or sale the inventor must file an application for patent with the patent office.

The inventor can make use of the invention, but only for a specific period of time: one year. If the inventor fails to file an application before the one year period expires, the inventor forfeits patent rights and in essence donates the invention to the public.⁶

What appears to be a draconian rule is also an easy one to understand and an easy rule with which to work. However, the inventor can easily bring on trouble by publishing or offering the invention for sale and waiting longer than the one year period, so self-awareness is necessary. But the one year clock can also be started by the publication of a total stranger, so vigilance in keeping an eye on the competition, known and unknown, is also necessary.

So, to not lose your wallet in an entrepreneurship program, you must be cognizant of any events that might establish a so-called “statutory bar.” Typically the statutory bar is generated by a publication, your publication, a colleague’s publication or someone working in the same area as your invention. A publication in a trade journal or a professional publication begins the running of the one year clock. Keeping track of your publications and your coworkers publications are essential, and acting to protect your patent rights before that one year clock expires is critical.

Obviousness

Another portion of the informal contract between the inventor and society is that the inventor’s device not be obvious.⁷ Nonobviousness is likely the most perplexing portion of U.S. patent law. The statute states that

[a] patent may not be obtained though the invention is not identically disclosed or described as set forth in [the novelty and statutory bar section of] this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.⁸

This provision is typically not too helpful to inventors. In other countries, the concept of obviousness is given the more helpful term “inventiveness.” The idea behind this provision is that small changes in a prior invention should not be rewarded with a patent. That is the invention must in some way be moved from other inventions.

In the U.S. patent system, the analysis for obviousness is done in a series of smaller sub-analysis. The first analysis requires a conjuring of a “person of ordinary skill in the art.” This term has been used so often that its acronym, PHOSITA, has even generated a blog on patent law and practice.⁹ A PHOSITA is an almost mythical person with just the right amount of knowledge in the area of the patent application in question. Too much knowledge or expertise makes the person beyond that of “ordinary skill,” and too little does not provide enough background. Obviously (no pun intended), even this first step in the analysis is particularly subjective.

Next in the obviousness analysis is the assembly of all relevant prior art, inventions made before the inventor conceived of the invention in question, that contains any part or elements of the subject invention. In general, the same prior art that can be used to preclude patentability from a novelty perspective (see above) can be used to preclude patentability based on obviousness.

Once the potential prior art is assembled, the next step is for the PHOSITA is to asked the following question: Would it have been obvious to the PHOSITA to assemble all of these pieces from the prior art to make this invention? If yes, then the subject invention is obviousness and does not warrant a patent.

So what does this rather muddy area of patent law tell participants in entrepreneurship programs? First, the date of invention is a critical one. The earlier an inventor can demonstrate the inventive step, the more prior art that invention may be able to avoid. An obviousness rejection can not be made based on “prior art” developed after the invention was developed. Again, here is where a properly maintained inventor’s notebook is critical. If the notebook clearly shows that the invention was made before the prior art used to establish obviousness, the inventor can avoid that prior art.

Second, when considering whether to pursue patenting, the inventor must look objectively at the invention relative to other prior art. If the invention is close to other areas then it is more likely that an obviousness rejection will result. However, if the invention appears to be on the verge of commercial success, the risk of not having a patent protecting the idea may outweigh the cost of obtaining patent protection.

Commercial success in the form of sales relative to competing products is one method of overcoming an obviousness rejection, so a successfully sold product may in itself support the patentability of an invention. In any case, the patentability of an invention is directly related to the market share and, in turn, the profitability of the product. Therefore, the ability to obtain patent protection must be factored into all of the other business decisions made in the commercialization process.

Future Developments

The U.S. patent system is one of only a few countries that use a “first-to-invent” system of patenting. That is the basis of the novelty concept described above – the statutory provision in 35 U.S.C. § 102(a). As discussed above, the laboratory notebook is useful in antedating a prior art reference if the inventor conceived of the invention before the prior art.

Most countries have adopted a “first-to-file” system requiring absolute novelty. In these systems, any publication, sale or offer for sale would invalidate the patent. Further, an inventor that conceives an invention after another inventor, but files an application before the first inventor would be entitled to a patent over the first inventor. In the U.S., the first inventor would be able to use the notebook to antedate the second inventor’s date of invention.

Currently pending in the U.S. Congress is legislation that could fundamentally change the U.S. patent system.¹⁰ The most important change is to move the U.S. from a first-to-invent system to a first-to-file system. There are many advantages to a first-to-file system, not the least of which is to bring the U.S. into conformity with the other major industrial countries, particularly Europe. However, there are some disadvantages too, many of which affect entrepreneurship programs. Specifically, any inventor must under the first-to-file system win the “race to the patent office” to successfully obtain patent protection.

The first-to-file system can be a significant hardship to entrepreneurship programs, particularly those programs that attempt to aid small businesses by helping to commercialize existing ideas. Under the proposed system, entrepreneurship programs will have to be exceedingly vigilant in filing a patent application once appropriate inventive advances are made. Failing to do so might lead the program to be scooped by another quicker filer. This will tend to drive patent costs up for programs already with thin budgets. Further, outside entities will be reluctant to enter into relationships with university entrepreneurship programs unless patent protection is established before substantive work is performed.

Universities, with the variety of student, staff and faculty colleague pose significant intellectual property security risks. These risks to intellectual property of the extra-university partners also represents legal risks to the university itself if a security leak results in loss of intellectual property rights. Breaches of nondisclosure agreements allow for recourse against the individual who disclosed the information, but does not provide for aid in overcoming any competing patents. In short, the first-to-file system presents potentially grave challenges to university-based entrepreneurship programs.

Best Practices of a University IP Office

A recent white paper¹¹ authored by the ASEE Dean's Council highlights many suggestions that can readily be viewed as best practices in treating intellectual property within universities particularly when involving the university intellectual property offices. Although this paper is a series of anecdotal observations made by industrial collaborators engaged in sponsoring research at universities, there are lessons to be learned by those involved in entrepreneurship programs. The overall message from this white paper is that expectations must be better managed.¹²

Faculty must realize that federal and state statutes mandate certain practices to be put in place by university administration, and that faculty must be tolerant of these practices.¹³ For example, it is common for a university to mandate that intellectual property developed by university personnel using university resources be owned by the university. Although this can be unpalatable to some faculty, it is a consequence of the Bayh-Dole act¹⁴ and federal tax laws. University administrators must recognize that for faculty and students involved in entrepreneurship programs time is of the essence and any administrative requirements over and above that mandated will force intellectual property offices to lose credibility. Outside partners must recognize that the university serves many masters including state and federal regulators. In addition, outside partners must appreciate that the states have a huge financial investment in the infrastructure at a state university. Intellectual property generated at these universities would not be possible without this public investment. Finally, and most importantly, all involved must recognize that the odds of an invention "hitting a homerun" are small.¹⁵

The major conclusion of this recent whitepaper is that universities should strengthen the role of intellectual property offices as a partner in not primarily seeking licensing revenue, but in expanding the opportunities for research by more realistically negotiating with outside partners.¹⁶ In many cases, hardball negotiations by university IP offices have cost more to the intangible goodwill of the university than that garnered in the licensing agreement.¹⁷

The lessons to be learned for university IP offices dealing with entrepreneurship programs can be gained by analogy with lessons learned from dealing with licensing research results. The university IP office plays a central, frontline roll in negotiating with outside partners. These negotiations have the potential to enhance the goodwill of the university to economic development creating more opportunities for all involved in entrepreneurship programs. Conversely, focusing on maximizing licensing revenues will typically not result in the "home run," but can irreversibly damage the goodwill necessary to sustain a university entrepreneurship program.

Conclusions

Patent protection is a powerful ally to inventors including those working in or working with entrepreneurship programs. However, the basics of patent law must be followed. A patent gives the patent owner the right to exclude others to practice that invention within the United States. In order to be awarded the patent, the inventor must agree to timely and adequate disclosure of the information required to practice the invention. Further, society will only allow

a patent if the invention is novel and not obvious. Finally, the role of university intellectual property offices must be kept in focus, and optimizing the program goodwill should be emphasized. If these conditions are satisfied, the patent holder will be awarded with a valuable monopoly that can be exploited and used to generate a valuable business opportunity.

¹ 35 U.S.C. § 101.

² *Minnesota Mining & Mfg. Co. v. Chemque Inc.*, 303 F.3d 1294 (Fed. Cir. 2002).

³ *City of Elizabeth v. American Nicholson Pavement Co.*, 97 U.S. 126, 134 (1877) (In this famous patent case, a developer of roadway material experimented with materials on a road is use by the public. Even though the use was “public” the use did not serve as a prior art reference since the use was experimental and used to further refine the materials considered.)

⁴ 35 U.S.C. § 102(a).

⁵ See Gerald McClain, “Inventor’s Logbook 16 Suggestions for Keeping a Proper Logbook,” available at <http://www.library.okstate.edu/patents/logbook.htm> (visited Jan. 10, 2006).

⁶ 35 U.S.C. § 102(b). (“A person shall be entitled to a patent unless ... the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United State”)

⁷ 35 U.S.C. § 103.

⁸ 35 U.S.C. § 103(b).

⁹ See phosita :: an intellectual property law blog, available at <http://www.okpatents.com/phosita/> (visited Jan. 13, 2006)

¹⁰ Patent Reform Act of 2005, H.R. 2795, 109th Cong. (2005). See also Bethany Halford, *First to File*, PRISM, Nov. 2005, available at http://www.prism-magazine.org/nov05/feature_first.cfm (visited Jan. 15, 2006).

¹¹ Am. Soc’y. Eng’g. Educ., *Intellectual Property: Universities, Corporations and Finding a Common Ground*, Feb. 13, 2006, at <http://www.asee.org/members/organizations/councils/edc.cfm> (visited Mar. 6, 2006).

¹² *Id.*

¹³ In particular, it is important for faculty to recognize the role of the Bayh-Dole act in the regulation of intellectual property generated through the support of federally funded grants. See *id.* at 6.

¹⁴ See generally Jennifer A. Henderson & John J. Smith, *Academia, Industry, and the Bayh-Dole Act: An Implied Duty to Commercialize*, available at http://www.cimit.org/coi_part3.pdf (visited Mar. 6, 2006).

¹⁵ Am. Soc’y. Eng’g. Educ., *supra* note 11 at 7.

¹⁶ *Id.*

¹⁷ *Id.*