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Executive Summary: It is now possible to patent an improved underwriting or risk selection process. Recent court decisions have stated unambiguously that new, innovative methods of doing business, which include improvements or new invention in underwriting processes, can be protected by a U.S. patent. Removing or mitigating the negative effect of the underwriting hurdle on the insurance sales process is a necessity that has long been addressed by many in the underwriting community. Historically, improvements or new invention in the insurance industry has either been freely shared, thus limiting competitive advantage to a head start, or maintained as trade secrets, thus depriving the industry as a whole of the nature of the improvements. Now that underwriting improvements can be patented, however, competitive advantage can be sustained for the 20-year life of a patent, and the industry can benefit from the timely disclosure of important new advances. Whether you are an inventor or competing with an inventor, you need to understand the impact that the use of patents in the insurance industry can have on you or your company.

Intellectual Property

An invention is the result of creative thought and ingenuity applied to solving a problem with no obvious or otherwise available solution. An invention is intellectual property (IP). If the problem solved needs a solution, that is, if there is market demand for the solution, then the invention is *valuable* intellectual property. The private ownership of intellectual property is provided for in the U. S. Constitution (Article 1, Section 8, Clause 8). Similar laws exist in almost every other country in the world. Per the Constitution, Congress has the power to grant inventors the right to exclusive use of their discoveries for a limited period of time. Congress has exercised this authority by creating the United States Patent and Trademark Office (the USPTO or Patent Office) which grants patents to inventors provided that they disclose the exact nature of their inventions in sufficient detail so that another person "skilled in the art" can reproduce them.

Historically, improved insurance products and processes could not be patented in the U.S. due to the "business method exception." It was commonly believed, and even written into the rules of the Patent Office, that applications that solely addressed methods of doing business, such as improved bookkeeping techniques, pricing formulas or risk selection processes, could not be patented. However, with the advent of the general purpose computer, the Internet and the consequent development of software patents, it became more difficult for the USPTO to determine if an invention was solely a "business method" and not also included in an acceptable category. Begin-

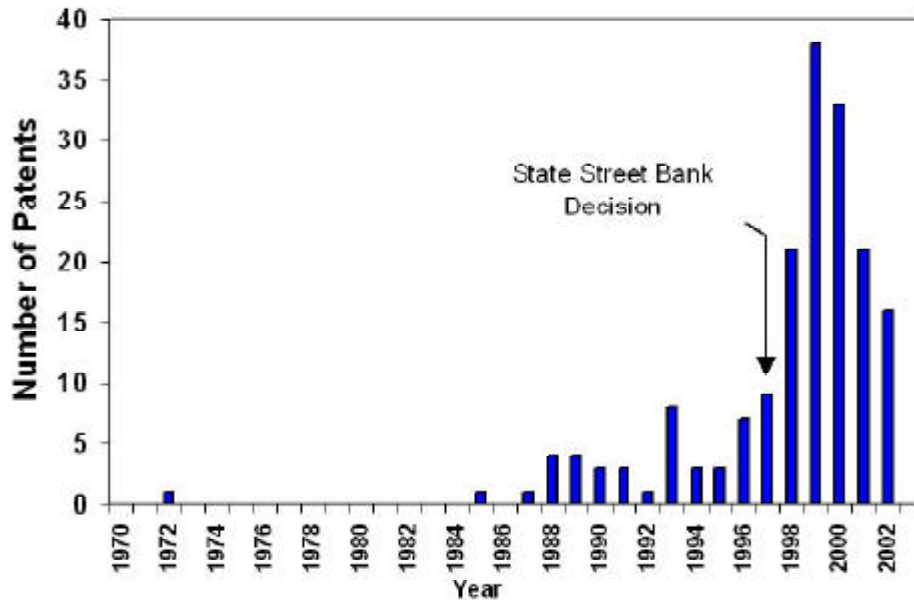
ning in the 1980s, more and more patents were being applied for and issued that looked only like "business methods." The situation came to a head when Signature Financial Group tried to enforce a patent which claimed an improved means for calculating the price of a financial instrument. The alleged infringer, State Street Bank, countersued to have the patent declared invalid. State Street's argument was that the patent was invalid since calculating a price was a method of doing business.

The district court agreed with State Street. Signature Financial appealed to the Court of Appeals for the Federal Circuit. On July 23, 1998, in one of the most significant and dramatic decisions ever handed down on patents, the Federal Circuit ruled that not only were improved methods of doing business patentable, but that they had always been patentable - at least since the patent laws were revised in 1952. This decision obliterated the assumption everyone had been making - never before tested in court - that business methods were not patentable. The U.S. Supreme Court made the decision final when they refused to review it (i.e., denied certiorari) and the business method "land rush" was on.

There has been a huge surge in business method patents issued since the State Street Bank decision. In 1997 the USPTO created Class 705 to include data processing, financial, business practice, management or cost/price determination. Subclass 4 is reserved for insurance business methods, which includes new risk selection and underwriting processes. Between the State Street Bank decision in 1998 and

June 2003, over 130 patents on improved insurance business methods (Class 705/4) have been issued. Only 47 were issued prior to 1998. Even more telling is the fact that currently there are over 200 insurance patent applications pending – most filed within the last two to three years. Clearly, there is a lot of problem solving going on.

Figure 1: Surge in Insurance Patents After the State Street Bank Decision



The Problem with Underwriting

The underwriting or risk selection process has always been a “problem” affecting the sale of insurance products in a voluntary insurance market. Of course, we mean “problem” in the kindest possible way. In place of “problem” you can read “hurdle” or “stumbling block” or “necessary evil.” Whereas most other products that are offered for sale in a general market are sold to the first person with the required purchase price, life insurance sold in a voluntary insurance market typically must be applied for from a providing company and is issued only if accepted by the provider. In addition, the premium is only finally determined by the providing company following its underwriting process. It is no wonder that insurance is not bought. It has to be sold. A salesman selling in this environment will encounter well-recognized difficulties. In a sense, life insurance is not available (or only available at a very high price) to those who should want it most.

When individuals are offered an opportunity to purchase any type of product, those who would benefit most from its purchase are usually the first in line. With respect to insurance products, from the insurance company’s perspective, this is known as anti-selection and is what the underwriting process is

intended to offset. Underwriting provides for equity in the individual life insurance market by charging for insurance in proportion to risk. It is an essential part of any voluntary life insurance market and cannot just be eliminated – the easiest solution to the underwriting “problem.”

The existing underwriting process (or business method) is designed to gather information about the risk entity

applying for insurance, evaluate the collected information to properly categorize the applicant with respect to insurability, and establish the premium payment required by the insurer to cover the risk. It seems simple, straightforward and reasonable to those of us familiar with the process. However, to those on the buying side it seems intrusive, inconvenient, time-consuming and unpredictable in the sense that the ultimate underwriting result can be surprising. In addition, the fact that the underwriting process used by each company is “stand-alone” in nature means that insurance shopping among companies

is multiply intrusive, inconvenient, time-consuming and surprising.

Solving the Underwriting Problem

Creative people in the underwriting community have addressed and continue to address ways to solve these underwriting problems or mitigate their impact on the insurance buyer without diminishing the value of the underwriting process to the insurance provider. There are solutions focused on each of the problem areas associated with underwriting. The intrusiveness of exams has been addressed by the use of non-medical underwriting, which uses underwriting expense savings to offset the additional non-med morality. This also partially solves the problem of inconvenience. Inconvenience has been addressed by simplified and guaranteed issue programs at the sacrifice of some additional premium cost or an agent compensation reduction. Jet issue units have addressed the time issue for the policy sizes that qualify. The Internet has been used to illustrate and even issue insurance relying on applicant-provided data and quick electronic searches of information in readily available external databases (such as prescription drug records). But, the usefulness of these databases for the issuance of insurance has been questioned due to corruption, ambiguity or poorly categorized data. So, the

problems have not been entirely eliminated. In addition, underwriting surprise is still a factor since many of these quick issue processes still rely on ultimate confirmation of the final premium by a more traditional underwriting process.

Solutions to these problems, and many others like them, are still being provided by their inventors to the industry free of charge (or, perhaps, being kept by them as trade secrets) under the old industry business model. This business model, while it has always encouraged inventiveness, has placed little value on it. Creative problem-solving ideas have been freely shared. When demonstrated to be successful by the original inventor and early adopters, they were rapidly assimilated and became part of every insurance process or portfolio which had the problem ... and the inventor, usually, was forgotten. The only advantage of being the first to solve a problem in the insurance industry before was a head-start on your competition.

But times are changing, and even before the 1998 State Street Bank decision, there were some in the insurance industry who understood the value of the intellectual property they had created and sought a patent to protect it. For example, Lincoln National filed its patent on an expert underwriting system in 1988 (eventually issued in 1990 as patent #4,975,840). Their invention recognized relationships (based on their proprietary research) between different underwriting elements which are used by a system they created in order to evaluate the insurability of an applicant. Presumably, the greater accuracy and speed of such a new underwriting business method would give an advantage to any company that used it. More recently, some of the inventions in the underwriting area for which patents are being sought include:

- An Insurability Documentation File (#20020029158). This centralized file is created from information provided by service providers and maintained in a secure fashion. This file can be accessed as the result of a Universal Bid Request by multiple insurers who can bid on the insurance requested. The bids are binding, allowing the applicant a speedier way to get competitive insurance quotes and eliminating the unpredictability of the typical underwriting process.
- Medical records databases which individual patients own (#20020029157). These databases can be accessed by authorized medical professionals for their use in providing health care services as well as by insurers in underwriting for health insurance.
- A business method which enables an insurer to underwrite a life insurance policy in real time via a network (#20020087364). The system relies on insurability information available from readably available third party databases. The information is used to

create an underwriting score which is used to classify and price the insurance policy offered.

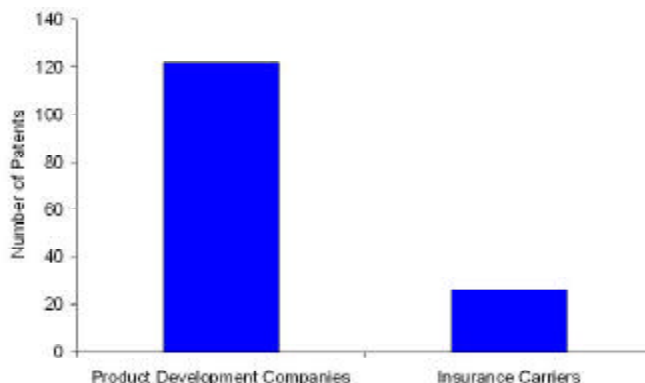
- A business method to enhance the sale of insurance (#20020111835) by providing an electronic system to take underwriting information provided by an applicant and effectively match it against the underwriting rules of a number of insurance carriers. By doing this, competitive insurance quotes from a number of insurance carriers can be received via a network.

These inventors, and perhaps many more as yet unknown to you or us, are going down a new path which will usher in a new business model for the insurance industry.

The New Business Model

The vast majority of insurance-related patents are being issued to new small development companies whose primary revenue comes from license fees for their patented processes. Therefore, they are not intending to share their unique solutions to problems they solve freely with others as had been done before.

Figure 2: Patents to Product Development Companies and Insurance Carriers as of June 2003



Products like reversionary annuities and investment management processes for non-qualified deferred compensation plans have been successfully developed, patented and licensed by development companies to major carriers. Very often these innovations require additional and substantial investment in order to become marketable. Carriers have an incentive to make this investment if they have an exclusive license to the product. Should a competitor attempt to copy the patented product, it can be stopped either by the original patent holder or the licensee.

The model of small entities inventing, patenting and licensing products to large entities for subsequent product development is well known in traditional, patent-intensive industries such as electronics and pharmaceuticals. Consider the light bulb. The original carbon filament light bulb was invented and pat-

ented by two independent inventors, Henry Woodward and Matthew Evans. They licensed it to Thomas Edison for \$5,000. Mr. Edison, in turn, invested \$50,000 to develop a long-lasting version, which he in turn patented. He invested substantially more money in developing an electrical infrastructure. All of this was enabled by the fact that Edison had the right to exclude anyone else from making, using or selling a carbon filament light bulb based on the Woodward and Evans patent.

This could very well be the future for problem solving and new business development in the insurance industry. There are significant challenges to adapting to the new business model. Patent owners relying on royalties need to be alert to potential infringement. And competitors in the market need to be aware that they may be infringing. In infringement cases, damage awards of over \$100 million are not unheard of. Legal costs alone can run over \$2 million in the defense against a patent infringement lawsuit, even if the case is settled before trial.

The best defense against infringement lawsuits is vigilance. Many major carriers and brokers are instituting "patent watches." In a patent watch, new and existing patents and patent applications are searched to find those that might be relevant to an ongoing business. If a relevant patent is discovered, appropriate action must be taken. Perhaps a new product or process under development needs to be modified so that it does not infringe. Perhaps a license must be sought. Perhaps the patent should be opposed if it covers a product or process that is already known to exist. The appropriate action will depend upon the particular situation. In all cases, competent legal counsel is essential to insure minimal downside risk.

The Value of Patents

The essential value of a patent is that it allows the inventor or the assignee to exclude others from making, using or selling the patented invention. The enforcement of this right falls on the owner of the patent. There are no patent police who search out infringers. Nonetheless, "ignorance is no excuse" when it comes to liability for infringing a patent. An infringer is liable for damages to a patent owner, even if the infringer was totally unaware of the existence of the patent in question. If the infringer is aware, it's even worse. Intentionally infringing a patent can result in a punitive damages equal to three times the commercial damages inflicted on the patent owner.

Getting a Patent

The first step in getting a patent is to invent something that is new, useful and not obvious. From the point of view of the USPTO, an invention is made when the inventor or inventors first describe both the

invention and its "utility" (i.e., what it's good for). There must be evidence of the date and contents of the description. A signed, dated and witnessed document is adequate evidence. Most patent-savvy inventors keep a bound notebook or diary where they record their new ideas. The description of the invention must be complete enough so that another person skilled in the area can read it and make the invention work. Working models are not likely to be required for insurance patents.

Having made the invention, the inventor ought to evaluate its market potential or strategic value. If it has adequate potential value, the next step is to prepare and file a patent application. The inventor can do this himself, but a patent application is required to follow a certain form and the language used has developed its own formal meaning. The experience of a patent agent or attorney can be very helpful in getting it right. Based on the inventor's description, the patent agent can prepare a draft patent application which satisfies the requirements of law and regulation. The inventor then reviews the application to make sure that it accurately and completely describes the invention.

Patent agents and patent attorneys perform the same service in terms of helping clients get patents. They both have the same license to represent clients in front of the USPTO. The only difference is that patent attorneys also have a license to represent clients in a court and can help, for example, in the enforcement of a patent if a lawsuit is required.

Before submitting a patent application, it is strongly recommended that the inventor search the "prior art" for similar inventions (patented or not) that have been made in the past. Prior art is any document published before the date of invention (or date of application in Europe and Japan) which "teaches" or suggests some aspect of the invention. Prior art can cause some or all of the application to be rejected.

In the U.S., the first person to conceive of an invention is entitled to a patent subject to certain limitations. In the rest of the world, the first person to file an application is entitled to the patent. If an invention has been publicly described before the "priority date" of a patent application, then no one is entitled to a patent (except for a grace period in the U.S. as noted below). This is true even if the person who made the disclosure is the inventor himself. The "priority date" is the date an inventor establishes with the patent office as the earliest date for which he or she has a claim on inventorship. In the U.S., there is a one-year grace period for filing a patent application after it has been publicly disclosed. In the rest of the world, there is no grace period. There is also the additional re-

quirement in the U.S. that the invention not have been offered for sale more than one year before the priority date.

The lesson is that patent applications should be filed as early as possible.

What Does a Patent Cost?

Patents are a significant investment. The visible expenses of a typical U.S. patent are \$7,000 to \$20,000 in legal fees and filing costs. Hidden costs, which include inventor time associated with the patent application and licensing efforts after the patent issues, can increase this expense by two to three times. U.S. patents are only good in the U.S. If foreign patents are sought, then add another \$5,000 to \$10,000 in legal fees and filing costs for each foreign country in which the patent is sought. Total patent costs of \$100,000 and up are not uncommon for broadly filed inventions. Fortunately, these costs can be deferred for several years as the inventor assesses the international market for the invention.

Patents require patience and perseverance. The time between a patent application and ultimate issue is, typically, two to five years in the U.S. and delays of 10 years or more are not unheard of. The USPTO is currently paying more attention to business method patents which could add to the length of time it will take. Often the delays are due to the belated discovery of relevant prior art after a patent application is filed. This makes it much more difficult to convince the Patent Office that a patent is allowable. A thorough prior art search done before a patent application is filed can help keep these delays to a minimum. Despite the expense and time, however, a patent can be quite valuable. As noted, a patent gives its owner the right to prevent anyone else from making, using or selling the invention, within the framework of antitrust laws and regulation. The owner can be the

exclusive provider of the product or service created by the invention, sharing nothing with competitors. With skillful licensing, the patent owner can prevent others from saturating a limited market and siphoning away profit from the inventor. An inventor can also prevent others from abusing the invention such that regulatory controls are brought to bear which impact adversely on its value.

Straight licensing of patents can be very profitable. Universities in the U.S., for example, collectively generate over \$1 billion a year by licensing the inventions of their faculties. Their combined patent, licensing and inventor costs are only about \$300 million per year.

Summary

Inventions which make underwriting or risk selection a more effective process by reducing costs, eliminating delays or lowering the hurdles to issuing insurance products are valuable intellectual property patentable in the U.S. The 1998 State Street Bank decision which enabled business method patents has led to a surge in patent filings, primarily from small entities such as insurance product "development labs." This is leading to a new business model in the insurance industry where product or process innovations will be owned by their inventors (or assignees) and transferred via license agreements. This will benefit the industry by stimulating investment in product development and encouraging the publication of trade secrets in exchange for patent rights. It may also cause difficulties as carriers, brokers and agencies realize that they can no longer freely copy a competitor's inventions. The ultimate benefit to the industry will depend in large part on the speed with which all parties become educated on the new realities of the developing patent-rich insurance environment.

About the Authors

Tom Bakos is President of Tom Bakos Consulting, Inc., an independent actuarial consulting firm specializing in non-traditional, "beyond-the-box" areas of practice, giving special attention, currently, to patents. Mr. Bakos has had over 30 years of significant general management and technical actuarial experience in various roles within the life insurance industry in the United States. These activities have included work in the home offices of both mutual and stock life insurers, providing actuarial services to a large brokerage general agency, and innovative product design and development work as a consultant. Professionally, Mr. Bakos currently serves on the Board of Governors of the Society of Actuaries (SoA). His three-year term expires in 2005. He is also a member of the American Academy of Actuaries (AAA) Council on Professionalism and serves as Chairman of the AAA Committee on Professional Responsibility. He can be reached at tbakos@bakosenterprises.com or (970) 626-3049.

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