

Software Patents

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Disclaimer

This presentation is intended to provide general information only, and is for educational purposes. It is not intended as legal advice and cannot be relied upon as such.

Patent law is a complex subject, and in addition is constantly changing and evolving. Persons should seek professional legal advice regarding their specific fact situation.

Abstract

- This talk provides an introduction to software patents, and addresses problems in patenting software and algorithms. It suggests possible solutions and directions.
- This talk is based on the following paper presented at the SWSTE 2012 conference:

**Asher Wilk, Patentability of Software,
2012 IEEE International Conference on Software Science,
Technology & Engineering (SWSTE 2012), June 2012**

Talk Outline

- **Protecting Intellectual Property**
- **Introduction to Patents**
- **Patentability (in the U.S.)**
- **Patentability of Software**
- **Patenting Business Methods**
- **Software Patents in Europe**
- **Pros and Cons of Software Patents**
 - **The Controversy Regarding Software Patents**
- **Problems and Possible Directions**
- **Summary**

How to Protect Software?

- Some computer software can be protected by multiple mechanisms:
 - **Patent**
 - **Copyright** (source or object code)
 - Does not protect methods of operation
 - **Trade secret**
 - No protection against reverse engineering
 - **Contracts**

What is a Patent?

- A Patent is an exclusive **monopoly** granted by a Government to an inventor over his invention for a limited period of time.
 - **Limited time** (typically 20 years).
 - **Limited territory** (issuing country).
 - The patentee is given a market monopoly and the **invention is disclosed to the public.**



Copyright	Patent
Copyright does not protect ideas. It protects expression	Protects ideas that have been reduced to practice
Long term protection	Short term protection
Fair Use	No Fair Use
Protects against copying	Innocent infringement not a defense
Protection is automatic (no formalities)	Extensive examination process
Originality	Novelty and Nonobviousness

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Why Get a Patent?

- **Secrecy protection is sometimes impossible**
- **Non-secret inventions can be copied** at low cost forcing market price down to levels not justifying investments of investors.
 - **The free rider problem**
- Patents are valuable to start-up companies to **attract investments.**

Historical Background

- Venice, Italy 1474 - first patent law
- England 1561 (Elisabeth I) letters patent
 - Abuse of the system
 - Case of Monopolies [Darcy v. Allin]
 - Statute of Monopolies 1624
- U.S. 1790 – patent act. U.S. 1836 - 1st modern patent act
- U.K. 1883 – 1st modern patent act



What Can Be Patented?

In the United States:

- Utility patents
 - Machine
 - Composition of matter (pharmaceuticals)
 - Method, Process
 - **Software, Method of doing business**
 - An article of manufacture
 - An improvement of an invention that fits within one of the first four categories
- Design patents
- Plant patents

What is a Business Method?

- The expression "business methods" refers to a broad category of subject matter which often relates to financial, marketing and other commercial activities
- Business methods are frequently implemented using computers
- Historically, “methods of doing business” were not patentable until the court case State Street Bank & Trust Co. v. Signature Financial Group, Inc. (1998)

What Can Not Be Patented?

In the United States:

- Laws of nature (e.g., law of gravity)
- Abstract ideas (e.g., mathematical formulas)
- Physical phenomena.

See: *Gottschalk v. Benson*, 409 U.S. 63 (1972);
Parker v. Flook, 437 U.S. 584 (1978); and
Diamond v. Diehr, 450 U.S. 175 (1981).

Patent Specification

- A utility patent application must satisfy very stringent standards
 - Abstract, Background, Summary of invention
 - Brief description of Drawings, Drawings
 - **Brief description of the preferred embodiments**
 - **Claims** - describe legal rights of the patent owner
- A patentee seeks to maximize the scope of patent, whereas the public benefits from limiting the scope so that more inventions can be brought out.
 - Designing around a patent

What do you get?

- **True or False:** If I got a patent, am I free to manufacture and sell my invention?

False

- A patent is a “**negative right**” – it gives the **right to exclude** others from practicing your invention
 - Making, using, selling, offering for sale, importing
- You may not be able to practice the invention
 - Someone else may have a broader patent.
 - Broad patents may block the use of rights granted by narrower (“improvement”) patents.

(Patent) Law is Territorial

- Example: [Harvard Transgenic Mouse \(Oncomouse\)](#)
 - U.S. patent (1988) Transgenic non-human mammals
 - Europe: Moral issues.
 - European patents will not be granted for inventions which would be contrary to the 'ordre public' or morality.
 - Canada: The claim involving the mouse itself is not patentable.
 - Court Decision: The Question is whether the words "[manufacture](#)" and "[composition of matter](#)", within the context of the Patent Act, are sufficiently broad to include higher life forms. Conclusion: higher life forms are not patentable.

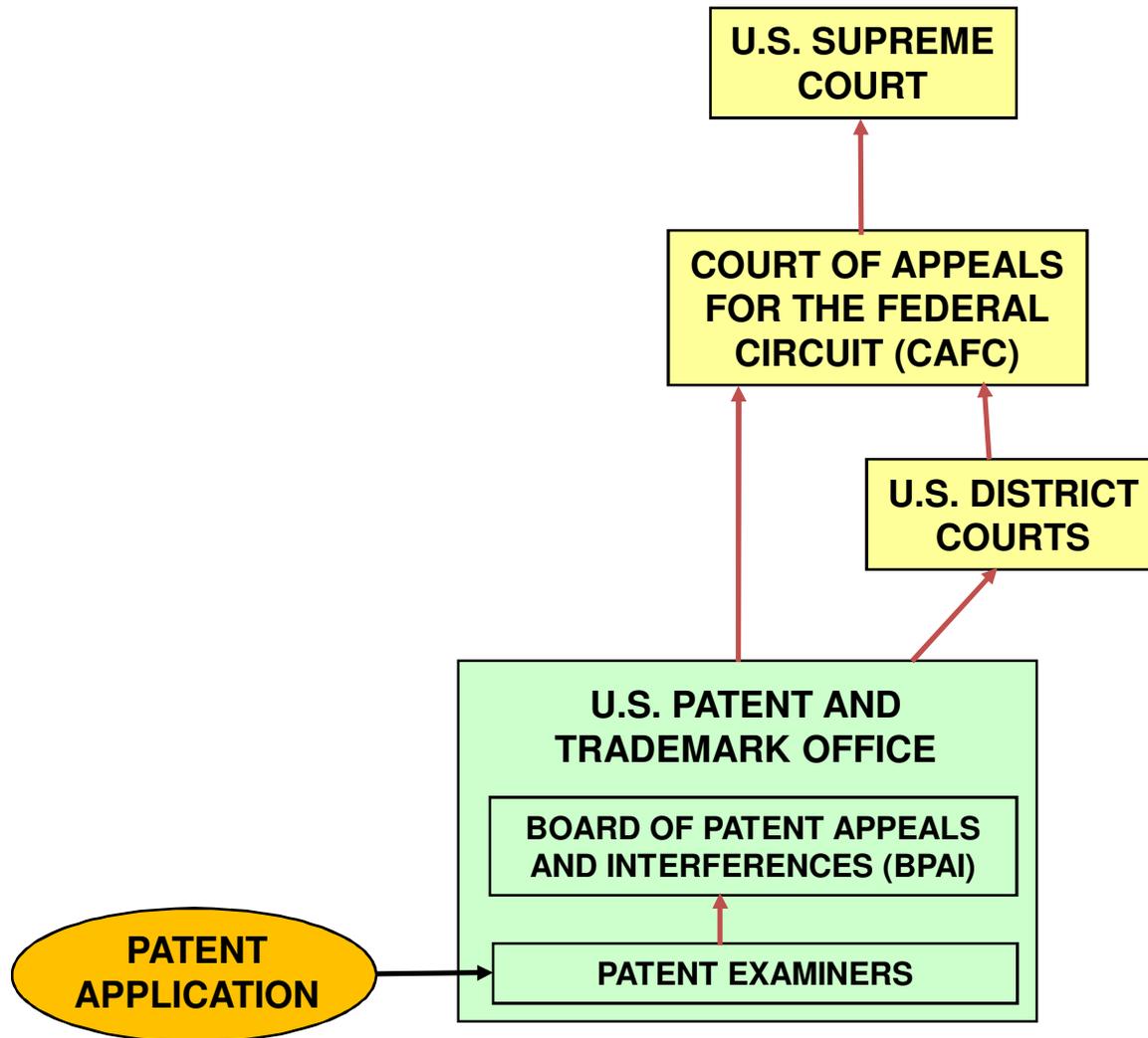
Harmonization is Difficult

- The are differences among countries
 - in patenting software, algorithms and business methods
 - in law (interpretation), culture, interests, politics
 - between developing countries and industrialized countries
- Patent Law Treaties
 - WIPO (<http://www.wipo.int/>)
 - TRIPS [World Trade Organization]: minimal standard.

Patent Litigation

- Claim interpretation
 - What did the words of the claims mean to one of **ordinary skill in the art** when the application was filed?
- Infringement
 - [35 U.S.C. § 271(a)]: “Except as otherwise provided in this title, whoever without authority **makes, uses, offers to sell, or sells** any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent”.
- Invalidity
 - Given the claim interpretation, is the claim valid?

U.S. Patent System



Patents Cost

- Cost in U.S. \$5,000 to \$15,000 per application
 - Patent drafting \$5000-\$7500
- “The minimum cost of taking a relatively simple patent infringement lawsuit through trial would be **half a million dollars**”

[M. H. Jester, Patents and Trademarks Plain & Simple, page 124]

- RIM v. NTP
 - Research in Motion’s Blackberry product allegedly infringed NTP’s patents
 - Settlement: \$612,500,000

Talk Outline

- **Protecting Intellectual Property**
- **Introduction to Patents**
- **Patentability (in the U.S.)**
 - Utility
 - Novelty
 - Nonobviousness
 - Enablement
 - Patentable Subject Matter [35 U.S.C. §101]
- **Patentability of Software**
- **Patenting Business Methods**
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Constitutional Basis

U.S. Constitution Art. I, §8(8)

“Congress shall have Power ...

To promote the Progress of Science and **Useful Arts**,

By securing for Limited Times

to Authors

and Inventors

the exclusive Right

to their respective Writings and Discoveries.”

PATENT

COPYRIGHT

35 U.S.C. §101

(Patent Act 1952)

“Whoever invents or discovers any new and useful

1. process (method),
2. machine,
3. manufacture, or
4. composition of matter, or

Patentable Subject Matter

UTILITY

5. any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title”.

Subject Matter Eligibility - a “threshold” test

Exceptions: **laws of nature, natural phenomenon, abstract idea.**

35 USC §112

- Adequate written description
- Enablement

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

35 USC §102

- **Novelty**

- A necessary requirement in any patent system.
- The invention must be “new”.
- The invention must differ from existing public information disclosing the state of the art.
- Single prior-art reference.
- On September 16, 2011 President Obama signed the [‘America Invents Act’](#) into law. It changes 35 U.S.C. §102 and other sections. A major change: from ‘first-to-invent’ to ‘first-to-file’ (not yet effective).

A person shall be entitled to a patent unless —

(a) 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, or (b) ... (c) ...

[Notice: this is §102(a) before the AIA amendment]

What is Prior Art?

- Prior Art includes:
 - Patents
 - Patent application publications
 - Non-patent publications (e.g. scientific publications)
- Prior art search is used to determine whether inventions are novel and nonobvious.

35 USC §103 [Nonobviousness]

“(a) A patent may not be obtained ... if 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.”

Compare the invention as a whole to the prior art

- In the early 1980s, scientists at **3M** combined an adhesive (that seemed to be useless because it did not permanently stick) with note-sized paper to create **Post-It® notes**.
- The invention became a worldwide commercial success.
- This invention, however, was merely the combination of a glue (element A) with note-sized paper (element B). Both elements were in the prior art.
- Evaluating the invention part by part might have rendered this patentable invention obvious. Evaluating it "**as a whole**" shows that this new combination warranted an exclusive right.

Nonobviousness (Inventive Step)

- Nonobvious to whom?
- Nonobviousness is difficult to determine
- Framework for analyzing obviousness
 - Graham v. John Deere Co. (1966)
- The problem of **Hindsight bias**
 - Obviousness determination may occur years after the invention. This brings subjectivity into the examination.
- Teaching-suggestion-motivation (TSM) test
 - CAFC created TSM to carry out the Graham analysis.
 - Must be **some suggestion or teaching in the prior art** to combine elements shown in the prior art in order to find a patent obvious .

KSR v. Teleflex

- Teleflex claims KSR infringed on their patent
- KSR argued that it is not patentable because it is obvious
- DISTRICT COURT: Favor KSR (Basis: §103)
- APPEALS COURT: Favor Teleflex (Basis: TSM)
- SUPREME COURT: Favor KSR (Basis: §103)
TSM is not the exclusive test.

Supreme Court in KSR

- TSM is not to be employed in a rigid or formalistic manner.
 - Motivation could be found implicitly when it is obvious to try.
 - Electrical sensors are becoming a norm over mechanical connections in everything, so market pressure dictated that KSR putting a sensor on the pedal is obvious.
 - Combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.
- TSM test sets the patentability bar too low.
 - Allows too many trivial inventions to receive patent protection.
- Justice Kennedy: “A person of ordinary skill is also a person of ordinary creativity, not an automaton.”

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 - Gottschalk v. Benson
 - Diamond v. Diehr
 - State Street Bank v. Signature Financial
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Gottschalk v. Benson (1972)

- A method of converting signals from binary coded decimal (BCD) form into binary form.
- The supreme court considered the algorithm as an abstract principle and therefore unpatentable.
- **Supreme Court Decision (1972)**
 - Congress to determine whether computer software should receive patent protection.
 - Allowing the claims **would wholly pre-empt the underlying mathematical formula** and in practical effect would amount to a patent on the algorithm itself.

Diamond v. Diehr

- A method for operating a rubber-molding press under control of a computer program.
- The examiner:
 - the only **non-program steps** recited in the claims were "**conventional** and necessary to the process and cannot be the basis of patentability."
 - the claims sought protection of a **computer program** and were therefore directed to **non-statutory subject matter**.

Diamond v. Diehr (S.Ct. 1981)

- Claim must be directed to **practical and definite application** with a **useful result** (cure rubber).
- A Claimed **method** for operating a rubber-molding press is directed to statutory subject matter since the claims are directed to **an industrial process** of the type that has historically been eligible for patent protection.
- The fact that it uses **a programmed computer as a part of the process** to operate the press does not render the subject matter non-statutory.

Patenting Algorithms

- Algorithms in the abstract are not patentable
- An algorithm embedded in a general purpose computer becomes a patentable machine
[In re Alappat, 33 F.3d 1526 (Fed. Cir. 1994)]
- An example:
 - We found that claim ... does not seek to patent its mathematical algorithm in the abstract and is instead directed to a particular machine implementation of the mathematical algorithm.

An Example

- Title:US4464650: Apparatus and method for compressing data signals and restoring the compressed data signals
Country: US United States of America
Inventor: Eastman, Willard L.; Lexington, MA
Lempel, Abraham; Haifa, Israel
Ziv, Jacob; Haifa, Israel
Cohn, Martin; Arlington, MA
Assignee: Sperry Corporation, New York, NY
Published / Filed: 1984-08-07 / 1981-08-10
- References:
Ziv, "IEEE Transactions on Information Theory", IT 23-3, pp. 337-343, May, 1977. (7 pages)
Huffman, "Proceedings of the Ire", Sep. 1952, pp. 1098-1101.

State Street Bank & Trust Co. v. Signature Financial Group, Inc. (1998)

- Seminal court case on the eligibility of "**business methods**" under 35 U.S.C. §101.
- Claimed a programmed computer configured to **calculate various output financial data based on input data.**
- No "business method" exception under 35 U.S.C. §101.
- The patent had been held invalid by the District Court as directed to non-statutory subject matter.
 - an abstract idea, mental process

State Street Bank & Trust Co.
v. Signature Financial Group, Inc.

- Federal Circuit:
 - Mathematical formulas, equations, and algorithms are not statutory subject matter unless applied in some manner by the claimed invention to produce **"a useful, concrete, and tangible result."**

Software and business methods are patentable if the invention produced a **"useful, concrete, and tangible result"**

State Street Bank

- "[T]he **transformation of data**, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes **a practical application of a mathematical algorithm, formula, or calculation**" because the final share price produced is "**a useful, concrete, and tangible result.**"
- Statutory subject matter determinations involving **methods utilized in business** should be analyzed like any other process claims and not on whether the claimed subject matter does "business".

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 - **Bilski v. Kappos (Machine or Transformation Test)**
- **Software Patents in Europe**
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Bilski's Patent

- A method of hedging risk in trading commodities.
 - Claims not limited to operation on a computer.
 - One could think his method is yielding a useful, concrete tangible result.
- Examiner rejected the claims under 35 USC §101.
- BPAI affirmed the rejection:
 - Claims fail the “transformation” test.
 - Claims are “abstract ideas”
 - Not a “practical application” or “concrete and tangible result” under State Street.
 - “non-machine implemented” methods.

In re Bilski (2008)

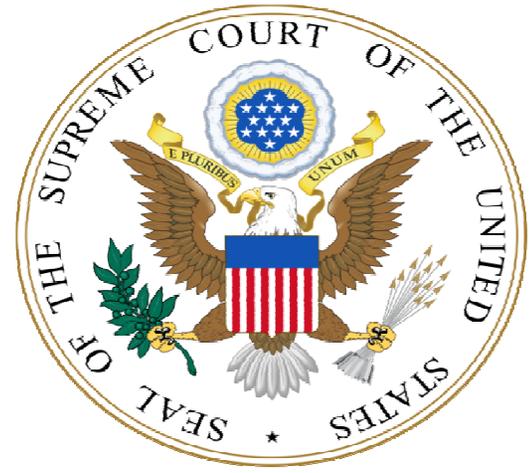
- CAFC (*en banc*) ruled that Bilski's method was unpatentable under a new rule called: **machine or transformation test.**
- “At present, and certainly for the present case, we ... reaffirm that the **machine-or-transformation test**, properly applied, is the governing test”
- Producing useful, concrete and tangible results is insufficient.

Machine or Transformation Test

- A claimed process is patent eligible under §101 if
 - (1) it is tied to **a particular machine** or apparatus, or
 - (2) it **transforms** a particular article into a different state or thing.
 - What is a particular machine?
 - Will Bilski's hedging method becomes patentable if he adds a computer?
 - What transformations will qualify? - Historically a “process” involved **physical transformation** of tangible materials, as in a chemical process.

U.S. Supreme Court Decision

Bilski v. Kappos



- Rejected calls to categorically exclude business methods – or any technology – from the scope of patent law.
- Rejected as the sole test of subject matter eligibility the “machine or transformation” test.
- Did not provide important additional guidance
- Did not provide a good explanation why Bilski’s invention was unpatentable

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European Patent Convention (EPC) Art. 52

- 52(1): European patents shall be granted for any **inventions**, in all fields of technology, provided that they are **new**, involve an **inventive step** and are susceptible of **industrial application**.

EPC Art. 52

- 52(2): The following in particular shall not be regarded as inventions within the meaning of paragraph 1:
 - a) discoveries, scientific theories and mathematical methods;
 - b) aesthetic creations;
 - c) schemes, rules and method for performing mental acts, playing games or doing business, and program for computers;
 - d) presentation of information.

EPC Art. 52

- 52(3): Paragraph 2 shall exclude the patentability of the subject-matter or activities referred to therein only to the extent to which a European patent application or European patent relates to such subject-matter or activities **as such**.

Technical Character

- The European Patent Office (EPO) first tests “technical character”. Then, novelty and inventive step.
- Guidelines for examination in the EPO
 - ... the invention must be of "technical character" to the extent that it must relate to a technical field (Rule 42(1)(a)), must be concerned with a technical problem (Rule 42(1)(c)), and must have technical features in terms of which the matter for which protection is sought can be defined in the claim (Rule 43(1)) (see F-IV, 2.1).

Technical Character

- Guidelines for examination in the EPO
 - The basic patentability considerations in respect of claims for computer programs are in principle the same as for other subject-matter. While "programs for computers" are included among the items listed in Art. 52(2), if the claimed subject-matter **has a technical character** it is not excluded from patentability by the provisions of Art. 52(2) and Art. 52(3).

Technical Character

- According to the Boards of Appeal (BOA)
 - An Invention must have a **technical character**.
 - Technical has no definition (intentionally).
Instead we have examples given by the BOA:
 - Processing physical data controlling industrial processes is technical.
 - Sales methods and Mathematical methods are non technical.

Technical Character

- **Look at the claim as a whole and ask whether it does have technical character.**
 - A machine, an article of manufacture, a process of operating a machine, are clearly of a technical nature.
 - If one feature of a claim has technical character, then the whole claim has technical character.
 - What characterizes a non-invention is its lack of technical character [T 258/03 (HITACHI)].
 - Any invention having a technical character would not be excluded. Then, the invention would have to satisfy the requirements of being novel and inventive step.

Vicom T208/84

- **Vicom T208/84** – computerized process for digitally enhancing images, which employ a particular mathematical method [a digital filter].
- The **technical contribution** was a **graphic display resulting from an algorithm**.
- In the early 1990s, the EPO would typically employ the **technical contribution approach**.
- The EPO would assess the contribution that the claimed invention made to the (closest) prior art and determine whether this contribution had technical character.

Pension Benefit Systems Partnership

T931/95 [2001]

- The patent was a business method implemented on a computer.
 - A straight forward translation of a financial system into a computer program.
- Technical Board of Appeal:
 - the contribution approach confused the examination for patentable subject matter with that of inventive step.
 - It should be possible to determine whether claimed subject matter does or does not have technical character without reference to the prior art or the contribution it makes. **Technical character is an inherent absolute property of a claimed invention.**
 - Board of Appeal decision: The claims **lacked technical inventive step.**

Hitachi/Auction Method T258/03 [2004]

- Any hardware approach

- An invention will not fall within any of the excluded categories, which are set out in Article 52(2), if it embodies or is implemented by some technical means (such as a computer).
- Anything carried out by a programmed computer forms an invention, whether claimed as a concrete entity or as an activity
- When an invention covers both technical and non-technical elements it should not be rejected under Art. 52 EPC.

Further Technical Effect - IBM T1173/97

- A method or program requires a **further technical effect** in order not to be considered a "computer program as such"
 - whenever you run a program on a computer, you have a technical effect (e.g. electrical currents).
 - According to [T 1173/97](#) this is not sufficient to avoid the exclusion from patentability.
 - However, if a computer program is capable of bringing about, when running on a computer, **a further technical effect** going beyond these normal physical effects, it is not excluded from patentability.

Further Technical Effect - IBM T1173/97

- A software invention has a further technical effect if:
 - it acts on physical data, e.g., processing control values of an industrial process (money, business data and text are not physical data); or
 - affects the way a computer operates: saving memory (e.g. file compression), increasing speed, improving the security of a process, improving the rate of data transfer, etc.
 - its structure involves technical considerations (implementation details).

The Problem Solution Approach

- Three stages (EPO guidelines)
 1. Determine the **closest prior art**
 - Item of prior art disclosing technical effects most similar to the invention (often has greatest number of common features with the invention).
 2. Establish **the objective technical problem**
 - How to modify or adapt the closest prior art to achieve the specific technical effects of the invention that are not in the closest prior art.
 3. Check obviousness
 - Would a skilled person in the art starting from the closest prior art knowing the objective technical problem arrive at the claimed solution in an obvious way.

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Why Software Should be Patentable?

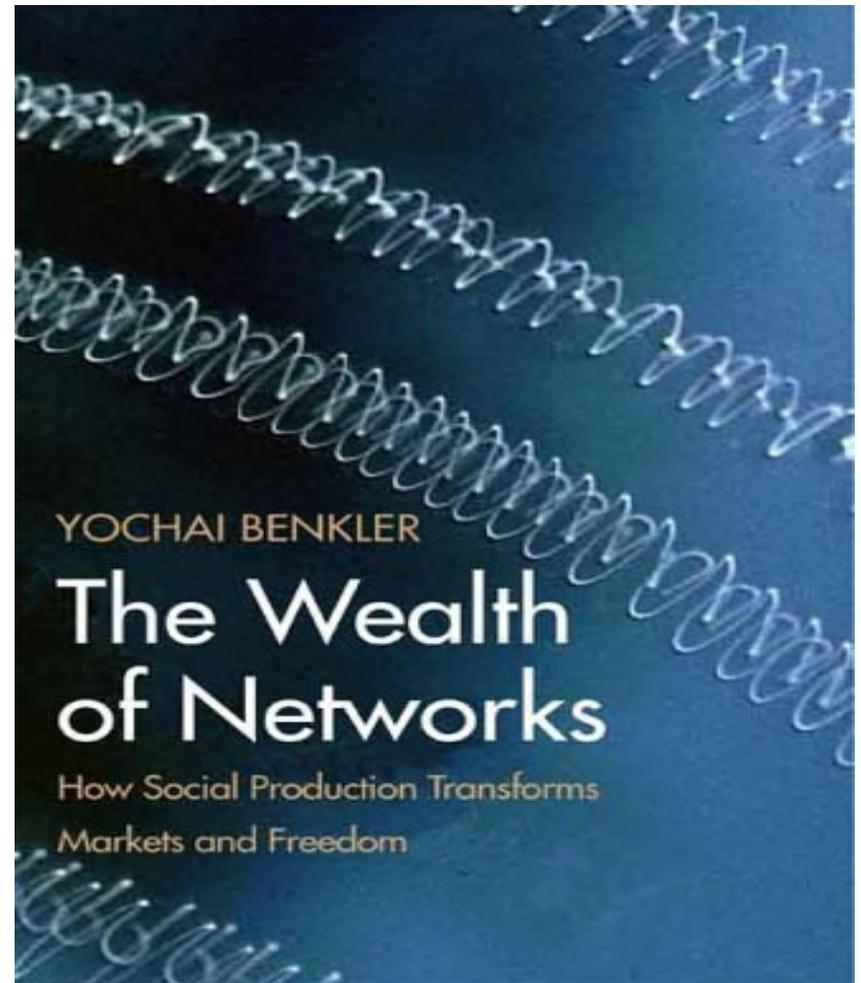
- To encourage innovation and develop the economy
 - Innovators are highly responsive to **monetary incentives**
 - patents are the most effective incentives.
- Why shouldn't software inventors be rewarded like others?
- To overcome the **free-rider problem**
- Patents are important when
 - R&D Costs are high
 - Competitors can easily perform “reverse engineering”
 - Technological advances can be mimicked by competitors rapidly and inexpensively

Arguments Against Software Patents

- Monopolies distort competition & Increase prices
- No evidence of increase in innovation
 - Many great software inventions without patents
 - Open Source software demonstrates that patents are not necessary
 - Some argued that patenting software reduces the overall level of innovation.

Views

- **“Innovation in software business has flourished without patents**, and there is no obvious reason to implement a new exclusive right in a market that seems to have been enormously innovative without it”
- Before 1981: GUI, linked lists, search algorithms, databases, word processing, spreadsheets, programming languages.



Arguments Against Software Patents

- 20-year term is too long for a fast moving industry
- Difficult to evaluate Novelty or Nonobviousness of software inventions
- Prior art may be hard to find in software
 - Algorithms may be buried in program code
- Prevents research
 - Research is cumulative; Need multiple licensing agreements

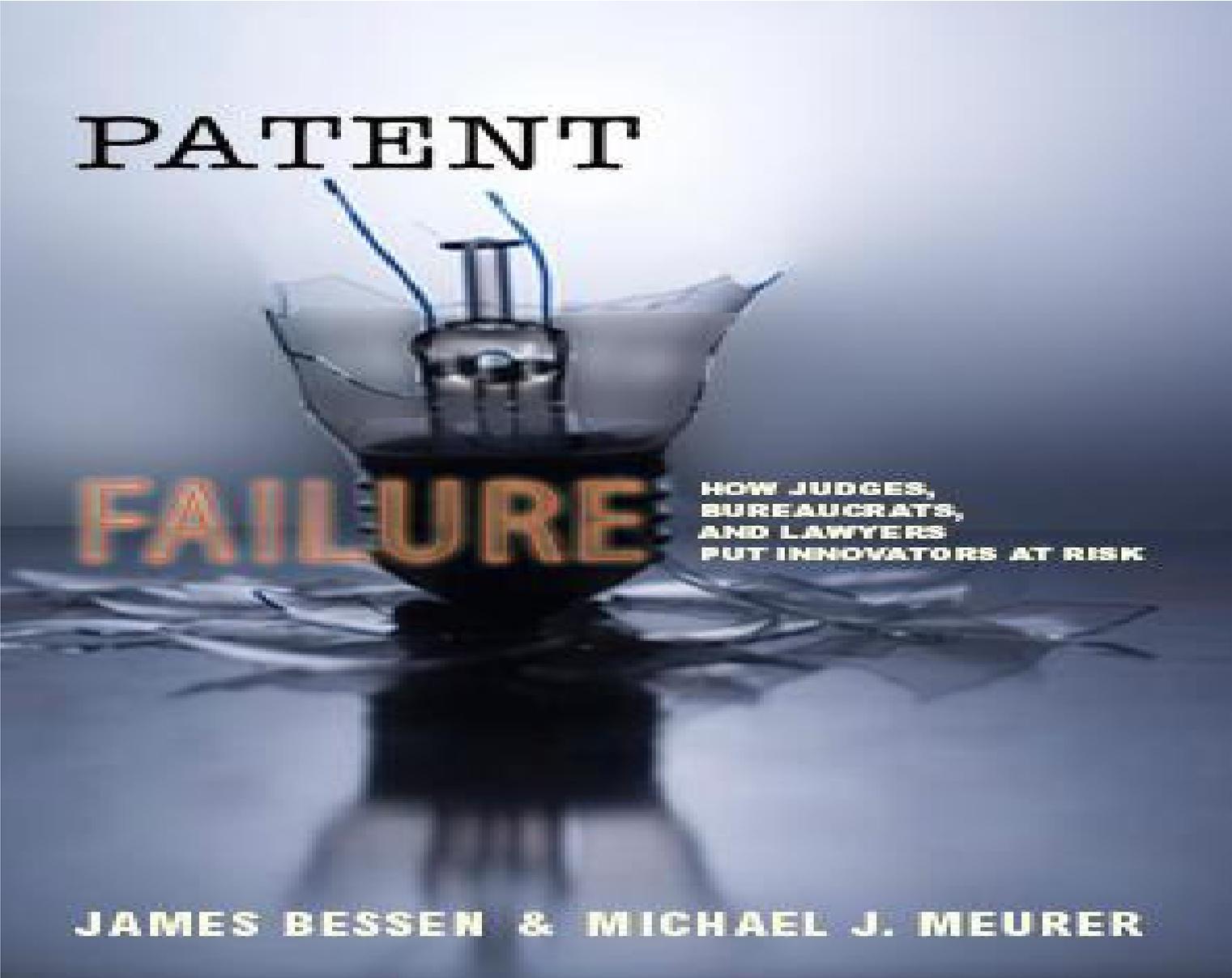
Arguments Against Software Patents

- Patents inhibit software development
 - Constant searching for infringement
- Software does not fit into the patent system.
- Patent litigation destroys small companies

Views

- Former Federal Circuit Judge Paul Michel
 - “... **How much [patents] retard [software] I'm not so sure. I hear a lot of anecdotes, a lot of scare stories. I'm a facts and figures guy.** I'm not for anecdotes and assumptions.”
 - fixing the patent system would require "a lot of very careful hard work from the lowest examiner to the top of the Supreme Court and all of the rest of them.”

<http://arstechnica.com/tech-policy/2012/05/top-judge-ditching-software-patents-a-bad-solution/>



PATENT

FAILURE

**HOW JUDGES,
BUREAUCRATS,
AND LAWYERS
PUT INNOVATORS AT RISK**

JAMES BESSEN & MICHAEL J. MEURER

Views

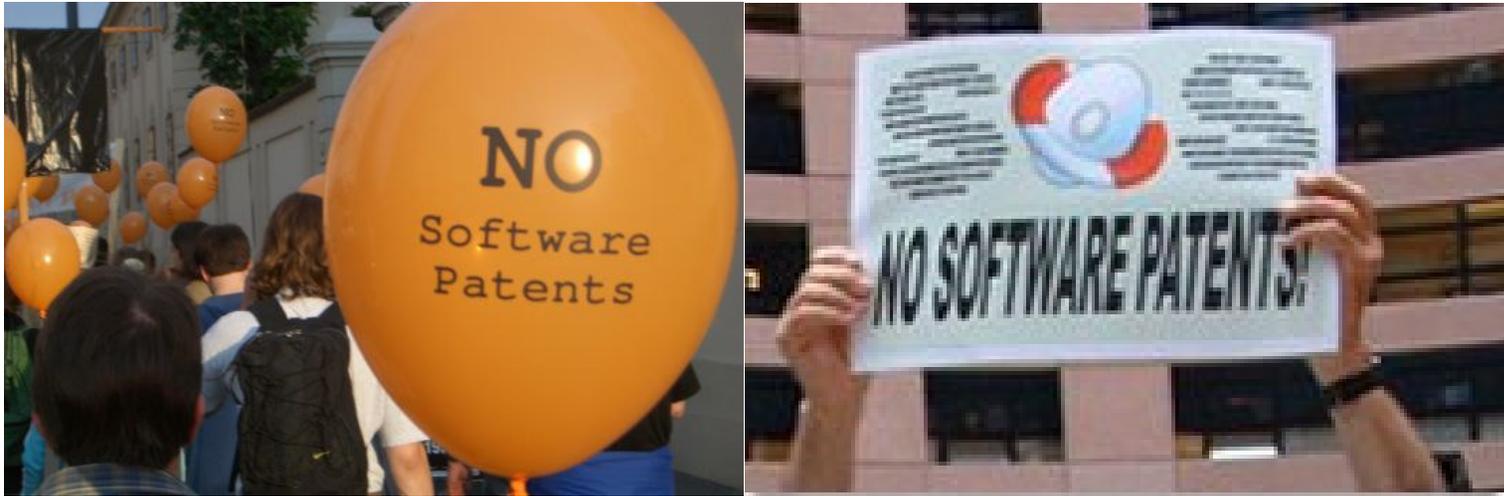
- ... The core problem with software patents is that this key principle has been tossed aside. Everyone in the software field has seen a parade of patents which do nothing but try to claim rights on techniques that have already been in use for years, let alone developments that while new, are still obvious to those of us with ordinary skills in programming.
 - <http://martinfowler.com/bliki/SoftwarePatent.html>
- Let's Limit the *Effect* of Software Patents, Since We Can't Eliminate Them
 - <http://www.wired.com/opinion/2012/11/richard-stallman-software-patents/>

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Debates about software patents

- **Proposal for a directive of the European Parliament and of the Council on the patentability of computer implemented inventions (initiated 2002)**
 - **Heated debates**
 - between various groups of software developers and companies,
 - between governments of countries with different interests,
 - between pro-IP and anti-IP groups.
- **Drastic amendments by the European Parliament, revision by the Council, second reading and rejection by the Parliament (in July 2005).**



<http://www.nosoftwarepatents.com/m/m/dangers/index.html>

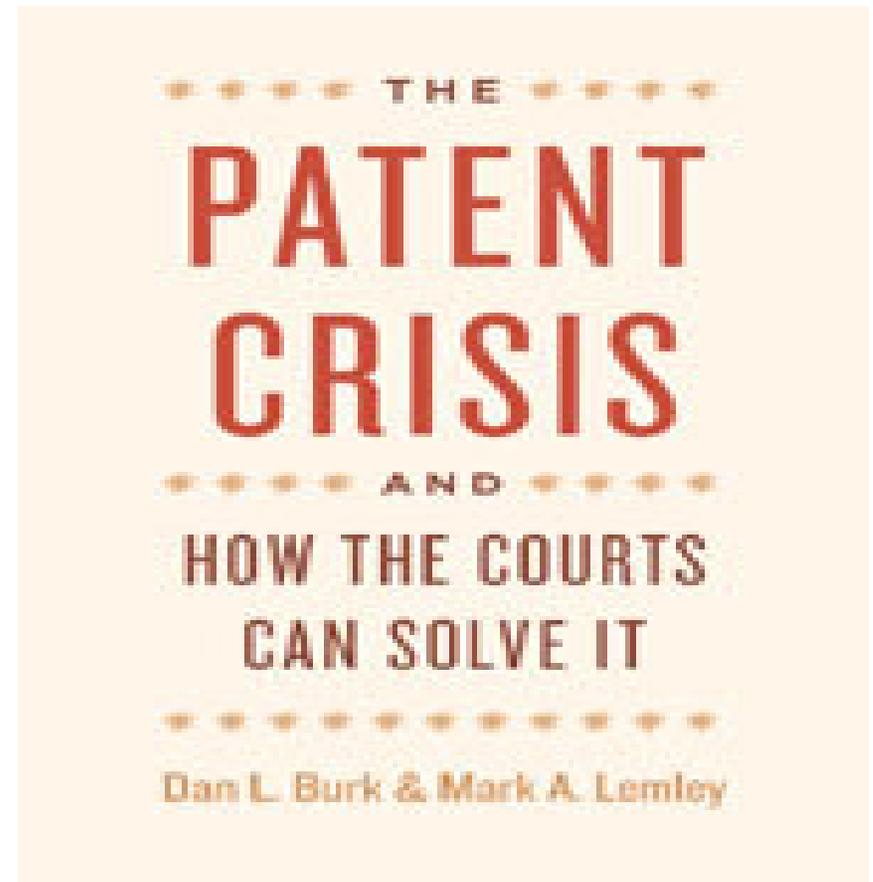
<http://www.gnu.org/philosophy/danger-of-software-patents.html>

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Patent Reform

Patent law is crucial to encourage technological innovation. But as the patent system currently stands, diverse industries from pharmaceuticals to software to semiconductors are **all governed by the same rules even though they innovate very differently.**



THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT, Dan L. Burk & Mark A. Lemley, Chicago, Ill., University of Chicago Press, 2009.

Patent Reform Issues

- Need better and cheaper ways than litigation to challenge a weak patent.
- Need a better review process that may reject bad applications, and may deter threats of litigation by holders of weak patents.

Should software be patentable?

- Maybe that's the wrong question to ask.
- The question to ask is how to improve the system so that no patent protection will be granted to broad, vague or unoriginal ideas.
- Need methodologies, principles and rules that will best suit software patent.

Views (Paul Graham)

Are Software Patents Evil?, March 2006,

<http://www.paulgraham.com/softwarepatents.html>

- ... if you're against software patents, you're against patents in general. Gradually our machines consist more and more of software. Things that used to be done with levers and cams and gears are now done with loops and trees and closures. There's nothing special about physical embodiments of control systems that should make them patentable, and the software equivalent not.
- Since **software patents are no different from hardware patents**, people who say "software patents are evil" are saying simply "patents are evil." So why do so many people complain about software patents specifically? I think **the problem is more with the patent office** than the concept of software patents.

Possible Directions

- Law adaptation to new technologies
 - By legislation or by proper interpretation by courts
- Better principles, rules and procedures to increase patent quality, increase certainty and reduce litigation.
- Possible different patent terms to different inventions
 - 20-year term is too long for software patents
- Focus on better ways to determine nonobviousness.
 - Prevents patents on minor modifications
- A threshold test (e.g., U.S.C. §101) should be minimal.

Possible Directions

- Prevent too Broad Claims
 - Diehr's process was tied to a specific practical application of a (known) formula that did not prevent future innovation relying on that formula.
 - Need better rules regarding the **Doctrine of Equivalence**.
 - **Balancing**: proper balance between the gains of society and gains of an inventor.
 - Market power of certain patents (e.g., interfaces) may be out of proportion to the intrinsic value of the innovation.

Need for Advanced Patent Search Tools

- “Why do firms in some industries ignore patents when developing new products? This paper posits a simple but novel answer to this long-puzzling question: firms ignore patents because they are unable to discover the patents their activities might infringe. The costs of finding relevant patents, which we call discovery costs, are prohibitively high”.
 - Mulligan, Christina and Lee, Timothy B., Scaling the Patent System (March 6, 2012). NYU Annual Survey of American Law, Forthcoming. Available at SSRN: <http://ssrn.com/abstract=2016968>

Advanced Search Tools

- **Asher Wilk,**
Advanced Semantic Search: The Patent World as an Example
Info 2012: The 27th Annual Conference and Exhibition, May 2012
http://blog.tau.ac.il/libraries/wp-content/uploads/2012/05/Info2012_160512_presentation.pdf
- **Ariel Frank,**
Advanced Semantic Search: The Medical World as an Example
Info 2012: The 27th Annual Conference and Exhibition, May 2012
<http://blog.tau.ac.il/libraries/wp-content/uploads/2012/05/info2012-sem.pdf>

Talk Outline

- **Protecting Intellectual Property**
- **Introduction to Patents**
- **Patentability (in the U.S.)**
- **Patentability of Software**
- **Patenting Business Methods**
- **Software Patents in Europe**
- **Pros and Cons of Software Patents**
 - **The Controversy Regarding Software Patents**
- **Problems and Possible Directions**
- **Summary**

Summary

- It is important for computer professionals to gain knowledge in the patents domain
- Presently patent law contains several methodologies, many rules, there are differences among countries, and there have been claims for inconsistency.
- Therefore, there is a need for significant improvements, and for researching which methodologies, principles and rules will best suit software patents, to achieve desired goals.

Thank You