

**"A New Traffic Cop at Intersection Of Patents and Financial Inventions"**

by Robert E. Rosenthal and N. Stephan Kinsella

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Until recently, the worlds of patent law and finance may have seemed far apart. A recent decision by the Court of Appeals for the Federal Circuit (CAFC), however, has caused their paths to intersect.

In *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, (No. 96-1327, July 23, 1998) 1998 U.S. App. LEXIS 16869, the CAFC - the sole Federal Court of Appeals having jurisdiction over patents - cleared the way for patents related to innovations in the fields of finance, accounting and business.

In *State Street*, defendant Signature Financial Group obtained a patent for a "Data Processing System for Hub and Spoke Financial Services Configuration." This invention was directed to a data processing system for implementing an investment structure in which the assets of several different funds (spokes) were combined in a single investment portfolio (hub).

In the configuration of this investment structure, there are several funds, each of which is an investor in a partnership portfolio. The funds may be, for example, mutual funds, pension funds, common trust funds and other types of funds.

Under this type of system, certain economies of scale can be achieved, as certain fixed expenses, rather than being paid by each of the individual funds, may be paid by the portfolio partnership. The portfolio makes daily allocations of income, capital gains, and expenses or investment losses. Also, the partnership interest of the funds vary on a daily basis.

The patent notes that the calculations are further complicated by the fact that the value of the portfolio assets rises and falls, and additional funds are invested in, or withdrawn, from the portfolio.

The patent emphasizes that a daily calculation of these figures is essential for non-tax and for tax accounting purposes. Each fund has a book capital account, which represents each fund's total investment in the portfolio including all earned, but undistributed, economic benefit. Each fund has a book capital account balance based on its relative percentage of the total dollar amount of investments in the portfolio.

The book capital account for each fund is changed daily based on any capital contributions, such as purchases by fund shareholders, made by the fund to the portfolio, any distributions, such as expenses and redemptions by fund shareholders, any increase or decrease in net unrealized gains or in net unrealized losses allocated to the fund; and any profit or loss respectively allocated to the fund.

It is also necessary to determine aggregate year end income, expenses and capital gain or loss for tax and accounting purposes.

The patented system, therefore, allowed, inter alia, the true asset value of each spoke to be determined, to allocate, among the various spokes, the

hub's daily income, expenses, and gain and loss. In essence, the subject patent transformed data representing dollar amounts through a series of mathematical calculations, into final share prices.

These generated share prices could be used for various useful purposes, including recording and for use in subsequent trades.

Under federal patent law, a patent may be obtained if a variety of criteria are satisfied, including novelty, non-obviousness, utility and statutory subject matter. In *State Street*, it was argued that the hub-and-spoke patent was invalid on the grounds that it claimed "non-statutory subject matter."

This argument relied on two traditional patent law doctrines often invoked to invalidate similar types of patents in the past: the so-called "mathematical algorithm" and "business method" exceptions.

## Patentable Subject Matter

In general, laws of nature, natural phenomena and abstract ideas, are not patentable subject matter. Mathematical algorithms are themselves abstract ideas that, standing alone, are not patentable subject matter. However, when mathematical algorithms are applied in a useful manner, they are deemed to be patentable.

The prohibition on obtaining patents on inventions using or involving mathematical algorithms has been steadily eroding over the years in the computer software field.

The erosion of this exception has proceeded hand-in-hand with a gradual strengthening of U.S. patent protection and increase in the types of patentable subject matter. American patents have become increasingly valuable and reliable since the establishment of the CAFC in 1982, which strengthened and unified the protection afforded to issued U.S. patents.

In addition, patent law has been expanded and clarified in recent years to cover software inventions and other new forms of innovation.

## PTO's Shifting Position

For example, at one time the courts and the Patent and Trademark Office insisted that inventions implemented in computer software be characterized as either methods or machines. The PTO retreated from this position several years ago, however, and now permits patents directed to computer programs stored on a recording medium, such as a floppy disk, hard drive, tape or CD-ROM.

It also appears now that patents may be directed to computer programs embodied in a signal being propagated through some medium, such as a fiber-optic cable or the Internet.

The PTO had looked with suspicion on inventions that were directed to transforming data from one form to another. However, the CAFC ruled in the 1992 case *Arrhythmia Research Technology Inc. v. Corazonix Corp.*, 958 F.2d 1053, 22 USPQ2d 103 (Fed. Cir. 1992), that a transformation of electrocardiograph signals from a patient's heartbeat by a machine through a series of mathematical calculations constituted a practical application of an abstract idea (the mathematical algorithm), because it corresponded to the condition of a patient's heart (a useful, concrete or tangible thing).

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Similarly, a 1994 case held that a machine that transforms data through a series of mathematical calculations to produce a smooth waveform display on a monitor is a practical application of a mathematical algorithm, because the machine provides a useful, concrete, and tangible result, the smooth waveform.

Thus, the transformation of signals through mathematical calculations, so long as the signals represented a useful, concrete or tangible thing, constitute patentable subject matter.

However, until State Street, it was unclear whether it is a "practical application" of an abstract idea to transform input numbers to generate output numbers representative of price, cost, profit and loss.

Extending the holding of Arrhythmia and other cases, the CAFC held in State Street that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, is patentable subject matter.

Thus, a computer programmed to calculate a certain price or cost in accordance with a particular mathematical algorithm is a machine that constitutes patentable subject matter. (Of course, other requirements, such as novelty and non-obviousness, must also be met in order to obtain a patent.)

In other words, inventions that involve inputting, calculating, outputting and storing numbers (representative of some quantity like price) are no longer necessarily non-statutory subject matter under the mathematical algorithm exception.

## Business Method Exception

The other doctrine in the patent jurisprudence which had been cited as a reason for doubting the validity of patents directed to financial instruments and methods is the so-called business method exception.

This exception is generally held to deny patentability for a particular way of doing business, which is not embodied in physical process steps. The CAFC concluded that this judicially-created exception to statutory subject matter is ill-conceived and unnecessary, and therefore should be laid to rest.

The court noted that there has actually never been a case decided by the CAFC or its predecessor, the Court of Customs and Patent Appeals, in which the business method exception was relied on to deem an invention unpatentable. Rather, in every case where a "business method" was found unpatentable, the decision was based on some other ground such as the abstract idea exception based on finding a mathematical algorithm.

The court held that the question of whether a method of doing business is patentable should be treated like any other method claims.

State Street clearly establishes for the first time that patents directed to financial instruments constitute statutory subject matter.

As a matter of patent drafting, such patents will ordinarily be characterized as computers adapted to carrying out a specific process; methods for carrying out a specific process; and computer programs recorded on storage

carrying out a specific process, and computer programs recorded on storage media and embodying the process.

In each case, the process steps will be the factor that defines the invention, as other portions will refer to general-purpose computer technology.

As a result of this decision, more innovations of economists, accountants, bankers and the like will be protectable by patent. Thus, the financial services and related industries will start to adopt some of the patent-related practices of the electronics industry and other technology-intensive industries.

For example, proposed new financial products and customer services will be reviewed for potential patentability, and will be the subject of patent applications. Financial services companies will be in the position of reviewing employment agreements with their creative employees to ensure that patent rights are properly vested in the company.

New developments will also be reviewed for possible infringement of existing patents. Patent licensing and infringement litigation will likely become commonplace.

Even financial services companies that do not see patent acquisition and enforcement as beneficial for protecting their own products and services may consider acquiring a patent portfolio for defensive reasons.

Financial services companies that already hold patents will likely be reviewing them anew.

No matter what the exact results, the ramifications of State Street will likely be felt for years to come in the financial sector, as well as in the patent law field. It can only be hoped that this collision of the patent and financial worlds will generate more light than heat.

*Robert E. Rosenthal, a partner in the [Philadelphia](#) office, practices in the areas of domestic and international trademarks, patents and trade secrets and related transactional issues.*

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