

Protecting Software

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Brief Historical View

- The fundamental threat to non-open source software companies is that someone is illegally copying their program and not paying for it.
- Before the 1980s when mainframes dominated, most software programs were sold by businesses to businesses (B2B) and enforced through contract.
- During the 1980s, with the growth of personal computers and sales to individuals, a series of cases and lobbied for changes in the Copyright law and policies in the United States Patent Office, allowed software companies to protect their software programs through Copyright and Patents (Bill Gates often complained about how people were stealing MS-DOS).
- In the late 1990s, with peer-to-peer file sharing programs, new laws were enacted to make illegal anyone who tries to circumvent, hack, or jailbreak any type of control access on copyrighted works. Digital Millennium Copyright Act (1998).
- The legal and technological protections for software change with the way people access these programs and digital content.



Multipronged Strategy

Technological	Legal
Encryption	Copyright
Obfuscation	Trademark
Tamper-proofing	Click-Wrap (User) Agreement
Verification	Confidentiality Agreement
Watermarking	Trade Secret
Cloud Computing (Distributed Architecture)	Patent

When it comes to protecting software, companies pursue a combination of the above strategies. The decision usually comes down to the cost-effectiveness of pursuing any one of these strategies.



Legal Protections for Software

- Patent
- Trade Secret
- Confidentiality Agreement
- Trademark (Registered)
- Copyright (Registered)
- Click-Wrap (User) Agreement
- Trademark (Unregistered)
- Copyright (Unregistered)



Increasing Difficulty
and Expense to Obtain



Copyright

- Copyright is **automatic** and registration is voluntary.
- Protection is provided to an author of
 - “original works of authorship,” including literary, dramatic, musical, artistic, and certain other intellectual works; and
 - Is fixed in tangible form of expression.
- You cannot copyright facts or information but can copyright the form of expression of those facts or information. For example:
 - You cannot copyright facts in a news article, but you can copyright the form of expression, i.e., style and organization, of the news article.
- Protection is life of the author plus 70 years.



Copyrighting Software

- The Copyright Act provides that “[a] computer program is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result.” 17 U.S.C. § 101, Definitions.
- You can copyright:
 - The structure, sequence and organization, i.e., expression, of the source and object code; and
 - The creative, decorative and design elements of an interface.
- You cannot copyright:
 - The idea, process, method, functionality, or system underlying the software program (these maybe protectable under patent).



Copyright Registration

- Registration with the U.S. Copyright Office is not required but has benefits:
 - Registration establishes a public record;
 - Necessary for bringing a lawsuit;
 - If registration is made within three months of publication, owner is entitled to statutory damages (\$300-\$150,000 per infringed work) and attorney's fees. Otherwise, only actual damages and loss profits; and
 - Registration with the U.S. Customs Office to prevent importation of copies.



Designing Around the Copyright

- To state in simple terms, in order to enforce a copyright, the copyright owner must prove that the accused infringer illegally “copied” the software.
- Independent creation is a defense against copyright infringement even if the accused work is substantially similar to the software program.
- Moreover, because there are many ways to program for a specific result, many would-be defendants design around a copyrighted software program by changing the structure, sequence and organization in a meaningful way. The would-be defendants care about the functionality of the program which is not protectable under a copyright, but may be protectable under a patent.
- Thus, while copyrighting software is relatively easy, the protection afforded by copyright is not as strong as patents.



Trademark

- A trademark is a word, symbol, device, or other designation that serves to identify the source of goods or services (simply called a “mark”).
- You get a trademark by actively using the mark in commerce and in connection with goods or services.
- While registration with the state or the United States Patent & Trademark Office (USPTO) is not necessary, registration with the USPTO provides a lot of benefits:
 - Presumption of validity;
 - Federal jurisdiction;
 - Constructive notice;
 - Basis for registration in foreign countries;
 - Registering with Customs; and
 - Use of symbol ®.



Trademark Strength: Distinctiveness

- Coined/fanciful terms (Symantec).
- Arbitrary (Java).
- Suggestive (Angry Birds).
- Descriptive (TurboTax).
- Secondary meaning:
 - Java for Computing Language; and
 - Surname: Norton's Antivirus.
- Generic words cannot become trademarks: “App” for application cannot be a trademark, but there is a live dispute whether “App Store” can be a trademark. Apple v. Amazon.



Trademark Software Example

- RIMM, maker of the Blackberry, initially named its 2012 operating system “BBX” which was supposed to compete with iOS (iPhone) and Android.
- On Nov. 30, 2011, Basis Int’l (a 26 year old software company) filed for a temporary injunction to stop RIMM from using BBX as the name for its new operating system. Basis has two registered trademarks for BBX for software tools to help developers build scalable and platform-independent software programs.
- On Dec. 6, 2011, a federal court in New Mexico granted the temporary injunction, finding that RIMM’s use of BBX would cause confusion.
- Realizing that it would ultimately lose, RIMM changed the name to Blackberry 10.
- Key points:
 - A trademark will protect the “name” by at least requiring the defendant to change the name in order to stop any confusion regarding the source and origin of the goods and services. However, the defendant can continue to provide goods and services using a different name.
 - A successful patent case can stop a defendant from continuing business if a critical part of their business infringes the patent. Most high stakes intellectual property litigation where one party can destroy a line of business of another involves claims of patent infringement.
 - For example, in NTP v. RIMM, from 2000 to 2006, RIMM lost one battle after another against NTP where NTP ultimately won a judgment for patent infringement and had an injunction that could have stopped RIMM from operating for a significant amount of time. RIMM eventually settled for \$612.5 million.



Click-Wrap (User) Agreement

- Agreements that appear and require user acceptance before installing and/or using a software program from a disk, download, on the cloud, etc.
- Contract of adhesion: a take-it or leave-it basis.
- Provide terms and conditions for installation or use.
- Typical terms and conditions include:
 - Term and duration (i.e., 3 years on Quicken);
 - Permitted uses (i.e., what the program was designed to do);
 - Prohibited uses (i.e., cannot send spam via Outlook);
 - Limitations on liability (i.e., if program fails, user limited to a partial or full refund); and
 - Agreements to share personal information (i.e., tracking software for providing advertisements and promotions).



Confidentiality Agreements

- Agreements between two parties that define what types of information should be kept confidential;
- Are usually between:
 - Employer and employees or contract workers;
 - Business partners, including suppliers, potential buyers, consulting firms, etc.Where certain proprietary information is needed in order to conduct business for the owner of the proprietary information.
- Terms and conditions often include:
 - Covered proprietary information;
 - How and under what circumstances the proprietary information may be used;
 - Period for keeping confidential;
 - Measures to keep information confidential; and
 - Recourse for failure to keep confidential.
- Because confidentiality agreements allow the parties to define what information is confidential, the coverage on the types of information to be protected is broader than a trade secret.
- But confidentiality agreements only bind the parties.
- A confidentiality agreement is usually a prerequisite for obtaining a trade secret.



Trade Secrets

The Uniform Trade Secrets Act ("UTSA") defines a trade secret as:

- information, including a formula, pattern, compilation, program, device, method, technique, or process,
- that derives **independent economic value**, actual or potential, from **not being generally known** to or **readily ascertainable** through appropriate means by other persons who might obtain economic value from its disclosure or use; and
- is the subject of **efforts that are reasonable** under the circumstances to **maintain its secrecy**.
- Note: a trade secret is a special form of proprietary, confidential information.



Protecting Trade Secrets

Owner must take reasonable steps to maintain its secrecy by employing:

- Technology practices:
 - High security procedures;
 - Security system testing, i.e., white-hacking; and
 - Encryption, obfuscation and passwords.
- Business practices:
 - Thorough hiring process of trustworthy employees;
 - Thorough interview process with trustworthy business partners;
 - Compartmentalize confidential information;
 - Stamping documents and materials as “confidential”; and
 - Share confidential information on a need-to-know basis.
- Legal practices:
 - Confidentiality agreements with employees and business partners; and
 - Regular reminders to employees regarding confidentiality obligations.



Trade Secrets

- Recourse against misappropriation (acquisition or use) of the “trade secret” by **improper means**.
 - Improperly acquiring the information
 - “[T]heft, bribery, misrepresentation, breach or inducement of a breach of a duty to maintain secrecy, or espionage through electronic or other means.” Uniform Trade Secrets Act.
 - Improperly using the information
 - Employee obtains secret legally but uses that information for personal gain; or
 - Knowingly using a trade secret that was negligently or accidentally disclosed (Example, finding prototype of the next iPhone in a bar).
- No recourse against those who discover the secret by **proper means**:
 - Reverse engineering;
 - Independent discovery or observation, i.e., putting 2+2 together from public information; or
 - Obtaining information from someone not obligated or no longer obligated to keep secret:
 - Former employee whose non-compete, confidential agreement has expired (usually in force for between 1-5 years) and where the agreement covers trade secrets; or
 - Learning from a mutual business partner or customer whose has no confidentiality agreement with trade secret owner.



Trade Secrets in Software

- Cloud computing, distributed architecture, and Software as a Service (SaaS) provide great environments for maintaining the secrecy of a trade secret.
 - Because all valuable processes, methods, functionality, maintenance, updates, etc., can be done remotely and hidden from end-users.
- Google maintains many of its search algorithms as trade secrets because disclosure of these algorithms will allow companies to exploit them and artificially raise the companies' ranking on search results.
- Trade secrets last as long as they are kept secret.
- For software, without proper and sufficient technological security measures, such as obfuscation and encryption, executable programs are vulnerable to reverse engineering. If a trade secret is reversed engineered, it loses its protection.



Patent

- An intellectual property right granted by the U.S. Government to an inventor:
 - “**to exclude** others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States”;
 - for a period of 20 years from date of application;
 - in exchange for public disclosure of the invention when the patent is published or granted.
- A patent is **not a right to use or practice** the invention.
 - In the real world, there are many inventive ways to do the same thing. If someone else also has a patent on your invention, they can prevent you from making the invention. Your patent does not give you the right to make the invention but only to exclude others.
- Patent protection is stronger than Trademark & Copyright:
 - If competitor’s accused product is substantially similar, patent owner can stop competitor from using the infringing product.
 - No fair use defense (medical exceptions); every use is an infringing use.
 - No need to prove confusion (TM) or copying (C).



Three Patent Types:

- **Utility patents** may be granted to anyone who invents or discovers any new and useful process, machine, article of manufacture, or composition of matter, or any new and useful improvement.
- **Design patents** may be granted to anyone who invents a new, original, and ornamental design for an article of manufacture; and
- **Plant patents** may be granted to anyone who invents or discovers and asexually reproduces any distinct and new variety of plant.



Software is a Utility Patent

Utility Patent Requirements:

- **Utility** (35 U.S.C. § 101):
 - “[A]ny new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement. . .”.
 - Does what it intends to do
- **Novelty** (35 U.S.C. § 102), No patent if invention was:
 - Described in a single prior art reference;
 - In public use by inventor or someone else for more than 1 year before application; or
 - Invented by someone else who abandoned, suppressed or concealed the invention.
- **Non-obviousness** (35 U.S.C. § 102), No patent if:
 - The difference between invention and a combination of prior art references are obvious to someone who is skilled in that particular industry.
- **Full and Particular Description** (35 U.S.C. § 112):
 - Written description; and
 - Best mode.



Software & Business Method Patents

Bilski v. Kappos (Supreme Court 2010)

Issue: whether a business method for explaining how buyers and sellers of commodities in the energy market can protect, or hedge, against the risk of price changes may be patentable?

Patentable Subject Matter	Unpatentable Subject Matter
Processes (Bilski)	Laws of nature
Machines	Physical phenomena
Manufactures	Abstract ideas (Bilski)
Compositions of matter	
Example: Amazon 1-Click	Example: $E = MC^2$



Bilski v. Kappos

- Explained the “process” is broadly defined;
- “Machine-or-Transformation” test is not exclusive;
- Claims in the patent-at-issue for hedging risk are not patentable because they were abstract ideas; and
- Reaffirmed that business method patents, and implicitly software, are patentable if they meet all other criteria.



U.S. Patent & Trademark Office

- Issued Interim Guideline for patenting business methods in light of *Bilski*
- Two general guidelines as investigative tools:
 - Machine or transformation test; and
 - Proof that an abstract idea has been reduced to practical applications.



Patent Example: Amazon 1-Click

United States Patent [19]

Hartman et al.

[54] **METHOD AND SYSTEM FOR PLACING A PURCHASE ORDER VIA A COMMUNICATIONS NETWORK**

[75] Inventors: **Peri Hartman; Jeffrey P. Bezos; Shel Kaphan; Joel Spiegel**, all of Seattle, Wash.

[73] Assignee: **Amazon.com, Inc.**, Seattle, Wash.

[21] Appl. No.: **08/928,951**

[22] Filed: **Sep. 12, 1997**

[51] Int. Cl.⁶ **G06F 17/60**

[52] U.S. Cl. **705/26; 705/27; 345/962**

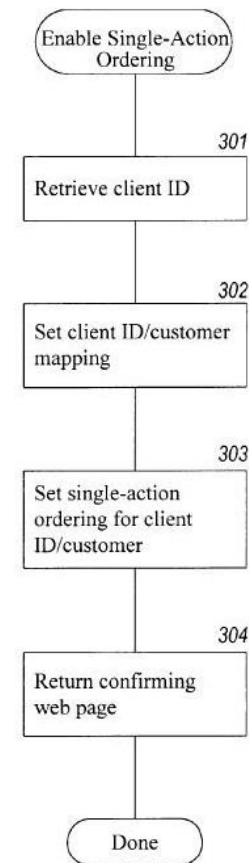
[58] Field of Search **705/26, 27; 380/24, 380/25; 235/2, 375, 378, 381; 395/188.01; 345/962**

U.S. Patent

Sep. 28, 1999

Sheet 5 of 11

5,960,411



Amazon 1-Click History

- Sept. 12, 1997: Amazon filed its patent application for the 1-Click program;
- Sept. 28, 1999: the USPTO granted the patent;
- May 12, 2006, the USPTO ordered a reexamination of the patent;
- October 9, 2007, the USPTO confirmed claims 6 to 10 and rejected claims 1 to 5 and 11 to 26 of the patent;
- November 2007, Amazon amended the broadest claims, claims 1 and 11, by restricting the invention to “a shopping chart model”; and
- March 2010, USPTO confirmed the amended claims 1 and 11.



USPTO Confirmed 1-Click

US 5,960,411 C1

1
EX PARTE
REEXAMINATION CERTIFICATE
ISSUED UNDER 35 U.S.C. 307

THE PATENT IS HEREBY AMENDED AS
INDICATED BELOW.

Matter enclosed in heavy brackets [] appeared in the patent, but has been deleted and is no longer a part of the patent; matter printed in italics indicates additions made to the patent.

AS A RESULT OF REEXAMINATION, IT HAS BEEN
DETERMINED THAT:

The patentability of claims **6-10** is confirmed.

Claims **1** and **11** are determined to be patentable as amended.

Claims **2-5** and **12-26**, dependent on an amended claim, are determined to be patentable.

1. A method of placing an order for an item comprising:
under control of a client system,
displaying information identifying the item *purchasable through a shopping cart model*; and
in response to only a single action being performed, sending a request to order the item along with an identifier of a purchaser of the item to a server system;

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under control of a single-action ordering component of the server system,
receiving the request;
retrieving additional information previously stored for the purchaser identified by the identifier in the received request; and

generating an order to purchase the requested item for the purchaser identified by the identifier in the received request using the retrieved additional information; and
fulfilling the generated order to complete purchase of the item

whereby the item is ordered without using [a] *the shopping cart [ordering] model*.

11. A method for ordering an item using a client system, the method comprising:

displaying information identifying the item *purchasable through a shopping cart model* and displaying an indication of a single action that is to be performed to order the identified item; and

in response to only the indicated single action being performed, sending to a server system a request to order the identified item

whereby the item is ordered independently of [a] *the shopping cart model* and the order is fulfilled to complete a purchase of the item.

* * * * *



1-Click: Claim 1

Claim 1. A method of placing an order for an item comprising:

under control of a client system,

displaying information identifying the item ***purchasable through a shopping cart model***; and

in response to only a single action being performed, sending a request to order the item along with an identifier of a purchaser of the item to a server system;

under control of a single-action ordering component of the server system,

receiving the request;

retrieving additional information previously stored for the purchaser identified by the identifier in the received request; and

generating an order to purchase the requested item for the purchaser identified by the identifier in the received request using the retrieved additional information; and

fulfilling the generated order to complete purchase of the item

whereby the item is ordered without using the shopping cart model.



Comparison Chart

	Pros	Cons
Copyright	Automatic and long life	Easy to design around
Trademark	Can be automatic but registration recommended	Value and life depends on active use and brand building
Click-Wrap Agreement	Simple agreement and freedom to define	Binds only those who agree
Confidentiality Agreement	Freedom to define	Binds only those who agree
Trade Secret	Binds anyone who improperly uses or acquires trade secret	Requires reasonable efforts to keep secret and vulnerable to reverse engineering
Patent	Prevents anyone from practicing the underlying business method/process	Complicated process to obtain and requires public disclosure



Mutually Exclusive and Non-exclusive

- Because a trade secret is mutually exclusive to a registered copyright, trademarks or patents, the first decision is whether to keep the software program:
 - (1) secret or
 - (2) publicly disclose and register the program.
- If you decide to publicly disclose the software program, assuming the program meets all the criteria for copyright, trademark and patent, then the decision is based on the costs for obtaining any of these protections.
 - Because registering a copyright and trademark is inexpensive relative to the development cost for software, it is often economical to apply for these types of protection.
 - Click-wrap agreements are relatively simple and can be embedded in any program that it is also an inexpensive way to protect software.
 - Whether to apply for a patent requires more consideration:
 - Likelihood of getting a patent;
 - The scope and coverage of the patent; and
 - Because software advances so quickly and the life of a program so short, whether the time and cost for applying for patent is worth the short time in market lead.



General Trends

Because the different types of Intellectual Property protections have different costs and benefits:

- Universities and non-profits rely more on copyright protection than patents;
- Corporations employ all forms of IP protections and spend a lot of money building a patent portfolio; and
- Almost all venture capital firms will only fund start-up companies with patents because of the monopoly-like protection of patents its accompanying barriers to entry on competition.



Prediction

- With the growth of cloud computing, it is likely that trade secret and confidentiality agreements will grow in importance in the Software space.
- Companies will require employees to sign confidentiality agreements and post-termination non-compete agreements to prevent former employees from sharing the companies' secrets and confidentiality information with the employees' new employer (often a competitor).



Questions?



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