Patentability of Software and Business Methods in the U.S. and Europe

by

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Contents

一. Consensus in “all fields of technology”

二. The U.S. developments

三. The European developments

四. Comparison of the two approaches

五. Discussion on the issue of “technical effect”

The Foreseeable Process of Technology Development

	Catch-up-type R&D		Breakthrough-type R&D
Commercialization	Needs and product image are clear	→	Needs and product image are vague
Risk involved	Low		High
IPR	Mainly improved inventions		Basic or pioneer inventions

TRIPS - Article 27 (1)

- Patent shall be granted for **"any inventions**, whether products or processes, in **all fields of technology**, provided they are new, involve an inventive step, and are capable of industrial application.

Business Models

- What is a business model?

  -- A set of value propositions by which different entities exchange items of value (money, information, materials, exposure)
- Implemented by a series of information transformations and exchanges between entities
- Does not require use of computer to practice model

Business Model Claim Example

- A method of insuring an asset against a risk of loss, the method comprising:

  -- determining a premium for a period of insurance as a function of the value of the asset and a risk of loss of the asset;

  -- establishing a plurality of fractional ownership interests in the premium which expire after the period of insurance;

  -- receiving bids on the fractional ownership interests from a plurality of bidders;

  -- transferring ownership of the fractional ownership interests to a number of highest bidders; and

  using the bids from the highest bidders as a reserve against loss of the asset.

Business Methods

- What is a business method?

  -- A method or system executed on business-related entities that contributes to the operation of a business, and that improves the accuracy, yield, profitability, or performance of the business.

  (Business method may support business models.)

- Implementation may be held by computer, or by humans.
- May be identical to software claims

Business Method Claim Example

- A method of forecasting demand for a product in a recurring time period, the method comprising:

  -- determining an average historical time period demand for the product in a plurality of previous time periods equal in length to the recurring time period;

  -- separating the average historical time period demand into a plurality of equal portions;

  -- determining for each portion a percent of the product demand that occurs in the portion;

  -- separating a current time period into a plurality of equal portions corresponding to the portions of the average historical time period demand; and

  -- determining a product demand in a next portion of the current time period based on a cumulative percent demand in corresponding prior portion portions of the average historical time period demand.

Distinguishing Business Method Patents (BMP) from Software Patents (SWP)

- Applicability

  -- BMPs primarily apply to **specific businesses**

  -- SWP are **general purpose**

- Contribution

  -- BMPs contribute to the commercial arts

  -- SWPs contribute to the computer or technical arts

- Inventorship

  -- BMPs are invented by business persons

  -- SWPs are invented by technologists (engineers, programmers, scientists)

The U.S. Developments

The U.S. Constitution, Article 1, Section 8, Clause 8

The 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** …

The Applicable State: 35 U.S.C. § 101

-- Whoever 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.

Old Case Law

a) Business methods not patentable

-- Hotel Security Checking Co. v. Lorraine Co. 160 F. 467 (2d Cir. 1908)

b) Never expressly adopted by the Federal Circuit, its predecessor, or the Supreme Court.

- **Diamond v. Chakrabarty,447 U.S. 303, 309 (1980)**

  -- Congress intended statutory subject matter (SSM) to include "anything under the sun that is made by man"

  -- Human-made microorganism is patentable SSM, constituting a manufacture" or "composition of matter"

- **Diamond v. Diehr, 450 U.S. 175, 184 (1981)**

  -- The computer constantly recalculates rubber curing time, based on the Arrhenius equation of: In v = CZ + x

  -- Transformation and reduction of an article "to a different state or thing" (measuring, then determining when to open the mold) is the clue to the patentability of a **process** claim that does not include particular machines.

Recent Federal Circuit Cases (一)

- Arrhythmia Research Technology Inc. v. Corazonix Corp., 22 USPQ 2d 1033 (Fed. Cir. 1992)

  -- Manipulation of signals that represent a **physical entity** is a **physical process** and is statutory

- In re Alappat, 31 USPQ 2d 1545 (Fed. Cir. 1994)

  -- Claim as a whole must be examined and use of **mathematical formulae** in a machine does not render machine that produces useful result non-statutory

Recent Federal Circuit Cases (二)

- In re Warmerdam, 31 USPQ 2d 1754 (Fed. Cir. 1994)

  -- **Computer memory** containing instructions for computer operation is patentable; mere arrangement of data is not patentable.

- In re Beauregard, 35 USPQ 2d 1383 (Fed. Cir. 1995)

  -- **Computer readable memory** that instructs computer to operate in a particular manner is a statutory article of manufacture

Recent Federal Circuit Cases (三)

- State Street Bank v. Signature Financial Group 47 USPQ 2d 1596 (Fed. Cir. 1998)

  -- A data processing system for monitoring, calculating, and recording information involved in an **investment vehicle** of "Hub and Spoke" configuration.

  -- A mathematical algorithm may be an integral part of patentable subject matter such as a **machine** or process if the claimed invention as a whole is applied in a "**useful manner**"

  -- A computer program with software that produces "**a useful, concrete and tangible result**" is per se SSM

Recent Federal Circuit Cases (四)

- The Claimed Invention: The Patented Data Processing **System**

  -- determined the percentage share that each Spoke fund has in the Hub portfolio;

  -- calculated any daily activity affecting the portfolio's assets;

  -- allocated gains, losses and expenses to each of the Spoke member funds; and

  -- tracked data necessary to determine aggregate year-end income, gains, losses and expenses for accounting and tax purposes.

- ATT Corp. v. Excel Communications, Inc. 50 USPQ 2d 1447 (Fed. Cir. 1999)

  -- An analysis begins with Section 101 of Title 35.

  -- The Supreme Court has construed Section 101 broadly.

  -- There are three categories of unpatentable subject matter: **laws of nature**, **natural phenomenon** and **abstract ideas**.

  -- The method claims at issue fall within the **process** category of enumerated categories of patentable subject matter.

A Historical Review in the USPTO

- Supreme Court and CAFC Decisions (1994-1996)
  -- Public Forums (1994)
  -- Proposed Examination Guidelines (June 2, 1995)
  -- Legal Analysis (October 3, 1995)
  -- Final Examination Guidelines (March 29, 1996)

Summary of the USPTO Guidelines

- Determine Whether the Claimed Invention Complies with Section 101
- Determine Whether the Computer Related Inventions Are Statutory
- Determine What The Applicant Has Invented and Seeks to Patent Protection
- Determine Whether the Application Complies with Section 112
- Determine Whether the Claimed Invention Complies with Sections 102 and 103

The European Developments

Cohesive patent system part of EU goal to create a common market

- EU had two sub-goals:

  -- Create single patent covering EU

  -- Create a system for filing one EU application

- Signatories unable to create single treaty achieving both sub-goals
- Instead, CPC and EPC created

Community Patent Convention

- Designed to work with EPC
- Sought to create single EU patent
- Sought common appeals court
- CPC never ratified by all Member States
- CPC never entered into force
- The Green Paper (1997) attempts to revive notion of community-wide patent

European Patent Convention (EPC)

- Signed on October 5, 1973
- In effect since October 7, 1977
- Currently has 19 signatories
- Negotiation leading to adoption of EPC
- EPC substantive provisions:

  -- Article II

  -- Article 52

EPC --- Article II

European patents will "have the effect of and be subject to the same conditions as a national patent granted by the State, unless otherwise provided by the Convention."

EPC - Article 52 (1)

European patents shall be granted for any inventions which are susceptible of industrial application, which are new and which involve an inventive step.

EPC --- Article 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 methods for performing mental acts, playing games or **doing business**, and **programs for computers**; and

-- (d) presentations of information.

EPC - Article 52 (3)

(3) The provisions of paragraph 2 shall exclude patentability of the subject-matter or activities referred to in that provision only to the extent to which a European patent application or European patent relates to such subject-matter or activities **as such**.

EPO / Board of Appeals (BOA) Cases

- EPO and BOA have interpreted EPC and TRIPS to allow patent protection for software-related inventions
- EPO has issued over 20,000 software patents!!!
- EPO and BOA require software patent claims to have a "technical effect" or "technical character"

  --- See, e.g., EPC Rule 27

  --- See, e.g., EPC Rule 29

  --- See, e.g., EPC Rule 30

T 208/84 -- "VICOM"

- "Method for digitally filtering data" does **not** have "technical character"
- "Method for digitally processing images in the form of a data array" does **have** "technical character"

T 107/87 - "HEINZ"

- "Method for compression of redundant sequences of serial data elements does **not** have "technical character"
- "Method for electronic storage and/or transfer of redundant serial data elements by compression of the redundant sequences" does **have** "technical character"

T 769/92 - "SOHEI"

- An "invention" **must** have "technical character"
- A computer management system does have "technical character" if "technical considerations" are necessary to realize the computer program

T 931/95 - Pension Benefits System / PBS

- An "invention" must have "technical character"
- Business methods as such are **not** inventions under Article 52 (1)
- Method claims describing only the business method as such are not considered inventions **even if** technical features are mentioned in the claims
- Apparatus claims have **per se** technical character
- If the real contribution of the invention as claimed over prior art is non-technical, it cannot contribute to inventive step

T 1194/97 - Data Structure Product / PHILIPS

- Data structures are in principle patentable
- Similar to In re Lowry, 32 F. 3d 1579, 1583 (Fed. Cir. 1994)
  -- 'The stored data exist as a collection of bits having information about relationship between the attribute data objects. This is the essence of electronic structure."

T 1173/97 - Computer Program Product I / IBM

- Interpreted computer programs "as such"
- BOA held that 52(2) and 52(3)
- -- Show legislature did not want **to exclude all** computer programs from patentability
- Computer programs **without** "technical effect" are not patentable
- Programs do not have "technical effect" merely because they execute on computers
- Computer programs with **"further technical effect"** are patentable

“Beauregard” claims in the EPO

Decision T 1173/97 of July 1, 1998

- 21. Computer program comprising program code means for performing all the steps of anyone of the claims 1 to 13 when said program is run on a computer.
- 22. Computer program product comprising program code means stored on a computer readable medium for performing the method of any one of the claims 1 to 13 when the program is run on a computer.

Reasoning

Computer programs have a technical character, and are considered inventions in the sense of Art.52(1) EPC, **if** when run on a computer they bring about a further technical effect, this effect need not necessarily be novel, but it must go beyond the "normal" physical interactions between the program (software) and the computer (hardware) on which it is run.

U.S. vs. EPC

Statutory matter:35 USC §101:

- process, machine, manufacture, composition of matter
- useful
- judicial:
  - -- anything under the sun made by man could be SM of a patent
  - -- not: "laws of nature, natural phenomena and abstract ideas"

Statutory matter:Art 52 EPC:

- invention
  - -- not "as such":
    - ¤ discoveries, scientific theories, mathematical methods
    - ¤ schemes, rules and methods for performing mental acts, playing games or **doing business** and **programs for computers**

U.S. vs. EPO

US Guidelines: "useful" relates to technological arts

If mathematical method:

-- not statutory, if "disembodied concept"

-- statutory, if "useful, concrete, tangible result"

¤ can also be a stock price

Judicial exclusion of business methods put to rest

No "program as such" if **further technical effect** over normal interaction with computer

- better performance
- less hardware resources
- new functions

Discussion Claim 1A

- A method for optimizing warehouse worker travel, comprising:

  -- inputting workers, aisles and items to be picked;

  -- determining worker agility using a computer; and

  -- computing a pick list and aisle path for each worker responsive to worker agility, aisles and items.

Discussion Claim 1B

- A method for optimizing warehouse worker travel, comprising:
  -- inputting workers, aisles and items to be picked;
  -- determining worker agility from *a biometric database record for each worker;* and
  -- computing a pick list and aisle path for each worker responsive to worker agility, aisles and items.

Discussion Claim 1C

- A method for optimizing warehouse worker travel, comprising:

  -- inputting workers, aisles and items to be picked;

  -- determining worker agility using a biometric database record for each worker *and the Gigadrone computational algorithm;* and

  -- computing a pick list and aisle path for each worker responsive to worker agility, aisles and items.

Discussion Claim 1D

- A method for optimizing warehouse worker travel, comprising:

  -- inputting workers, aisles and items to be picked;

  -- *recording worker movement using BigBro position tracking devices affixed to the workers;*

  -- determining worker agility based upon the recorded worker movements; and

  -- computing a pick list and aisle path for each worker responsive to worker agility, aisles and items.