

Software Patents

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What is patent?

- Designed for industrial protection
- Duty to disclose => Exclusive Right
- Idea => Useful Invention => Protected by Patent
- Patent claims => define the scope of protection

Obtaining a patent

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graph LR; A[Patent application] --> B[Patent examination]; B --> C[Patent obtained];
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Patent
application

Patent
examination

- Patentability
- Disclosure

Patent obtained

Patent Granted



Patentee

- Exclusive rights

Third parties

- Access to information

Patentability

Patentable
subject

Novelty

Inventive
step

Industrial
applicability

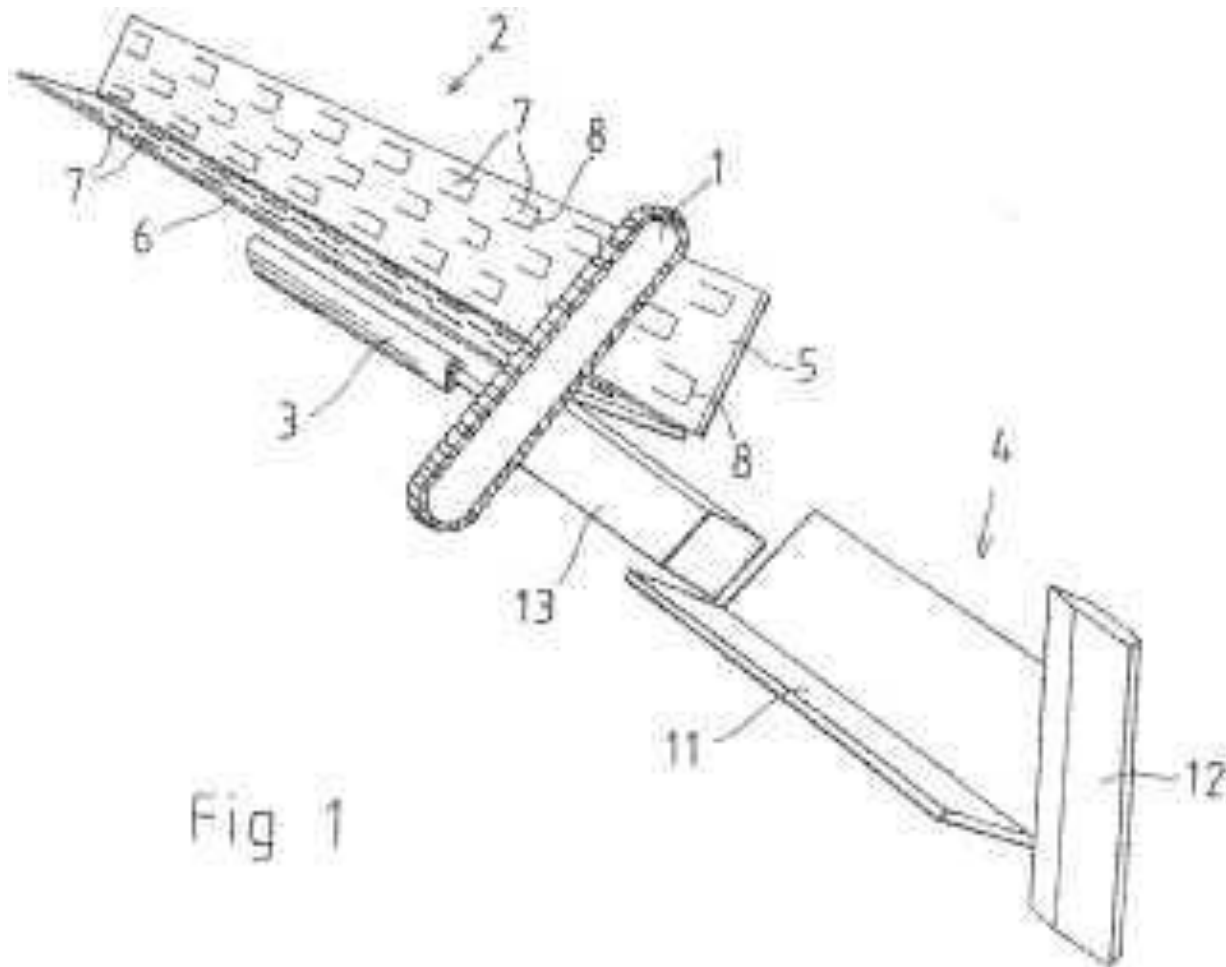
Traditional Invention

A chopping machine for cutting and splitting a timber, said chopping machine comprising a crosscutting device for cutting the timber, a feeder for feeding the timber in its longitudinal direction to the crosscutting device, a splitting apparatus operated by a splitting cylinder for splitting a cut block of timber, said feeder comprising two elongated supporting surfaces forming a substantially horizontal trough open in the upward direction, into which the timber to be treated can be placed...

According to: [EP1118438](#)

Used as an example in: R M Ballardini, "The Software Patent Thicket: A Matter Of Disclosure", (2009) 6:2 *SCRIPTed* 207, <http://www.law.ed.ac.uk/ahrc/script-ed/vol6-2/ballardini.asp>

Chopping machine for cutting and splitting timber



„Software Patent“

1. A method of digitally processing images in the form of a two-dimensional data array having elements arranged in rows and columns in which an operator matrix of a size substantially smaller than the size of the data array is convolved with the data array...

8. Apparatus for carrying out the method in Claim 1 including data input means for receiving said data array, and said data array to generate an operator matrix for scanning said data array to generate the required convolution of the operator matrix and the data array, characterised in that there are provided feedback means for transferring the output of the mask means to the data input means, and control means for causing the scanning and transferring of the output of the mask means to the data input means to be repeated a predetermined number of times.


According to: EP79300903

Used as an example in: R M Ballardini, "The Software Patent Thicket: A Matter Of Disclosure", (2009) 6:2 *SCRIPTed* 207, <http://www.law.ed.ac.uk/ahrc/script-ed/vol6-2/ballardini.asp>

The Problem with Software

- Software
 - Source code
 - Object code
 - + supplementary material

Software X Computer Program



Set of algorithms
- What everything can be implemented by software?
 - Law of nature, mathematical method
X
 - Technical solution

SP WORLDWIDE

Paris Convention

Paris Convention

for the Protection of Industrial Property of

March 20, 1883, as revised at Brussels on

December 14, 1900, at Washington on

June 2, 1911, at The Hague on

November 6, 1925, at London on June 2, 1934,

at Lisbon on October 31, 1958, and at Stockholm

on July 14, 1967, and as amended on

September 28, 1979

PCT

Patent Cooperation Treaty

Done at Washington on June 19, 1970, amended on September 28, 1979, modified on February 3, 1984, and on October 3, 2001 (as in force from April 1, 2002)

International Patent Classification

- <http://web2.wipo.int/ipcpub/#refresh=page>

Patent research – relevant Section

G

Example: [Google PageRank](#)

G06F 1730

TRIPS

- Art. 27.1 TRIPS Agreement: “*patents shall be available for any inventions, whether products or processes, in all fields of technology*”.
- SP basically OK

USA

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.

Article 1, section 8 United States Constitution:

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.

Section 101 of title 35, United States Code

Patentability

Statutory
subject
matter

- NOT Laws of nature
- NOT Natural phenomena
- NOT Abstract Ideas

Utility

- Usefulness – real world use

Novelty

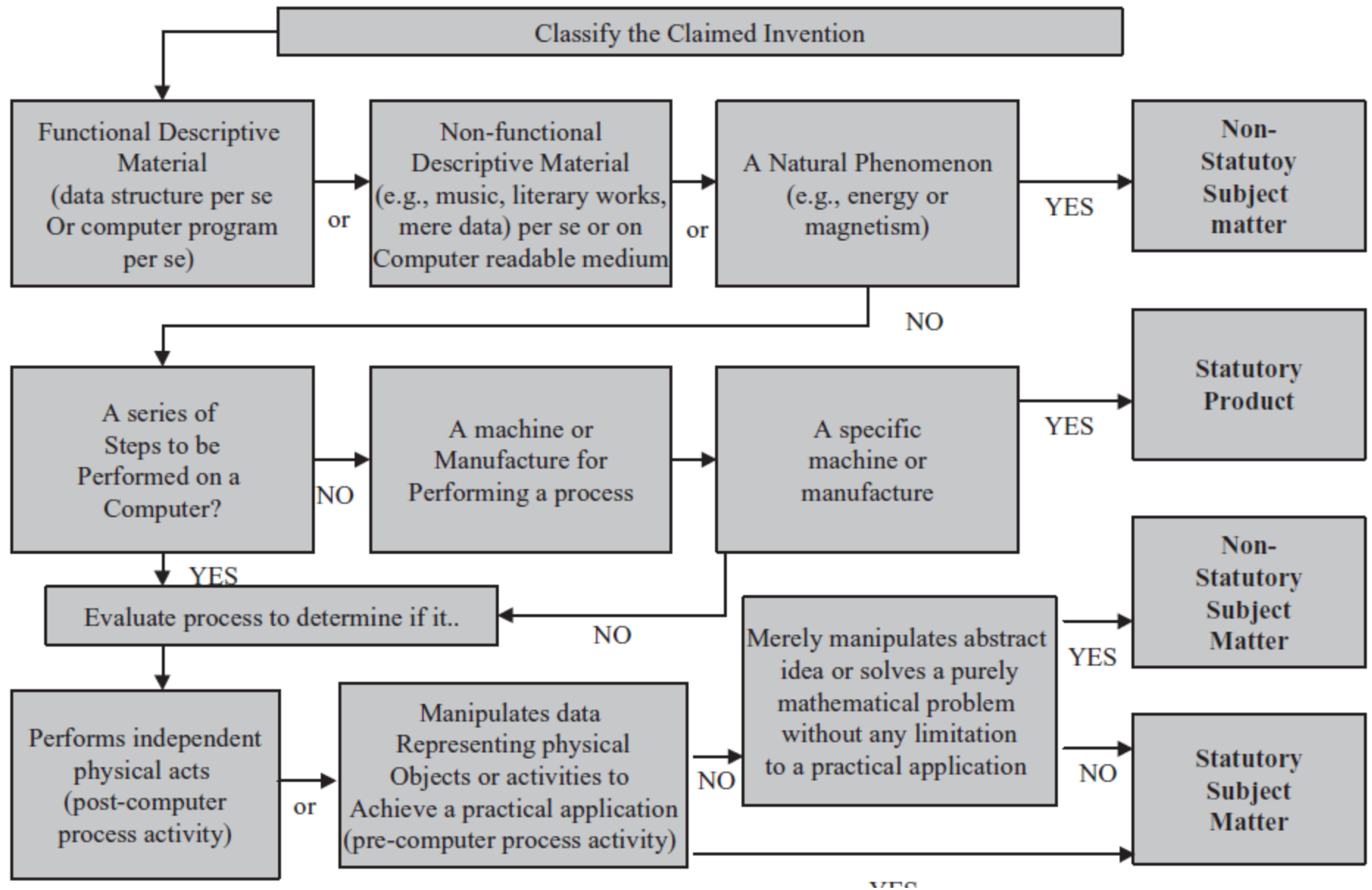
- § 102 – not known before

Non-
obviousness

- § 103 - obvious to a person having ordinary skill in the art at the time the invention was made

Disclosure

- Business methods patentable
- Software as such patentable
- NO TECHNICAL EFFECT needed for Computer-Related Inventions
- [Examination Guidelines for Computer-Related Inventions](#)



YES

Jinseok Park: Has Patentable Subject Matter Been Expanded? -A Comparative Study on Software Patent Practices in the European Patent Office, the United States Patent and Trademark Office and the Japanese Patent Office. *I. J. Law and Information Technology* 13(3): 336-377 (2005)

Case	Claimed Invention	Main Holding	Patentable
<i>Lowry</i> , 32 F. 3d 1579 (Fed. Cir. 1994)	A data structure that organised the information in a database according to an attributive data objects (ADOs)	'Lowry's [data structures] do not represent merely underlying data in a database. [These structures] contain both information used by application programs and information regarding their physical interrelationships within a memory. . . . Thus, Lowry's claims define functional characteristics of the memory.'	Yes
<i>Beauregard</i> , 32 F.3d at 1583, 32 USPQ 2d at 1034	An article of manufacture comprising a storage device, such as floppy diskette or CD-ROM, encoded with machine-readable software code for implementing an algorithm	'The printed matter doctrine has no relevance to a claimed invention which required that the information stored in a memory be processed not by the mind but by a machine, the computer.'	Yes
<i>State Street, State St. Bank & Trust Co. v. Signature Fin. Group, Inc.</i> , 149 F.3d 1368 (Fed. Cir. 1998)	A 'hub and spoke' system for an administrator to monitor and record the financial information flow and to make all calculations necessary for maintaining a partner fund financial services configuration	- The 'mathematical algorithm' exception has little applicability and the 'business method' exception cannot be applied to Section 101 determinations - 'The question of whether a claim encompasses statutory subject matter should not focus on the categories of the claim but rather on its practical utility. An invention is patentable if it produces a 'useful, concrete and tangible result''	Yes
<i>At & T, AT&T Corp. v. Excel Communications, Inc.</i> 172, F.3d 1352 (Fed. Cir. 1999)	A method for 'generating a message record for an inter-exchange call' and recording to whom the call should be billed	The requirement that a claimed method must accomplish a 'physical transformation' and be 'applied to or limited by physical elements' was abolished	Yes

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Case	Claimed Invention	Main Holding	Patentable
<i>Benson, Gottschalk v. Benson</i> , 409 U.S. 63, 175 USPQ 673 (1972)	A method of programming a general purpose computer to convert binary-coded decimal (BCD) numerical information into binary numbers	- A Mathematical algorithm itself is not patentable. - To be statutory, there must be a 'physical embodiment or a transformation and reduction of an article to a different state or thing'	No
<i>Flook, Parker v. Flook</i> , 437 U.S. 584, 198 USPQ 193 (1978)	A computerised method of continuously updating alarm limits in a process for the catalytic conversion of hydrocarbons	'An algorithm cannot support a patent unless there is some other inventive concept in its application.'	No
<i>Diehr, Diamond v. Diehr</i> , 450 U.S. 175, 209 USPQ 1 (1981)	A method of operating a rubber-molding press by using Arrhenius equation to control the cure time of synthetic rubber	- 'A claim drawn to subject matter otherwise statutory does not become non-statutory simply because it uses a mathematical formula, computer program or digital computer.' - 'An application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.' - The claimed invention should be considered as a whole in determining the patentability.	Yes
<i>Alappat</i> , 33 F. 3d 1526, 31 USPQ 2d 1545 (Fed. Cir. 1994)	A rasterizer which processes a digitally sampled input waveform to provide anti-aliased pixel illumination intensity data for display on the screen of an oscilloscope	- 'The determination of patentable subject matter should comply with the primary authorities, i.e., the statutory language of Section 101 and the trilogy of Supreme Court decisions, <i>Benson, Flook, and Diehr</i> .' - 'A general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software.'	Yes

EPO

Convention on the Grant of European Patents
(European Patent Convention) of 5 October
1973 as revised by the Act revising Article 63
EPC of 17 December 1991 and the Act revising
the EPC of 29 November 2000

Invention

Scope of protection

- claims to a physical entity (product, apparatus)
- claims to an activity (process, use)

Novelty – Art 54

(1) An invention shall be considered to be new if it does not form part of the state of the art.

(2) The state of the art shall be held to comprise everything made available to the public by means of a written or oral description, by use, or in any other way, before the date of filing of the European patent application.

Inventive step – Art 56

An invention shall be considered as involving an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art.

Industrial application – Art 57

An invention shall be considered as susceptible of industrial application if it can be made or used in any kind of industry, including agriculture.

Art 52 para 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.

Art 52 para 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;
- (d) presentations of information.

Art 52 para 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**.

SP = Computer-Implemented Inventions

Patented, if:

- They have **technical character** and **solve a technical problem**.
- They are **new**.
- They involve an **inventive technical contribution** to the prior art.

Part of the „Inventive step“ test.

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Case	Claimed Invention	Main Holding	Patentable
<i>Koch & Sterzel</i> X-ray Apparatus T 0026/86 - 3.4.1	A data processing unit to control x-ray apparatus to achieve optimum exposure while protecting against overloading of the x-ray tubes	- 'An invention must be assessed as a whole. The use of non-technical means does not detract from the technical character of the overall teaching.' - 'If the computer program controls the operation of a conventional general-purpose computer so as technically to alter its functioning, the unit consisting of program and computer combined may be a patentable invention'	Yes
<i>Vicom</i> Digital Image Processing T 0208/84 - 3.5.1	A method of digitally processing images in the form of two-dimensional data array having elements in rows and columns...	'Even if the idea underlying an invention resides in a mathematical method, the invention may be patentable so long as the claim is directed to a technical process and does not seek protection for the mathematical method as such.'	Yes
<i>IBM</i> Text Processing T 65/86 -	A method for automatically detecting and correcting contextual homophone errors in a text document...	'The processing of abstract data, for a non-technical purpose, by means of computer programs running on conventional hardware' is not patentable.	No
<i>Sohei</i> General-purpose Management System User Interface T 769/92 - 3.5.1	A method for processing of both financial and inventory data in a system which used a single, common form, 'transfer slip', which was displayed to the user on a computer screen for the input of data	'An otherwise patentable computer program would not be rejected merely because of additional features that are excluded under Article 52 (2) of the EPC.'	Yes
<i>Phillips</i> Picture Retrieval System T 1194/97	A picture retrieval system comprising a record carrier and a read device, a coded picture composed of...	'A record carrier characterised by having functional data recorded thereon is not a 'presentation of information as such' and hence not excluded from patentability.'	Yes

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Case	Claimed Invention	Main Holding	Patentable
<i>IBM</i> Recovery from Resource Failure T 1173/97	A computer program product stored on a computer usable medium, comprising computer program means for causing the computer to control . . .	- 'A computer program is not excluded from patentability, irrespective of whether it is claimed by itself or as a record on a carrier.' 'A computer program is within the definition of Article 52 EPC if the program is capable of bringing about a 'further technical effect' going beyond normal physical effects when running on a computer.'	Yes
<i>PBS Partnership</i> <i>Controlling Pension</i> <i>Benefit Systems</i> T931/95-3.5.1	A method of controlling a pension benefits program by administering at least one subscriber employer account . . .	'Specifying the technical means for a purely non-technical purpose and/or for processing purely non-technical information does not necessarily confer a technical character on any such individual step of use or on the method as a whole.'	No
<i>COMVIK</i> Two Identities T 641/00	GSM type mobile telephone systems involving subscriber identity modules that are inserted by a user into his mobile unit to activate service in the respective telephone system by a subscriber identity IMSI	The features that make no technical contribution cannot be considered for the assessment of inventive step of the invention	No

The European „Software Patents“ Directive

- 2002 proposal COM(2002) 92 - "on the patentability of computer-implemented inventions"
- Computer program – patentable if providing a “technical contribution” to the prior art (interpreted by the EPO Board of Appeal to mean a further technical effect that goes beyond the normal physical interaction between the program and the computer).

- 2005 – European Parliament voted against

To sum up...

- „Further technical effect“
 - Not the „inevitable psychical effect – i.e. running of the program (current changes)
 - *„what is achieved beyond this normal technical effect“*
- [EP0771280](#) – „ABS“ patent
 - METHOD AND SYSTEM FOR DETECTING THE PROPER FUNCTIONING OF AN ABS CONTROL UNIT UTILIZING DUAL PROGRAMMED MICROPROCESSORS

„The Little Man test“

“The question to ask should be: is it (the artefact or process) new and non-obvious merely because there is a computer program? Or would it still be new and non-obvious in principle even if the same decisions and commands could somehow be taken and issued by a little man at a control panel, operating under the same rules? For if the answer to the latter question is 'Yes' it becomes apparent that the computer program is merely a tool, and the invention is not about computer programming at all.”

CFPH LLC, Patent Applications by [2005] EWHC 1589 (Pat) (21 July 2005) URL:
<http://www.bailii.org/ew/cases/EWHC/Patents/2005/1589.html>

Mind the TRIPS

- EPC is not in compliance with TRIPS!

SP IN CZ

- Act 257/1990 Sb. Inventions and Rationalisation Proposals, as follows from amendments implemented by Act No. 519/1991 Coll., Act No. 116/2000 Coll. and Act No. 207/2000 Coll.

SP in CZ (§ 3 para 2 CAP)

The following in particular shall not be regarded as inventions:

- 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**;
- d) presentations of information.

- Computer-Implemented Inventions
 - Granted under same conditions as in EPO

Pro SP

Incentive

- SP help recoup the investment in R & D activities

Flow of new Ideas

- Disclosing of functioning in the patent information (however no need to disclose source code as in ©)

Contra SP

Patent
thickets

- *“A dense web of overlapping intellectual property rights that a company must hack its way through in order to actually commercialize new technology”* Shapiro 2001
- Resources to invalidate „bad patents“?

Stalling
innovation

- 20 years (?)
- Insufficient evidence

EP0689133

A method for displaying on a computer screen multiple sets of information needed on a recurring basis, comprising the steps of: (1) Establishing an area on the computer screen in which the multiple sets of information are to be displayed, the established area having a maximum size which is substantially less than the entire area of the screen. (2) Providing within the established area a plurality of selection indicators, one for each of the multiple sets of information. (3) Selecting one of the multiple sets of information for display within the established area by pointing to one of the selection indicators within the established area, whereby the selected set of information will be substituted within the established area for the set of information previously being displayed therein. A selected set of information may also be moved out of the selected area by pointing to its selection indicator and dragging it away.

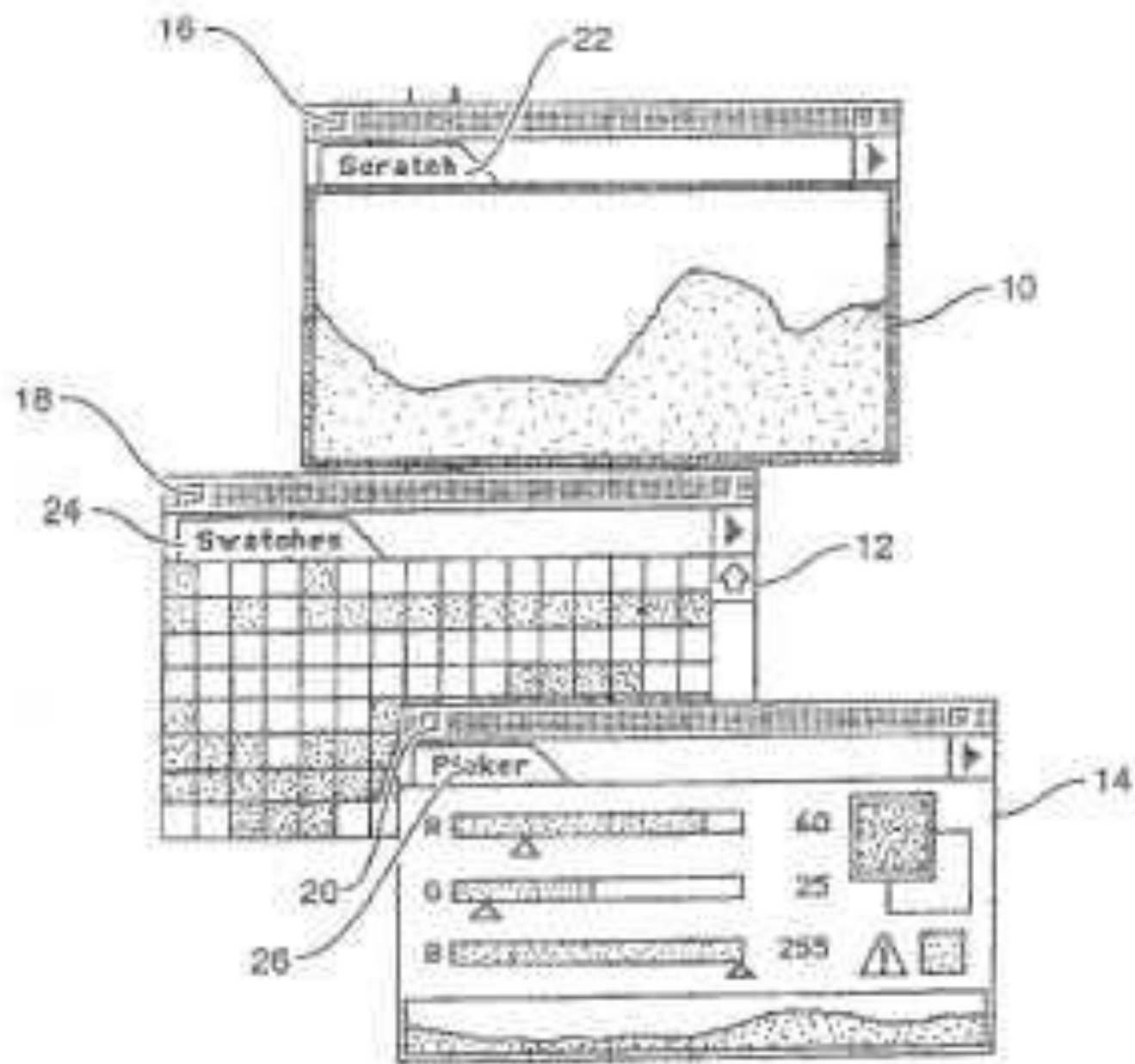


FIGURE 5

References

- C Shapiro, “Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard–Setting” (2001) 1 *Innovation Policy and the Economy*, at 118-150.