



*DPIIT IPR CHAIR
&
N C BANERJEE CENTRE FOR IPR STUDIES
NALSAR UNIVERSITY OF LAW
HYDERABAD*



DEPARTMENT FOR PROMOTION OF
INDUSTRY AND INTERNAL TRADE
MINISTRY OF COMMERCE & INDUSTRY
GOVERNMENT OF INDIA

*Patents
&
Information Technology
(Software Patents)*

Advanced Diploma In Cyber Law
NALSAR University of Law, Hyderabad
Contact Class; December, 2023.

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper — Second-class postage paid at Boston, Mass.

Vol. 2 No. 25

June 19, 1968

Price: \$9/year

First Patent Is Issued for Software, Full Implications Are Not Yet Known

WASHINGTON, D.C. — The first patent for a software computer program has been issued by the Patent Office to Martin Goetz, Applied Data Research vice president. This represents the first landmark after the withdrawal earlier this year of the proposed "Section 106" designed to outlaw patenting of computer programs.

The objections to the patenting of programs have been on two basic levels. Theoretically the main objective was that "programs were just mathematics and

Details of first patent appear on page 2.

you cannot patent math." On a more practical level, it has been observed that there was no way of searching for prior art, as the computer community has not yet developed any effective way of classifying programs. This practical problem of searching has a secondary, but definitely real, impact due to the fact that the Patent Office is currently short of funds and presumably would not

welcome a flock of computer patent applications.

Inventing in a Garret

It appears possible that such a rush may develop as a result of the precedent set by the software patent. Before this, patents involved logic design of actual hardware which few programmers were able to do and which even fewer could arrange to have built if the Patent Office wanted to see the system in operation.

Under the new procedure, it appears that a programmer working by himself, or in the traditional garret, may be able to get a patent and so exclude the hardware manufacturers from using his technique without his agreement. He still has to show novelty, and the traditional flash of genius, but the almost mandatory cooperation of one of the industry giants is no longer neces-

April 23, 1968

M. A. GOETZ

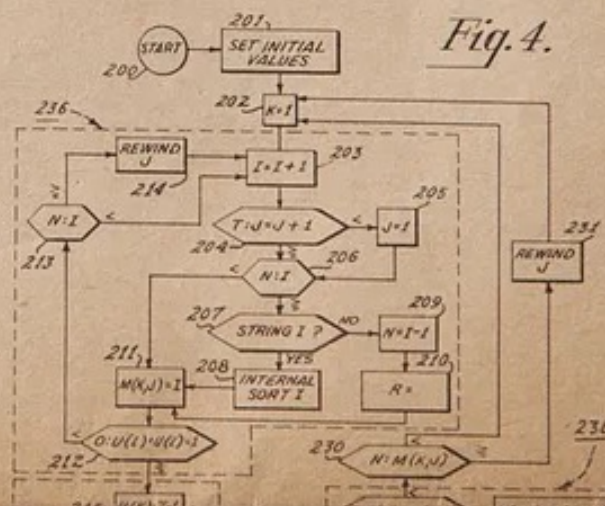
3,380,029

SORTING SYSTEM

Filed April 2, 1965

8 Sheets-Sheet 1

Fig. 4.



7090 or User-Designed Codes Work on System

LOS ANGELES, Calif. — A new computer system was introduced

Operation details of the

To start with

Some have argued that the TRIPS agreement requires us to grant patents for software because it says "patents shall be available for any inventions.....in all fields of technology, provided they are.....capable of industrial application". However, it depends on how you interpret these words. Is a piece of pure software an invention? European law says it isn't. Is pure software technology? Many would say no. Is it capable of "industrial" application? Again, for much software many would say no.

TRIPS is an argument for wider protection for software. But the decision to do so should be based on sound economic reasons. Would it be in the interests of European industry, and European consumers, to take this step?

Paul Hartnack, former Controller-General of the UK Patent Office.



What does TRIPS say?

Article 10

Computer programs, whether in source or object code, shall be protected as literary works under the Berne Convention (1971).

Compilations of data or other material, whether in machine readable or other form, which by reason of the selection or arrangement of their contents constitute intellectual creations shall be protected as such. Such protection, which shall not extend to the data or material itself, shall be without prejudice to any copyright subsisting in the data or material itself.

TRIPS also says

Article 27

members must make patents available without discrimination

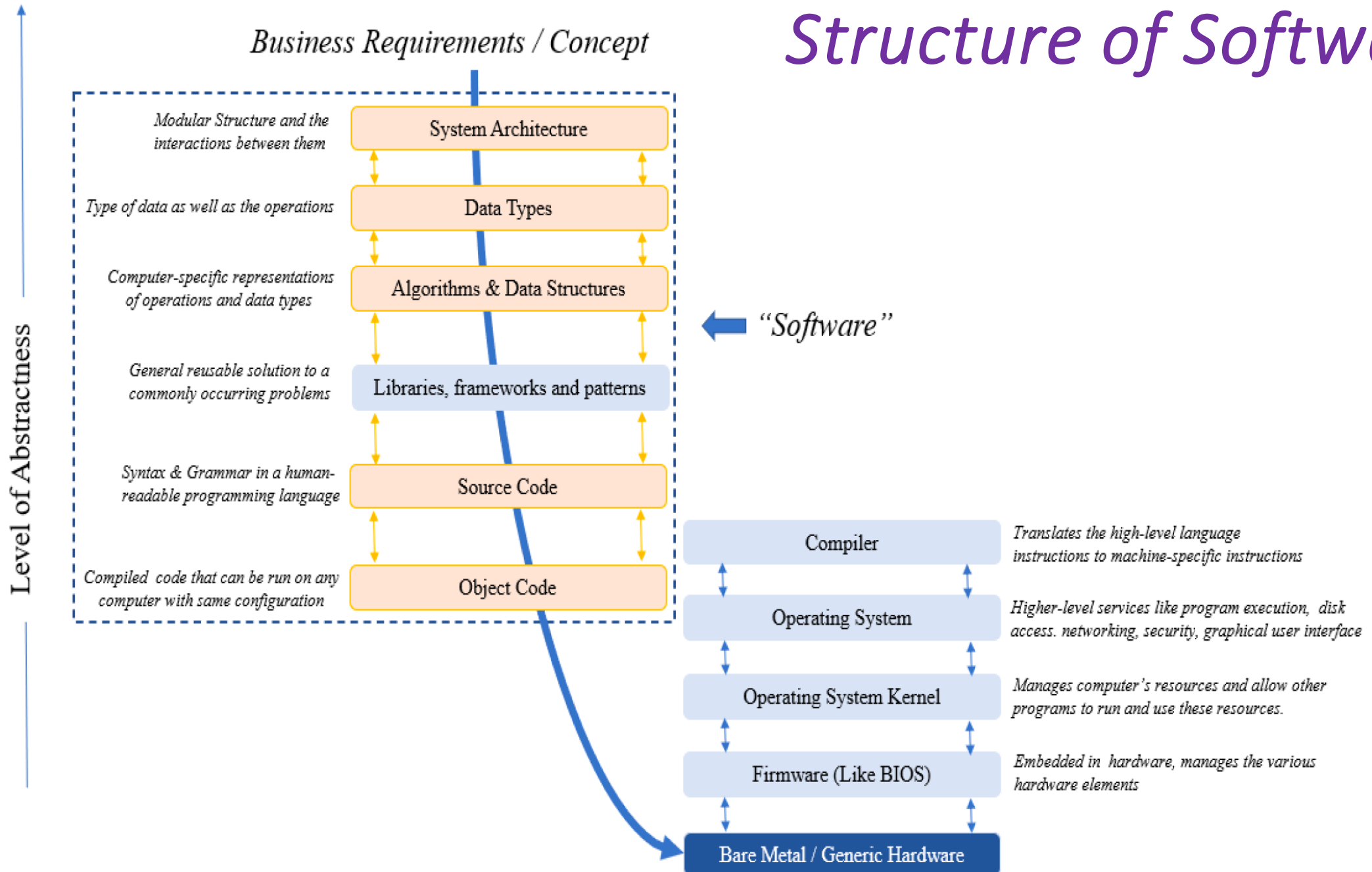
- for any inventions (products or processes)
- in all fields of technology
 - e.g. no exclusion of CRI
- as to place of invention
- whether imported or locally produced

Exceptions:

- Inventions against *ordre public*; morality; human, animal, plant life or health; environment
- Methods of medical treatment
- Plants & animals
 - Including biological processes for production of plants & animals
 - But not micro-organisms and non-biological production processes
 - Plant varieties: either patent or *sui generis* system (UPOV or others) or combination thereof



Structure of Software





US006727830B2

(12) United States Patent
Lui et al.**(10) Patent No.: US 6,727,830 B2**
(45) Date of Patent: Apr. 27, 2004

- (54) **TIME BASED HARDWARE BUTTON FOR APPLICATION LAUNCH**
- (75) Inventors: **Charlton E. Lui**, Redmond, WA (US);
Jeffrey R. Blum, Seattle, WA (US)
- (73) Assignee: **Microsoft Corporation**, Redmond, WA (US)

5,007,008 A * 4/1991 Beers 708/145
 5,134,497 A * 7/1992 Kim 386/120
 5,181,029 A * 1/1993 Kim 341/20
 5,258,748 A * 11/1993 Jones 345/172
 5,818,361 A * 10/1998 Acevedo 341/23
 6,167,412 A * 12/2000 Simons 708/105
 6,192,187 B1 * 2/2001 Kinghorn 386/83

OTHER PUBLICATIONS

- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 98 days.

Applications Handbook for the Palm III™ Organizer, 3Com Corporation, 1998.

Handbook for the Palm III™ Organizer, 3Com Corporation, 1998.

(21) Appl. No.: **10/195,256**

(22) Filed: **Jul. 12, 2002**

(65) Prior Publication Data

US 2002/0180622 A1 Dec. 5, 2002

Related U.S. Application Data

- (63) Continuation of application No. 09/226,031, filed on Jan. 5, 1999, now abandoned.

(51) **Int. Cl.** **H03M 11/00**

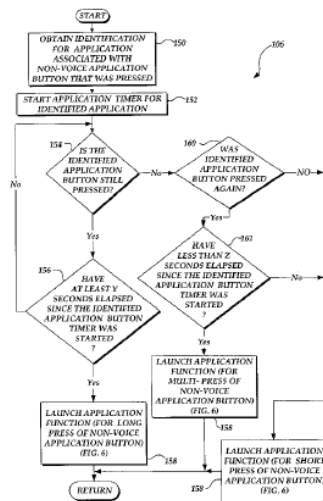
(52) **U.S. Cl.** **341/20; 341/22; 341/26; 345/172; 708/145; 708/146**

(58) **Field of Search** **341/20, 22, 26, 341/34; 178/17 C; 400/479; 345/172; 708/144, 145, 146; 386/83, 120**

(56) References Cited**U.S. PATENT DOCUMENTS**

4,549,279 A * 10/1985 Lapeyre 708/145

27 Claims, 6 Drawing Sheets



Double Clicking



US007415666B2

(12) United States Patent
Sellers et al.**(10) Patent No.: US 7,415,666 B2**
(45) Date of Patent: Aug. 19, 2008**(54) METHOD AND SYSTEM FOR NAVIGATING PAGINATED CONTENT IN PAGE-BASED INCREMENTS**

- (75) Inventors: **Timothy D. Sellers**, Bellevue, WA (US);
Heather L. Grantham, Redmond, WA (US); **Joshua A. Dersch**, Redmond, WA (US)

(73) Assignee: **Microsoft Corporation**, Redmond, WA (US)

- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 462 days.

(21) Appl. No.: **11/073,189**

(22) Filed: **Mar. 4, 2005**

(65) Prior Publication Data

US 2006/0200764 A1 Sep. 7, 2006

(51) **Int. Cl.**

G06F 17/27 (2006.01)

G06F 17/21 (2006.01)

(52) **U.S. Cl.** **715/251; 715/200; 715/243; 715/273; 715/277; 715/784; 715/785; 715/786**

(58) **Field of Classification Search** **715/500, 715/517, 525, 526, 784-786, 200, 243, 251, 715/273, 277**

See application file for complete search history.

(56) References Cited**U.S. PATENT DOCUMENTS**

5,463,725 A * 10/1995 Henckel et al. 715/776
 5,764,227 A * 6/1998 Ishimine 715/807
 6,157,381 A * 12/2000 Bates et al. 715/786
 6,972,776 B2 * 12/2005 Davis et al. 345/684
 2002/0030667 A1 * 3/2002 Hinckley et al. 345/173
 2002/0116421 A1 * 8/2002 Fox et al. 707/526
 2003/0126557 A1 * 7/2003 Yardumian et al. 715/513

* cited by examiner

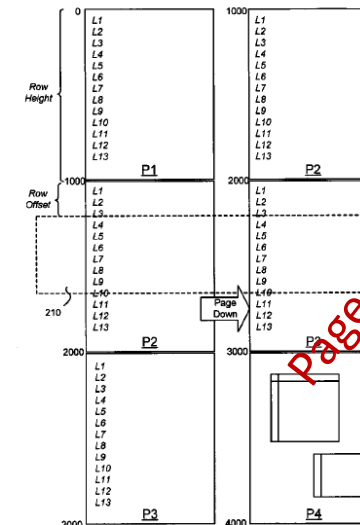
Primary Examiner—Joshua D Campbell

(74) *Attorney, Agent, or Firm*—Workman Nydegger

(57) ABSTRACT

A method and system in a document viewer for scrolling a substantially exact increment in a document, such as one page, regardless of whether the zoom is such that some, all or one page is currently being viewed. In one implementation, pressing a Page Down or Page Up keyboard key/button allows a user to begin at any starting vertical location within a page, and navigate to that same location on the next or previous page. For example, if a user is viewing a page starting in a viewing area from the middle of that page and ending at the bottom, a Page Down command will cause the next page to be shown in the viewing area starting at the middle of the next page and ending at the bottom of the next page. Similar behavior occurs when there is more than one column of pages being displayed in a row.

14 Claims, 7 Drawing Sheets



Page Up - Page Down



United States Patent [19] **Patent Number:** **5,960,411**
Hartman et al. [45] **Date of Patent:** **Sep. 28, 1999**

[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.**⁵ **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**

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,937,863	6/1990	Robert et al.	380/4
5,204,897	4/1993	Wyman	380/4
5,260,999	11/1993	Wyman	384/4
5,627,940	5/1997	Rohra et al.	395/12
5,640,501	6/1997	Turpin	395/768
5,640,577	6/1997	Scharmer	395/768
5,664,111	9/1997	Nahan et al.	705/27
5,715,314	2/1998	Payne et al.	380/24
5,715,399	2/1998	Bezos	705/27
5,727,163	3/1998	Bezos	705/27
5,745,681	4/1998	Levine et al.	395/200.3
5,758,126	5/1998	Daniels et al.	395/500

FOREIGN PATENT DOCUMENTS

0855659 A1	1/1998	European Pat. Off.	G06F 17/30
0855687 A2	1/1998	European Pat. Off.	G07F 19/00
0845747 A2	6/1998	European Pat. Off.	G06F 17/60
0883076 A2	12/1998	European Pat. Off.	G06F 17/60
WO 95/30961	11/1995	WIPO	G06F 17/60
WO 96/38799	12/1996	WIPO	G06F 17/60
WO 98/21679	5/1998	WIPO	G06F 17/60

OTHER PUBLICATIONS

Jones, Chris. "Java Shopping Cart and Java Wallet; Oracles plans to join e-commerce initiative." Mar. 31, 1997, Info-World Media Group.

"Pacific Coast Software Software creates virtual shopping cart." Sep. 6, 1996. M2 Communications Ltd 1996.

"Software Creates Virtual Shopping Cart." Sep. 5, 1996. Business Wire, Inc.

Terdoslavich, William. "Java Electronic Commerce Framework." Computer Reseller News, Sep. 23, 1996, CMP Media, Inc., 1996, pp. 126, http://www.elibrary.com/id/101/101/getdoc...rydocid=902269@library_d&dtype=0-0&dinst=0. [Accessed Nov. 19, 1998].

"Internet Access: Disc Distributing Announces Interactive World Wide." Cambridge Work-Group Computing Report, Cambridge Publishing, Inc., 1995, http://www.elibrary.com/id/101/101/getdoc...docid=1007497@library_a&dtype=0-0&dinst=0. [Accessed Nov. 19, 1998].

(List continued on next page.)

Primary Examiner—James P. Trammell

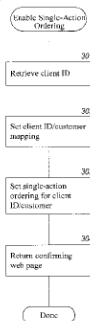
Assistant Examiner—Demetra R. Smith

Attorney, Agent, or Firm—Perkins Coie LLP

[57] **ABSTRACT**

A method and system for placing an order to purchase an item via the Internet. The order is placed by a purchaser at a client system and received by a server system. The server system receives purchaser information including identification of the purchaser, payment information, and shipment information from the client system. The server system then assigns a client identifier to the client system and associates the assigned client identifier with the received purchaser information. The server system sends to the client system the assigned client identifier and an HTML document identifying the item and including an order button. The client system receives and stores the assigned client identifier and receives and displays the HTML document. In response to the selection of the order button, the client system sends to the server system a request to purchase the identified item. The server system receives the request and combines the purchaser information associated with the client identifier of the client system to generate an order to purchase the item in accordance with the billing and shipment information whereby the purchaser effects the ordering of the product by selection of the order button.

26 Claims, 11 Drawing Sheets



amazon.com

- Amazon.com in 2000 licensed 1-Click ordering to Apple Computer (now Apple Inc.) for use on its online store.
- Apple subsequently added 1-Click ordering to the iTunes Store and iPhoto.
- Amazon filed a patent infringement lawsuit in October 1999 in response to Barnes & Noble's offering a 1-Click ordering option called "Express Lane".
- After reviewing the evidence, a judge issued a preliminary injunction ordering Barnes & Noble to stop offering Express Lane until the case was settled.
- Barnes & Noble had developed a way to design around the patent by requiring shoppers to make a second click to confirm their purchase.
- The lawsuit was settled in 2002.
- The terms of the settlement, including whether or not Barnes & Noble took a license to the patent or paid any money to Amazon, were not disclosed.
- In response to the lawsuit, the Free Software Foundation urged a boycott of Amazon.com.
- The boycott was lifted in September 2002.



US005341457A

United States Patent [19]

Hall, II et al.

[11] Patent Number: 5,341,457

[45] Date of Patent: Aug. 23, 1994

[54] PERCEPTUAL CODING OF AUDIO SIGNALS

[75] Inventors: Joseph L. Hall, II, Basking Ridge; James D. Johnston, Warren, both of N.J.

[73] Assignee: AT&T Bell Laboratories, Murray Hill, N.J.

[21] Appl. No.: 109,867

[22] Filed: Aug. 20, 1993

Related U.S. Application Data

[63] Continuation of Ser. No. 962,151, Oct. 16, 1992, abandoned, which is a continuation of Ser. No. 844,967, Feb. 23, 1992, abandoned, which is a continuation of Ser. No. 292,598, Dec. 30, 1988, abandoned.

[51] Int. Cl.⁵ G10L 7/00; G10L 3/02

[52] U.S. Cl. 395/2.35; 395/2.36; 395/2.31; 381/1

[58] Field of Search 381/1, 2, 29-35, 381/37, 47; 395/2, 2.35, 2.36, 2.39, 2.30, 2.31

[56] References Cited

U.S. PATENT DOCUMENTS

3,989,897 11/1976 Carver 381/47
 4,349,698 9/1982 Iwahara 381/1
 4,356,349 10/1982 Robinson 381/1
 4,803,727 2/1989 Holt et al. 381/1
 4,860,360 8/1989 Boggs 381/47
 4,949,383 8/1990 Koh et al. 381/31
 4,972,484 11/1990 Theile et al. 381/37

OTHER PUBLICATIONS

The Art of Computer Programming, 2nd Ed., vol. 2, Donald E. Knuth, Addison Wesley, Reading, Mass. (1981), pp. 274-275.

"Critical Distance Measurements on Rooms From the Sound Energy Spectrum Response", *Journal of the Acoustical Society of America*, vol. 65, 1979, pp. 1204-1211, Jetzt.

Chapter 5, by Betram Scharf, *Foundations of Modern*

Auditory Theory, edited by Jerry V. Tobias, Academic Press, N.Y., N.Y., 1970.

"Asymmetry of Masking Between Noise and Tone", *Perception and Psychophysics II*, 1972, pp. 241-246, R. P. Hellman.

"Auditory Patterns", *Reviews of Modern Physics*, vol. 12, pp. 47-65, A. Fletcher.

"Optimizing Digital Speech Coders By Exploiting Masking Properties of the Human Ear", *Journal of the Acoustical Society of America*, vol. 66, pp. 1647-1652, M. R. Schroeder et al. (Dec. 1979).

"MSC: Stereo Audio Coding With CD-Quality and 256 kBit/Sec", *IEEE Transactions on Consumer Electronics*, vol. CE-33, No. 4, Nov. 1987, pp. 512-519, E. F. Schroeder et al.

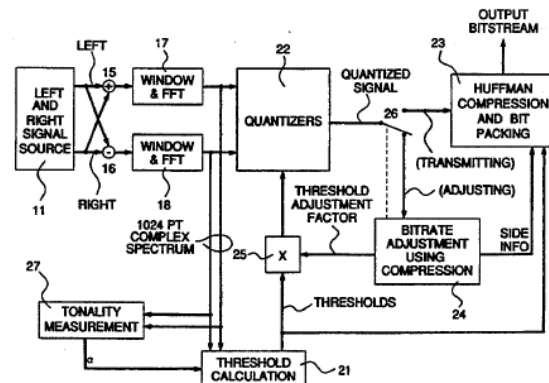
"Transform Coding of Audio Signals Using Perceptual Noise Criteria", *IEEE Journal of Selected Areas in Communications*, Feb. 1988, J. D. Johnston.

Primary Examiner—David D. Knepper
 Attorney, Agent, or Firm—William Ryan; David M. Rosenblatt

[57] ABSTRACT

A technique for the masking of quantizing noise in the coding of audio signals is adapted to include geometric interpolation between the thresholds for a tone masking noise and for noise masking a tone, in order to reduce use of bit-rate capability where it is not necessary for transparent or high quality. The technique is usable with the types of channel coding known as "noiseless" or Huffman coding and with variable radix packing. The stereophonic embodiment eliminates redundancies in the sum and difference signals, so that the stereo coding uses significantly less than twice the bit rate of the comparable monaural signal. The technique can be used both in transmission of signals and in recording for reproduction, particularly recording and reproduction of music. Compatibility with the ISDN transmission rates known as 1 B, 2 B and 3 B rates has been achieved.

17 Claims, 7 Drawing Sheets



US005627938A

United States Patent [19]

Johnston

[11] Patent Number: 5,627,938

[45] Date of Patent: May 6, 1997

[54] RATE LOOP PROCESSOR FOR PERCEPTUAL ENCODER/DECODER

5,218,435 6/1993 Lim et al. 358/133
 5,285,498 2/1994 Johnston 381/2

FOREIGN PATENT DOCUMENTS

376553 12/1989 European Pat. Off. H04B 1/66

OTHER PUBLICATIONS

J. D. Johnston, "Transform Coding of Audio Signals Using Perceptual Noise Criteria", *IEEE J. on Selected Areas in Communications*, vol. 6, No. 2, pp. 314 to 323 (1988).

R.N.J. Veldhuis et al., "Subband Coding of Digital Audio Signals," *Philips Journal of Research*, vol. 44, No. 2/3, Jul. 1989, pp. 329-343.

Musmann, H.G., "The Iso Audio Coding Standard," *Globe-com'90*, vol. 1(3), Dec. 1990, NY, USA, pp. 511-517.

Primary Examiner—Allen R. Macdonald

Assistant Examiner—Patrick N. Edouard

Attorney, Agent, or Firm—David M. Rosenblatt; Donald P. Dinella

[57] ABSTRACT

A method and apparatus for quantizing audio signals is disclosed which advantageously produces a quantized audio signal which can be encoded within an acceptable range. Advantageously, the quantizer uses a scale factor which is interpolated between a threshold based on the calculated threshold of hearing at a given frequency and the absolute threshold of hearing at the same frequency.

4 Claims, 10 Drawing Sheets

Related U.S. Application Data

[63] Continuation of Ser. No. 844,811, Mar. 2, 1992, abandoned.

[51] Int. Cl.⁶ G10L 3/02; G10L 9/00

[52] U.S. Cl. 395/2.39; 395/2.39; 395/2.38

[58] Field of Search 395/2, 2.35, 2.31,
 395/2.38, 2.36, 2.42, 2.39; 381/29-41,
 30, 45, 47, 37, 2; 358/133

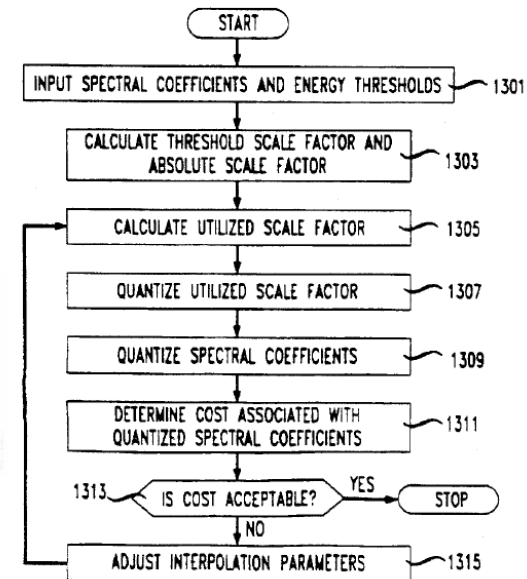
[56] References Cited

U.S. PATENT DOCUMENTS

4,216,354 8/1980 Esteban et al. 395/2.39
 4,860,313 8/1989 Shpiro 375/27
 4,953,214 8/1990 Takeguchi et al. 395/2.39
 4,972,484 11/1990 Theile et al. 381/37
 5,014,318 5/1991 Schott et al. 381/47
 5,054,217 10/1991 Brandenburg 381/47
 5,079,547 1/1992 Puchigama et al. 341/51
 5,185,800 2/1993 Mahieux 381/29



Lucent Technologies
 Bell Labs Innovations





(11) Publication number : **0 394 160 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication of patent specification : **08.11.95 Bulletin 95/45** (51) Int. Cl.⁶ : **G06F 9/46, G06F 9/44**

(21) Application number : **90480028.1**

(22) Date of filing : **20.02.90**

Progress Bar

(54) **Dynamic progress marking icon.**

(30) Priority : **20.03.89 US 325600**

(43) Date of publication of application : **24.10.90 Bulletin 90/43**

(45) Publication of the grant of the patent : **08.11.95 Bulletin 95/45**

(84) Designated Contracting States : **DE ES FR GB IT**

(56) References cited :
I.E.E.E. SOFTWARE, vol. 4, no. 3, May 1987, pages 8-19, IEEE, New York, US; S. ISODA et al.: "VIPS: A visual debugger"



(56) References cited :
I.E.E.E. SOFTWARE, vol. 4, no. 1, January 1987, pages 29-39, IEEE, New York, US; S.-K. CHANG: "Visual languages: A tutorial and survey" RESEARCH DISCLOSURE, no. 305, September 1989, page 654, disclosure no. 30535, New York, US; "Animated icons"

(73) Proprietor : **International Business Machines Corporation**
Old Orchard Road
Armonk, N.Y. 10504 (US)

(72) Inventor : **Jaaskelainen, William**
610 West Center
Oronoco, Minnesota 55960 (US)

(74) Representative : **Lattard, Nicole**
Compagnie IBM France
Département de Propriété Intellectuelle
F-06610 La Gaude (FR)

Note : Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid (Art. 99(1) European patent convention).



(11) **EP 1 254 562 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
29.06.2005 Bulletin 2005/26

(21) Application number: **01947006.1**

(22) Date of filing: **18.01.2001**

(51) Int Cl.⁷: **H04N 5/00**

(86) International application number:
PCT/US2001/001706

(87) International publication number:
WO 2001/056270 (02.08.2001 Gazette 2001/31)

(54) **BROADCAST PAUSE AND RESUME FOR ENHANCED TELEVISION**

UNTERBRECHUNG UND FORTSETZUNG VON SENDUNGEN FÜR ERWEITERTES FERNSEHEN
PAUSE/REPRISE DE DIFFUSION POUR TELEVISION AMELIOREE

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

(30) Priority : **26.01.2000 US 491787**

(43) Date of publication of application:
06.11.2002 Bulletin 2002/45

(73) Proprietor: **INTEL CORPORATION**
Santa Clara, CA 95052 (US)

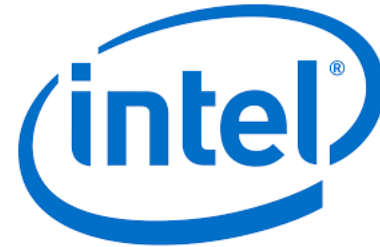
(72) Inventors:
• **WILSON, Andrew, T.**
Portland, OR 97221 (US)

• **KINDER, David, B.**
Portland, OR 97229 (US)

(74) Representative:
Niederkofler, Oswald A., Dipl.-Phys.
Samson & Partner
Widenmayerstrasse 5
80538 München (DE)

(56) References cited:
EP-A- 0 808 072 WO-A-00/36823
WO-A-01/11874 WO-A-98/48566

Digital Video Recording



Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

[54] METHOD OF DISPLAYING MULTIPLE SETS OF INFORMATION IN THE SAME AREA OF A COMPUTER SCREEN

[75] Inventor: Kevin R. Johnston, Mountain View, Calif.

[73] Assignee: Adobe Systems Incorporated, Mountain View, Calif.

[21] Appl. No.: 265,653
[22] Filed: Jun. 23, 1994

[51] Int. Cl.⁶ G06F 3/00
[52] U.S. Cl. 395/159; 395/156; 395/158
[58] Field of Search 395/155-161; 345/117-120, 146, 902

[56] References Cited

U.S. PATENT DOCUMENTS

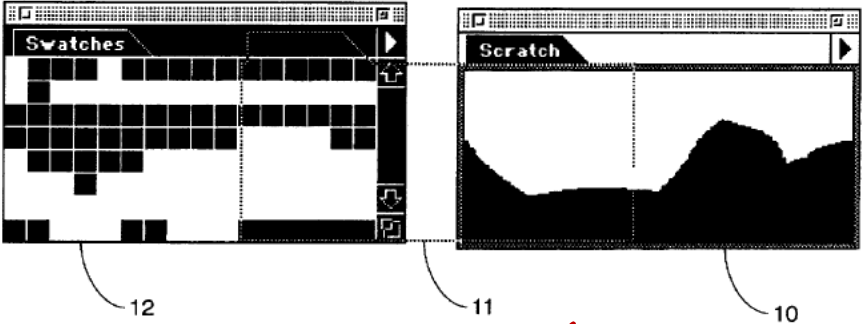
5,060,135 10/1991 Levine et al. 395/161 X
5,140,678 8/1992 Torres 395/159
5,157,763 10/1992 Peter et al. 395/157
5,283,864 2/1994 Knowlton 395/158
5,305,435 4/1994 Bronson 395/159
5,341,293 8/1994 Vertelney et al. 395/159

Primary Examiner—Mark R. Powell
Assistant Examiner—John E. Breene
Attorney, Agent, or Firm—Roger S. Borovoy

[57] ABSTRACT

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.

8 Claims, 5 Drawing Sheets



(12) EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent: 08.08.2001 Bulletin 2001/32
(51) Int. Cl.⁷: G06F 3/033, G06F 9/44

(21) Application number: 95303789.2

(22) Date of filing: 02.06.1995

(54) Method of displaying multiple sets of information in the same area of a computer screen
Verfahren zur Anzeige einer Mehrzahl an Informationsgruppen im gleichen Rechnerbildschirmbereich
Procédé d'affichage d'une pluralité de groupes d'information dans la même région d'un écran d'ordinateur

(84) Designated Contracting States:
DE FR GB IT SE

(30) Priority: 23.06.1994 US 265653

(43) Date of publication of application:
27.12.1995 Bulletin 1995/52

(73) Proprietor: ADOBE SYSTEMS INC.
Mountain View California 94039-7900 (US)

(72) Inventor: Johnston, Kevin R.
Mountain View, California 94043 (US)

(74) Representative: Wombwell, Francis et al
Potts, Kerr & Co.
15, Hamilton Square
Birkenhead Merseyside L41 6BR (GB)

(56) References cited:
• "IBM System Application Architecture - Common User Access Advanced Interface Design Reference (First Edition) (SC34-4290-00)" October 1991, INTERNATIONAL BUSINESS MACHINE CORPORATION XP002013624 * page 1 * * page 163 - page 164 *
• IBM TECHNICAL DISCLOSURE BULLETIN, vol. 35, no. 5, October 1992, ARMONK, NY, US, pages 365-366, XP000313008 "TECHNIQUE FOR USING DETACHABLE NOTEBOOK PAGES"
• IBM TECHNICAL DISCLOSURE BULLETIN, vol. 37, no. 8, August 1994, ARMONK, NY, US, pages 181-182, XP000456381 "Dynamically Adding and Removing Pages and Sections from a Notebook Control"
• IBM TECHNICAL DISCLOSURE BULLETIN, vol. 35, no. 7, December 1992, ARMONK, NY, US, page 207 XP000332983 "NOTEBOOK TABS AS TARGET LOCATION FOR DRAG/DROP OPERATIONS"
• IBM TECHNICAL DISCLOSURE BULLETIN, vol. 35, no. 7, December 1992, ARMONK, NY, US, page 196 XP000332978 "NOTEBOOK TABS AS SOURCE LOCATION FOR DRAG/DROP OPERATIONS"

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 0 689 133 B1



US005764992A

United States Patent [19]

Kullick et al.

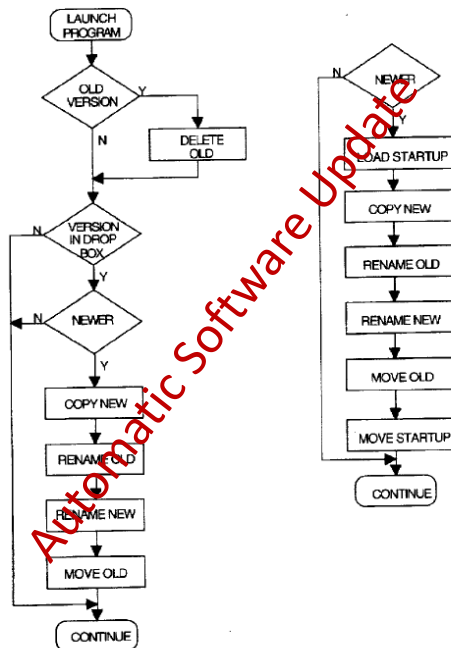
[11] Patent Number: **5,764,992**[45] Date of Patent: **Jun. 9, 1998**[54] **METHOD AND APPARATUS FOR
AUTOMATIC SOFTWARE REPLACEMENT**[75] Inventors: **Steven Kullick**, Saratoga; **Diane Titus**,
Santa Clara, both of Calif.[73] Assignee: **Apple Computer, Inc.**, Cupertino,
Calif.[21] Appl. No.: **471,659**[22] Filed: **Jun. 6, 1995**[51] Int. Cl.⁶ **G06F 9/45**[52] U.S. Cl. **395/712**[58] Field of Search 395/700, 650,
395/621, 622, 712[56] **References Cited****U.S. PATENT DOCUMENTS**

5,019,963	5/1991	Alderson	395/600
5,155,847	10/1992	Kirouac	395/600
5,247,683	9/1993	Holmes	395/700
5,473,772	12/1995	Halliwel	395/650
5,564,051	10/1996	Halliwel	395/600
5,608,901	3/1997	Letwin	395/621

Primary Examiner—James P. Trammell
Assistant Examiner—Peter J. Corcoran, III
Attorney, Agent, or Firm—Burns, Doane, Swecker &
Mathis, L.L.P.

[57] **ABSTRACT**

A software program running on a computer automatically replaces itself with a newer version in a completely automated fashion, without interruption of its primary function, and in a manner that is completely transparent to the user of the computer. This is achieved by means of a logic module that is incorporated into programs. The logic module performs the functions of locating and identifying other versions of its associated program, determining whether the other versions are older or newer than the currently running version, and replacing older versions of itself with a newer version. As part of this operation, the logic module can copy the newer version to its current location, move the older version to a secondary location, and remove older versions of itself that have been replaced by a newer version. The new version that is to replace an older version can reside on an individual computer, or can be present on a server to which a number of computers are connected via a network. With this arrangement, software upgrades can be effected in an efficient and automatic manner, without resort to any external resources.

30 Claims, 4 Drawing Sheets

US008046721B2

United States Patent
Chaudhri et al.[10] Patent No.: **US 8,046,721 B2**[45] Date of Patent: ***Oct. 25, 2011**[54] **UNLOCKING A DEVICE BY PERFORMING
GESTURES ON AN UNLOCK IMAGE**[56] **References Cited****U.S. PATENT DOCUMENTS**

[75] Inventors:	Imran Chaudhri , San Francisco, CA (US); Bas Ording , San Francisco, CA (US); Freddy Allen Anzures , San Francisco, CA (US); Marcel Van Os , San Francisco, CA (US); Stephen O. Lemay , San Francisco, CA (US); Scott Forstall , Mountain View, CA (US); Greg Christie , San Jose, CA (US)	5,465,084 A 5,559,961 A 5,677,710 A 5,821,933 A 5,907,533 A 6,151,408 A 6,168,000 A 6,299,606 B1	11/1995 9/1996 10/1997 10/1998 5/1999 11/2000 12/2000 2/2001	Cottrell Blonder Thompson-Rohrlich Keller et al. Ogura et al. Bartlett Kang et al. Elledge Kiralay et al.	340/825.31 395/188.01 345/173 345/348 345/339 361/683 345/358 713/202 382/195
-----------------	---	---	---	---	---

(Continued)

[73] Assignee: **Apple Inc.**, Cupertino, CA (US)**FOREIGN PATENT DOCUMENTS**

EP 1 284 450 A2 2/2003

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

OTHER PUBLICATIONS

IBM, "Access/Control Icons (Icon Keys)," IBM Technical Disclosure Bulletin, Vol. 38, No. 4, Apr. 1995.

(Continued)

[21] Appl. No.: **12/477,075**[22] Filed: **Jun. 2, 2009**[65] **Prior Publication Data**

US 2009/0241072 A1 Sep. 24, 2009

Related U.S. Application Data

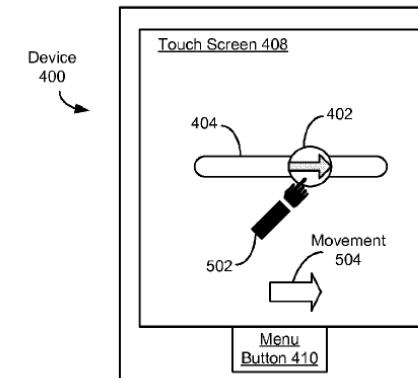
[63] Continuation of application No. 11/322,549, filed on Dec. 23, 2005, now Pat. No. 7,657,849.

[51] Int. Cl.
G06F 3/033 (2006.01)[52] U.S. Cl. **715/863; 345/173; 345/179**[58] Field of Classification Search **715/154, 715/863; 345/156**

See application file for complete search history.

ABSTRACT

A device with a touch-sensitive display may be unlocked via gestures performed on the touch-sensitive display. The device is unlocked if contact with the display corresponds to a predefined gesture for unlocking the device. The device displays one or more unlock images with respect to which the predefined gesture is to be performed in order to unlock the device. The performance of the predefined gesture with respect to the unlock image may include moving the unlock image to a predefined location and/or moving the unlock image along a predefined path. The device may also display visual cues of the predefined gesture on the touch screen to remind a user of the gesture.

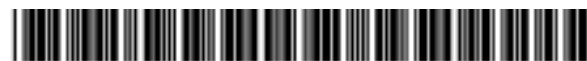
15 Claims, 15 Drawing Sheets

Softwares

- **Commercial Software** requires payment before the user can download and use the software. Commercial software typically does not allow source code to be modified, and usually restrict access to the source code altogether.
- **Shareware** is free to use, but limits the amount of time the program's features are available to the user.
- **Freeware** is software that is allowed to be shared for no cost, but not allowed to be modified.
- **Free Software** – Free Software Foundation defines Free Software as software that “the users have the freedom to run, copy, distribute, study, change and improve”.
- **Creative Commons** is non-profit organization that facilitates sharing creativity and knowledge by providing free legal tools. They offer free and easy to use copyright licenses that offer flexible ways to share creative work on the conditions that authors are going to choose.
- **Public Domain Software** is the software that is not a subject of copyright. This type of software is freely available through public domain, and can be used without any restrictions.

Softwares

- **Open Source** —. Software has to comply with specific criteria in order to be considered open source. According to Open Source Initiatives, open source software
 - Has to be distributed freely
 - Source code has to be included, and distribution in compiled form must also be allowed
 - Software must allow modifications and derived works, and if used, must be distributed on the same terms
 - Integrity of the author's code should not be compromised. If the code is modified it should only be distributed further using a different name.
 - The license can't discriminate against any individual, or group of individuals
 - The license cannot restrict the field that the software will be used in, nor can it restrict the software from being used for commercial purposes.
 - The rights that are attached to the software should apply to all who received the software without any additional license from the party the software was received from.
 - License must not be specific to a product
 - The license cannot restrict the use of any other software using the same license
 - License must be technology neutral meaning that no technology can dictate the style or interface of the software.
- This type of software always gets confused with free software, and freeware



US007613472B2

**(12) United States Patent
Northcutt****(10) Patent No.: US 7,613,472 B2****(45) Date of Patent: Nov. 3, 2009****(54) SYSTEM AND METHOD OF SHARING A
CONTACT LIST AMONG MOBILE PHONES**

2001/0032240 A1* 10/2001 Malone et al. 709/203

(75) Inventor: John W. Northcutt, Chapel Hill, NC
(US)

(Continued)

**(73) Assignee: Sony Ericsson Mobile
Communications AB**, Lund (SE)FOREIGN PATENT DOCUMENTS
WO WO/99/29127 6/1999**(*) Notice:** Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 1143 days.

(Continued)

OTHER PUBLICATIONS**(21) Appl. No.: 10/605,240**International Search Report, PCT/IB2004/001060, Sony Ericsson
Mobile Communications AB, Aug. 19, 2004.**(22) Filed: Sep. 17, 2003****(65) Prior Publication Data**

(Continued)

US 2005/0059418 A1 Mar. 17, 2005

Primary Examiner—Tan Trinh
(74) *Attorney, Agent, or Firm*—Frederick D. Bailey; Moore &
Van Allen, PLLC**(51) Int. Cl.**
H04Q 7/20 (2006.01)**(52) U.S. Cl.** **455/466**; 455/415; 455/412.1;
455/412.2; 455/414.1; 379/93.23**(58) Field of Classification Search** 455/466,
455/412.1, 414, 404.2, 558, 418, 556.1, 411,
455/419, 412.2, 415, 41, 517, 67.7, 414.2;
370/349, 352; 707/9; 705/1, 245; 709/245,
709/229, 206, 217; 379/93.23
See application file for complete search history.**(56) References Cited****U.S. PATENT DOCUMENTS**

5,464,087 A * 11/1995 Bounds et al. 194/200

(57) ABSTRACTA method of sending mobile phone contact list data from one
mobile phone to another mobile phone is disclosed. The
sender composes an SMS or MMS message having contact
data from the mobile phonebook attached. The message is
sent using a messaging service like SMS or MMS to other
mobile phones in a group. Before receiving mobiles act on the
message, a check is determined to see if the message contains
contact list data. If it does not, the message is processed
normally. If the message does contain contact list data, a
software program is launched to manage the received contact**(11) EP 1 665 731 B1****(12) EUROPEAN PATENT SPECIFICATION****(45) Date of publication and mention
of the grant of the patent:**
07.02.2007 Bulletin 2007/06**(51) Int. Cl.**
H04L 29/08 (2006.01) **H04L 12/58** (2006.01)
H04Q 7/32 (2006.01) **H04M 1/2745** (2006.01)**(21) Application number: 04723673.2****(86) International application number:**
PCT/IB2004/001060**(22) Date of filing: 26.03.2004****(87) International publication number:**
WO 2005/027469 (24.03.2005 Gazette 2005/12)**(54) SYSTEM AND METHOD OF SHARING A CONTACT LIST AMONG MOBILE PHONES**SYSTEM UND VERFAHREN ZUR MITBENUTZUNG EINER KONTAKTLISTE UNTER MEHREREN
MOBILFUNKTELEFONENDGERÄTENSYSTEME ET PROCEDE POUR PARTAGER UNE LISTE DE CONTACTS ENTRE DES
TELEPHONES MOBILES**(84) Designated Contracting States:**
DE FR GB**(56) References cited:**
WO-A-01/44911 WO-A-99/29127
WO-A-02/073992 US-A1- 2001 024 951
US-B1- 6 618 747**(30) Priority: 17.09.2003 US 605240****(43) Date of publication of application:**
07.06.2006 Bulletin 2006/23• **DATABASE WPI Week 200282, 28 June 2002**
(2002-06-28) Derwent Publications Ltd., London,
GB; AN 2002-038726 XP002290689 "Method for

Patent No.: 252199	Grantee: SONY ERICSSON MOBILE COMMUNICATIONS AB(Sweden)
Date of Filing: 26/03/2004	Address: NYA VATTENTORNET, S-221 88 LUND, SWEDEN
Date of Grant: 01/05/2012 12:06:09	Address for Service: REMFRY & SAGAR ATTORNEYS-AT-LAW REMFY HOUSE MILLENNIUM PLAZA SECTOR 27, GURGAON 122002, INDIA.
Ceased:	Title: "A METHOD OF UPLOADING A MOBILE PHONE CONTACT LIST"

Priority Date: 00:00:0017/09/2003((U.S.A.))

Application No. 244/DELNP/2006

Date of Recordal : 01/05/2012 12:19:17

Type of Application: PCT NATIONAL
PHASE APPLICATION

The invention claimed is:

1. A method of sending a mobile phone contact list from a first mobile phone using a mobile phone messaging service to a group of mobile phones comprising:

displaying the mobile phone contact list of the first mobile phone;
selecting one or more contacts from the mobile phone contact list;
adding contact data for the selected contacts from the mobile phone contact list to a message; and
sending the message containing the contact data for the selected contacts to the group of mobile phones using the mobile phone messaging service, the message containing control data identifying the message as containing a contact list.

2. The method of claim 1 wherein the mobile phone messaging service uses a short messaging service (SMS) format.

3. The method of claim 1 wherein the mobile phone messaging service uses a multi-media messaging service (MMS) format.

WE CLAIM:

1. A method of uploading a mobile phone contact list of selected contacts from a mobile phone (104) to a computer server (106) residing on a digital cellular network (DCN) (102), the method comprising:
selecting one or more contacts on the mobile phone to be uploaded to the computer server;
establishing a connection between the mobile phone and the computer server (302);
uploading the contact list of selected contacts from the mobile phone to the computer server (304);
storing the uploaded contact list of selected contacts on the computer server (308); and
sending a message to the mobile phones of the selected contacts in the new contact list, the message indicating that a new contact list of selected contacts has been posted on the computer server (310 or 312).

1. A method of uploading a mobile phone contact list of selected contacts from a mobile phone to a computer server residing on a digital cellular network (DCN), the method comprising:

selecting one or more contacts on the mobile phone to be uploaded to the computer server;

establishing a connection (302) between the mobile phone and the computer server;
uploading (304) the contact list of selected contacts from the mobile phone to the computer server;
storing (308) the uploaded contact list of selected contacts on the computer server, and **characterised by** the step of
sending (310) a message to the mobile phones of the selected contacts in the new contact list, the message indicating that a new contact list of selected contacts has been posted on the computer server.

2. The method of claim 1 wherein the message indicating that a new contact list of selected contacts has been posted on the computer server is sent from the mobile phone that uploaded the contact list to the server to the mobile phones of the selected contacts in the new contact list.

3. The method of claim 1 wherein the message indicating that a new contact list of selected contacts has been posted on the computer server is automatically, sent from the computer server to the mobile phones of the selected contacts in the new contact list.



US007130896B2

(12) United States Patent
Engel et al.**(10) Patent No.: US 7,130,896 B2****(45) Date of Patent: Oct. 31, 2006****(54) METHOD AND SYSTEM FOR REMOTE SOFTWARE DISTRIBUTION AND INSTALLATION****(75) Inventors:** Gerhard Engel, Herrenberg (DE); Uwe Heinrich, Deidesheim (DE)**(73) Assignee:** International Business Machines Corporation, Armonk, NY (US)**(*) Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 836 days.**(21) Appl. No.: 10/028,225****(22) Filed: Dec. 18, 2001****(65) Prior Publication Data**

US 2002/0078186 A1 Jun. 20, 2002

(30) Foreign Application Priority Data

Dec. 20, 2000 (EP) 00129018

(51) Int. Cl.
G06F 15/177 (2006.01)
G06F 15/173 (2006.01)
G06F 9/44 (2006.01)
H04L 12/56 (2006.01)**(52) U.S. Cl.** 709/220; 709/223; 717/172**(58) Field of Classification Search** 709/217, 709/220-223; 717/171, 172, 173, 174
See application file for complete search history.**(56) References Cited**

U.S. PATENT DOCUMENTS

6,351,761 B1* 2/2002 Cantone et al. 709/202
6,473,699 B1* 10/2002 Goldman et al. 709/217
6,557,654 B1* 4/2003 Reisman 709/206
6,640,238 B1* 10/2003 Bowman-Armash 709/201
6,966,660 B1* 11/2005 Young et al. 717/177
2002/0106036 A1* 7/2002 Moshir et al. 709/221

FOREIGN PATENT DOCUMENTS

JP 09-168858 6/1997

(Continued)

OTHER PUBLICATIONS

Copy of International Search Report for PCT/EP01/14326.

Primary Examiner—Khushi Dink

Assistant Examiner—Hassan Phillips

(74) Attorney, Agent, or Firm—Myers Bigel Sibley & Sajovec

(57) ABSTRACT

A mechanism for the remote distribution/installation of computer programs from a source to a number of target computers. The computer programs are transferred as packages identified in a package list. Attempt numbers for retrying a push mode and a pull mode distribution are pre-specified. A next package is identified in the package list and it is checked if a target computer is available. If it is available then installation of the package on the target computer is started. Otherwise, if at least one push mode attempt is left, a next push mode is resumed and rescheduled and, if no push mode attempt is left, but at least one pull mode attempt is left, a next pull mode distribution is

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets

(11)

EP 1 415 223 B1



(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
01.03.2006 Bulletin 2006/09**(51) Int. Cl.:**
G06F 9/445 (2006.01) *H04L 29/08* (2006.01)
H04L 29/06 (2006.01)**(21) Application number:** 01990519.9**(86) International application number:**
PCT/EP2001/014326**(22) Date of filing:** 06.12.2001**(87) International publication number:**
WO 2002/050660 (27.06.2002 Gazette 2002/26)**(54) METHOD AND SYSTEM FOR REMOTE SOFTWARE DISTRIBUTION AND INSTALLATION**

VERFAHREN UND SYSTEM FÜR FERNDISTRIBUTION UND FERNINSTALLATION VON SOFTWARE

PROCEDE ET SYSTEME DE DISTRIBUTION ET D'INSTALLATION DE LOGICIELS A DISTANCE

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**(30) Priority:** 20.12.2000 EP 00128018**(43) Date of publication of application:**
06.05.2004 Bulletin 2004/19**(73) Proprietors:**
• International Business Machines Corporation**(72) Inventors:**
• ENGEL, Gerhard
71083 Herrenberg (DE)
• HEINRICH, Uwe
67146 Deidesheim (DE)**(74) Representative:** Kauffmann, Wolfgang Christian
IBM Deutschland GmbH,
Patentwesen und Urheberrecht
70548 Stuttgart (DE)

Patent No.: 214325	Grantee: INTERNATIONAL BUSINESS MACHINES CORPORATION(U.S.A.)
Date of Filing: 06/12/2001	Address: Armonk, New York 10504
Date of Grant: 11/02/2008 11:40:02	Address for Service: M/S. DEPENNING & DEPENNING, INTELLECTUAL PROPERTY HOUSE, 31, SOUTH BANK ROAD, CHENNAI – 600 028.
Ceased:	Title: METHOD AND SYSTEM FOR REMOTE DISTRIBUTION AND INSTALLATION OF COMPUTER PROGRAMS

Priority Date:
00:00:0020/12/2000((EUROPEAN UNION))

Application No. 958/CHENP/2003

Date of Recordal : 25/02/2008

Type of Application: PCT NATIONAL
PHASE APPLICATION

What is claimed is:

1. A method for remote distribution/installation of computer programs from a source data processing system to at least one target data processing system based on at least two distribution/installation modes, comprising:

checking if the at least one target data processing system is available;

performing distribution/installation according to one of the at least two distribution/installation modes, if the at least one target data processing system is available; monitoring if the distribution/installation is successful;

switching the distribution/installation mode if the distribution/installation is not successful, wherein the computer programs are transferred as packages which are identified in a package list;

pre-specifying attempt numbers for retrying a push-mode distribution and a pull-mode distribution;

retrieving a next package identified in the package list; and

checking if the at least one target data processing system is available;

if the at least one target data processing system is available then starting installation of the package on the target data processing system;

otherwise, if at least one push-mode attempt is left, resuming and rescheduling a next push-mode distribution and, if no push-mode attempt is left, but at least one pull-mode attempt is left, resuming and rescheduling a next pull-mode distribution.

1. A method for remote distribution and installation of computer programs from a source data processing system to at least one target data processing system, wherein a computer program is transferred as a package in either a push mode or a pull mode and where the computer programs to be distributed and their target computer system/s are identified in a package list, the method comprising the steps of:

the source data processing system retrieving a package identified in the package list;

the source data processing system starting distribution in push mode of the package on the target data processing system, if at least one target computer system is available;

the source data processing system monitoring the target data processing system to signal a successful installation; and

the source data processing system repeating the push mode distribution as long as the installation is found not successful and switching to the pull mode distribution if the number of attempts for push mode has been exhausted and repeating the pull mode distribution as long as the installation is found not successful until the number of attempts for pull mode has been reached.

1. A method for remote distribution and installation of computer programs from a source data processing system to at least one target data processing system, wherein a computer program is transferred as a package in either a push mode or an authoritative pull mode, where an authoritative pull mode is a push mode waiting for a target computer system login, and where the computer programs to be distributed and

their target computer system/s are identified in a package list, the method comprising the steps of:

pre-specifying attempt numbers for retrying a push mode and a authoritative pull mode distribution;

the source data processing system retrieving (204,206) a package identified in the package list;

the source data processing system starting (212) distribution in push mode of the package on the target data processing system, if at least one target computer system is available (210); the source data processing system monitoring the target data processing system (214) to signal a successful installation; and

the source data processing system repeating the push mode distribution (220) as long as the installation is found not successful until the number of attempts for push mode has been reached (218) and switching to authoritative pull mode distribution (226) if the number of attempts for push mode has been exhausted and repeating the authoritative pull mode distribution as long as the installation is found not successful until the number of attempts for authoritative pull mode has been reached (224).



US007194494B1

(12) **United States Patent**
Dahlstedt(10) **Patent No.: US 7,194,494 B1**(45) **Date of Patent: Mar. 20, 2007**(54) **METHOD FOR GARBAGE COLLECTION OF UNUSED METHODS**(75) Inventor: **Joakim Dahlstedt**, Stockholm (SE)(73) Assignee: **Bea Systems, Inc.**, San Jose, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 78 days.

(21) Appl. No.: **10/111,566**(22) PCT Filed: **Oct. 27, 2000**(86) PCT No.: **PCT/SE00/02096**§ 371 (c)(1),
(2), (4) Date: **Oct. 31, 2002**(87) PCT Pub. No.: **WO01/31455**PCT Pub. Date: **May 3, 2001**(30) **Foreign Application Priority Data**

Oct. 28, 1999 (SE) 9903890

(51) **Int. Cl.**
G06F 12/12 (2006.01)(52) **U.S. Cl.** **707/206**(58) **Field of Classification Search** 707/2,
707/5, 6, 206; 717/154; 711/132; 718/100
See application file for complete search history.(56) **References Cited****U.S. PATENT DOCUMENTS**

5,088,036 A 2/1992 Ellis et al. 707/206

5,355,483 A * 10/1994 Serlet 711/154
5,652,883 A * 7/1997 Adcock 707/206
5,915,255 A 6/1999 Schwartz et al. 707/206
6,041,179 A * 3/2000 Bacon et al. 717/116
6,463,581 B1 * 10/2002 Bacon et al. 717/154
6,654,951 B1 * 11/2003 Bacon et al. 717/154**FOREIGN PATENT DOCUMENTS**

WO WO99/32978 7/1999

OTHER PUBLICATIONSPascal Fradet, Collecting More Garbage, 1994, ACM, pp. 1-10.*
Amitabh Srivastava, Unreachable Procedures in Object-Oriented Programming, 1992, ACM, pp. 1-10.*

* cited by examiner

Primary Examiner—Paul Rodriguez
Assistant Examiner—Luke Osborne
(74) *Attorney, Agent, or Firm*—Fliesler Meyer LLP(57) **ABSTRACT**

A method for improving the effectiveness of a data processing application when using a virtual machine, wherein the program includes a large number of methods, i.e. program sections, that are stored in the memory of the computer used, and wherein the program uses a garbage collecting procedure. The invention is characterized by analysing in a first step all so called thread stacks with respect to the procedures required thereby; causing each of said requisite methods to be regenerated in a second step, wherein occurring references to a method prior to the regeneration are replaced with references to regenerated methods; and by erasing all non-regenerated methods in a third step and placing corresponding memory space at the disposal of the program.

14 Claims, 1 Drawing Sheet

(19)



(11)

EP 1 240 589 B1

(12)

EUROPEAN PATENT SPECIFICATION(45) Date of publication and mention
of the grant of the patent:
23.07.2008 Bulletin 2008/30(51) Int. Cl.:
G06F 12/02 (2006.01)(21) Application number: **00978146.9**(86) International application number:
PCT/SE2000/002096(22) Date of filing: **27.10.2000**(87) International publication number:
WO 2001/031455 (03.05.2001 Gazette 2001/18)(54) **A METHOD FOR GARBAGE COLLECTION OF UNUSED METHODS**

VERFAHREN ZUR FREISPEICHERSAMMLUNG VON UNBENUTZTER VERFAHREN

PROCEDE DE RECUPERATION DES PROCEDURES INUTILISEES

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**(30) Priority: **28.10.1999 SE 9903890**(43) Date of publication of application:
18.09.2002 Bulletin 2002/38(73) Proprietor: **BEA Systems, Inc.**
San Jose, CA 95131 (US)(72) Inventor: **DAHLSTEDT, Joakim**
S-118 42 Stockholm (SE)(74) Representative: **Örtenblad, Bertil Tore et al**
Noréns Patentbyrå AB
P.O. Box 10198
100 55 Stockholm (SE)(56) References cited:
WO-A1-99/32978 US-A- 5 088 036
US-A- 5 915 255

Patent No.: 202795	Grantee: BEA SYSTEMS INC(US.A.)
Date of Filing: 27/10/2000	Address: 2315 NORTH FIRST STREET, SAN JOSE, CALIFORNIA 95131
Date of Grant: 30/10/2006	Address for Service: M/S. DEPENNING & DEPENNING 31, SOUTH BANK ROAD, CHENNAI 600 028
Ceased: 27/10/2011	Title: A METHOD FOR IMPROVING THE EFFECTIVENESS OF A DATA PROCESSING APPLICATION WHEN USING A VIRTUAL MACHINE

Priority Date:
00:00:0028/10/1999((Switzerland))

Application No. IN/PCT/2002/616/CHE Date of Recordal : 20/07/2007

Type of Application: PCT NATIONAL
PHASE APPLICATION

The invention claimed is:

1. A process for optimizing the distribution of application methods within the memory space of a computer system or virtual machine, wherein the application methods are part of an application program and wherein the computer system or virtual machine includes a plurality of threads, comprising the steps of:

analyzing thread stacks to determine a selection of application methods by stopping each thread one at a time, determining a selection of application methods currently required by the stopped thread, and restarting the stopped thread;

creating regenerated application methods by copying the selection of application methods to new memory addresses, determining if any of the application methods reference any of the selection of application methods, and replacing each reference by an application method to one of the selection of application methods, with a corresponding reference to the new memory address of the one of the selection of application methods; and

erasing all non-regenerated application methods and releasing the memory space occupied by those non-regenerated application methods, for subsequent use by the application program.

1. A method for improving the effectiveness of a data processing program when using a virtual machine, wherein the program includes a large number of methods, i.e. program sections, that are stored in the memory of the computer used, and wherein the program uses a garbage collecting procedure, **characterised by** analysing in a first step all so called thread stacks with respect to the methods required thereby; causing each of said requisite methods to be regenerated in a second step, wherein occurring references to a method prior to regeneration are replaced with references to regenerated methods; and by erasing all non-regenerated methods in a third step and placing corresponding memory space at the disposal of the program.

2. A method according to Claim 1, **characterised by** causing one thread at a time to be stopped as the program is run; transferring methods used for a stopped thread to a list, and thereafter restarting the thread; regenerating and storing the methods in said

list; causing all threads to be stopped simultaneously subsequent to having treated all threads in said fashion; erasing all methods that have not been regenerated and restarting all threads with the regenerated methods.

3. A method according to Claim 1 or 2, **characterised by** when locking mechanisms are used, identifying the most effective locking mechanism in a step prior to said first method step; and regenerating those methods that use a thus identified locking mechanism.

4. A method according to Claim 1, 2 or 3, **characterised by**, when different garbage collecting algorithms are used, determining the allocation and length of life of the various objects in a step prior to said first method step, and then identifying the most effective garbage collecting algorithm; regenerating the methods constituting the requisite garbage collecting algorithms; and erasing remaining garbage collecting algorithms.

US - 14 claims

EP - 4 claims



The US Position

“The Congress shall have the power ... to promote the progress of science and useful arts, by securing for limited times to ... inventors the exclusive right to their ... discoveries.”

“any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof” can be patented.

The US Position ...

1972: *Gottschalk v Benson*

a method for programming a general-purpose computer using an algorithm to convert binary-coded decimal Numbers into pure binary numbers.

1978: *Parker v Flook*

Involved the use of an algorithm to update alarm limits of a chemical process.

1981: *Diamond v Diehr*

dealt with a rubber-curing process controlled by a computer program.

1998: *State Street Bank & Trust Co v Signature Financial Group, Inc.*

overturning the exception to patentability of business methods

2010: *Bilski v Kappos*

CAFC articulated a “*machine-or-transformation*” test: to be patentable, the invention must be tied to a specific machine or transform an article to a different state or thing.

2014: *Alice Corp v CLS Bank Intl*

the claims were drawn to an abstract idea, and implementing those claims on a computer was not enough to transform that idea into patentable subject matter.

➤ In order for an invention to be entitled to patent protection in United States, it must overcome four statutory hurdles:

- the invention must have patentable subject matter;
- the invention must be useful;
- the invention must be novel; and
- the invention must be non-obvious.

➤ It also requires an invention to fit into one of four categories of subject matter:

- processes,
- machines,
- manufactures or
- compositions of matter.

➤ The business method and software come under process patents.

The US Position ...

➤ A process (including software related inventions or computer code) is patentable only if:

- it is synchronized to a particular machine or apparatus, or
- It transforms a particular article into a different state or thing.

➤ “**machine-or-transformation test**” is intended to identify and exclude abstract ideas that are not eligible for patent.

➤ certain claims about a computer-implemented transactions covered ***abstract ideas ineligible*** for patent protection

The US Position ...

- 1960s:** } No Protection if invention is exclusively calculations made via
- 1970s:** } computer.
- 1980s:** } The Supreme Court verdict clarifies that some computerize
- 1990s:** } inventions are patentable.
- 2000s:** } The Federal Circuit provides that almost all software is
- 2010s:** } patentable.
- 2014s:** } The Federal Circuit starts rolled back that almost all Software
- 2014s:** } are patentable.
- 2014s:** } Supreme Court intervened and upheld the initial decision that
- 2014s:** } almost all software are patentable.
- 2014s:** } The Federal Circuit provided a two step test for determining
- 2014s:** } patent eligibility for all software related inventions

The US has also designed its copyright laws to ensure that software programs are granted enough protection as literary works.



The EU Position

1973 EPC

- Computer programs were excluded
 - The first preliminary drafts of the EPC showed that computer programs were not excluded from patent protection.
- Many felt that an absolute prohibition on the patentability of computer program inventions was inappropriate, because the evolution of this nascent technical field was so dynamic. A Swiss proposal to specify in the EPC that only computer programs “as such” were to be excluded from patent protection was accepted.
- Since then, this wording has been the basis of many decisions of the Boards of Appeal of the EPO defining what software can be protected under the EPC and how the protection may be defined.

The EU Position ...

1986 (VICOM)

- The Board of Appeal held that a patent application concerning a method for digitally processing images related to a technical process: “The Board, therefore, is of the opinion that even if the idea underlying an invention may be considered to reside in a mathematical method a claim directed to a technical process in which the method is used does not seek protection for the mathematical method as such.”
- Since then, the EPO has allowed patents claiming protection for a computer (or a device or system with a processor) that has a computer program installed on it which has a technical effect or solves a technical problem, and for (technical) processes performed by such a computer program.
- *Neither the EPC nor the Boards of Appeal have ever defined **what** is meant by a “technical” effect or problem.*

The EU Position ...

Case law provides the following examples:

- Computer program inventions that control industrial processes, such as the production of end-user products (eg., cars, mobile telephones, medicines) or semi-manufactured products, are patentable in principle.
- Computer program inventions essentially solving a mathematical equation may be patentable, provided that they solve a technical problem – for instance, where they concern the encryption of telecommunication messages, the compression of data or signal processing.
- Computer program inventions relating only to non-technical areas, such as computer games, internet auctions, financial operations and business operations, cannot be protected by patents in Europe.

Boards of Appeal also decided to allow patent claims to computer programs and data carriers (eg, DVDs) that store such computer programs, provided that the computer programs concerned, when loaded on a computer, solve a technical problem or have a technical effect



The German Position

The German patent office, expressed an opinion on TRIPs in a decision on patentability of software, as per the German patent laws:

"The Treaty on Trade Related Aspects of Intellectual Property Rights (TRIPs) does not entail any different judgment of patentability. Independently of the question as to in what form - directly or indirectly - the TRIPs treaty is applicable here, the application of Art 27 TRIPs would not lead to any extension of patentability here. The wording, according to which patents shall be available for inventions in all fields of technology, merely confirms the dominating view of German patent jurisprudence, according to which the concept of technology (Technik) constitutes the only usable criterion for delimiting inventions against other kinds of intellectual achievements, and therefore technicity is a precondition for patentability (the "Logikverifikation" decision of the Federal Court of Justice (BGH) sees Art 27 TRIPs as "posterior confirmation" of this jurisprudence). The exclusion provision of Art 52 (2) and (3) EPC can also not be construed to be in conflict with Art 27 TRIPs, since it is based on the notion of lacking technical character of the excluded items."



The China Position

1993 Examination Guidelines

- Did not exclude computer software-implemented inventions from patent protection - provide a technical solution and produce a technical effect be patentable,
- Device claims were rejected for lack of support in the description - no block diagram of hardware

2006 Examination Guidelines

- Device claims are allowable - each component of the device claim must correspond fully to each step in the flowchart or in the method claim reflecting the flowchart.
 - *“the device claim defined by such functional modules should be interpreted as realizing the technical solution mainly by the computer software recited in the specification, rather than hardware device realized mainly by hardware”*

Open Question

Can a device claim cover a device with firmware having all functional modules?

The India Position

- *The Indian Patent Act does not grant patents on computer programs, per se.*
- *However, Computer Implemented Inventions, which have a dependence on hardware components, may be considered to be patentable.*
- *As per the revised guidelines, examiners may rely on the following three stage test in examining CRI applications:*
 - *Properly construe the claim and identify the actual contribution of the hardware and the computer program;*
 - *If the contribution lies only by the computer program, mathematical method, business method or algorithm, deny the claim; and*
 - *If the contribution lies by computer program, check whether it is claimed in conjunction with a hardware via a method and proceed to other steps to determine patentability with respect to the invention.*
- *Detailed disclosure requirements*
- *The New Draft manual of Patent Practice and Procedure published by the Indian Patent Office states that method claims in software related inventions is allowable.*
- *The Indian Copyright Act also provides for protection to computer program by treating it as literary works*



Indian Guidelines for CRI

- The Office of the **CGPDTM** issued revised Guidelines on Examination of **CRI(s)** on June 30th 2017.
- Proposes to bring much needed clarity and consistency in examination of patent applications for computer related inventions.
- The Patents (Amendment) Act, 2002 also introduced explicit exclusions from patentability under section 3 for Computer Related Inventions (CRIs) as under:
 - (k) a mathematical or business method or a computer programme per se or algorithms;
 - (l) a literary, dramatic, musical or artistic work or any other aesthetic creation whatsoever including cinematographic works and television productions;
 - (m) a mere scheme or rule or method of performing mental act or method of playing game;
 - (n) a presentation of information;
 - (o) topography of integrated circuits;
- Claims
 - 1) The claims should clearly define the scope of the invention and should take care of unity of invention requirements as defined under section 10(5) of the Patents Act, 1970.
 - 2) The claim(s) of a complete specification should be clear and succinct and should be fairly based on the matter disclosed in the specification.
 - 3) The claims in the field of Computer related inventions need to be construed to ascertain the substance of the claim without wholly relying on the forms and types of the claims.

Computer Related/Implemented Inventions



- ✓ Yes it is patentable - if the program has the potential to bring about, when running on a computer, a technical effect which goes beyond the normal interactions between the program and the computer.
- ✓ The normal interactions like flow of electrical current are not sufficient to establish the technical effect.

Computer Related/Implemented Inventions

- Highlight technical problem being solved
- Highlight the technical effect or technical advance of a specified program (whether by means of hardware or software)
- Try to avoid look and feel of algorithm, mathematical method, business method as even technical advance cannot save it due to absolute bar
- Avoid certain terms in claims, like program, instructions, calculating, etc.
- Link the invention to one or more end application/use
- Keep method as primary claims
- Clearly state what device/ component performs the method
- Avoid multi-party system claims – client and server, server and database
- Separate claim for each device, such as transmitter and receiver, source and destination device



Major Software Patent Cases: INDIA

#	Prominent Cases	Area
1	<i>Electronic Navigation Research Institute Vs. Controller General of Patents</i> ⁸¹ .	Patent Eligibility – Technical effects (Denied as mathematical formulae even if it resulted in technical effects)
2	<i>Yahoo Vs Controller of Patents & Rediffcom India Limited</i> ⁸²	Patent Eligibility – Technical effects (Denied as a business model being embodied via technology)
3	<i>Accenture global service GMBH Vs. the assistant controller of Patents & Designs</i> ⁸³	Patent Eligibility – Section 3(k) (held that the instant invention as claimed is not software per se but a system is claimed which has improved web services and software.)
4	<i>Enercon India Limited Vs. Aloys Wobben, Germany</i> ⁸⁴	Patent Eligibility – Section 3(k) (granted)
5	<i>Ferid Allani v Union of India</i> ⁸⁵	Patent Eligibility – Section 3(k) (granted)

Critical

- Different Subject Matter
- Different Criteria
- Different Rights
- Different Claimants
- Procedure
- Duration



Protection

- Software can be protected in three different ways:
 - trade secrets (if possible),
 - through copyright or
 - through a patent.
- Protection is available in all major countries, but the scope of protection available differs from jurisdiction to jurisdiction.

Method Claim

- Method claims include active steps in a process to define the invention.
- A process has to be unique or better than the prior arts. Each element in a claim uses verb + “-ing” form. This element represents an active step in a process.
- A method claim is a set of steps in verb + “-ing” forms.

A method for manufacturing [the invented product] comprising:

[Step A of the program] (further details of the step A);

[Step B of the program] (further details of the step B);

*[Step C of the program] (further details of the step C);
and so on.*

Claim 1 of

A method of unlocking a hand-held electronic device, the device including a touch-sensitive display, the method comprising:

detecting a contact with the touch-sensitive display at a first predefined location corresponding to an unlock image;

continuously moving the unlock image on the touch-sensitive display in accordance with movement of the contact while continuous contact with the touch screen is maintained, wherein the unlock image is a graphical, interactive user-interface object with which a user interacts in order to unlock the device; and

unlocking the hand-held electronic device if the moving the unlock image on the touch-sensitive display results in movement of the unlock image from the first predefined location to a predefined unlock region on the touch-sensitive display.

System Claim

- A system claim is to protect novel components that perform mandatory steps of the invented software program.
- Therefore, this system claim will protect essential and novel components of the invention.

A system for [the invented product] comprising:
[Element A] (further details of this element);
[Element B] (further details of this element);
[Element C] (further details of this element);
and so on.

Claim 1 of

A portable electronic device, comprising:

a touch-sensitive display;

memory;

one or more processors; and

one or more modules stored in the memory and configured for execution by the one or more processors, the one or more modules including instructions:

to detect a contact with the touch-sensitive display at a first predefined location corresponding to an unlock image;

to continuously move the unlock image on the touch-sensitive display in accordance with movement of the detected contact while continuous contact with the touch-sensitive display is maintained, wherein the unlock image is a graphical, interactive user-interface object with which a user interacts in order to unlock the device; and

to unlock the hand-held electronic device if the unlock image is moved from the first predefined location on the touch screen to a predefined unlock region on the touch-sensitive display.

SOFTWARE: WHAT IS PATENTABLE

In general, computer software in combination with a physical device or physical element that is used in processing, operation, or implementation of a function, which is a new, useful, and non-obvious process or product is a patentable subject matter. Few examples are given below which can be patentable within the meaning of patent laws:

1. Method of data/video/image/audio compression/processing;
2. A system that controlled an equipment (X-ray, microwave, robotic, inventory, washing machine, engine, hard disk, electronic meter, chemical reaction, etc);
3. An improved method for operation of a machine or memory;
4. Method of improving technical properties such as physical, chemical, biological or electric properties of an object;
5. A system that controlled a Graphical User Interface; and
6. A system and method for positioning of mobile unit.

SOFTWARE: WHAT IS NON PATENTABLE

When a claimed invention is an obvious process or product and considered as any of (i) to (vi) shown below, the claimed invention is not considered as patentable:

- (i) Abstract idea or computer programs or code;
- (ii) Arbitrary arrangements (e.g., a rule for playing a game as such);
- (iii) Mathematical formula;
- (iv) Mental activities of humans;
- (v) Algorithm; and
- (vi) Those utilizing only (i) to (v) (e.g., methods for doing business as such).



Do you need a patent for your software-related invention?

- In many countries, computer programs, whether in source or object code, are protected under copyright. The major advantage of copyright protection lies in its simplicity.
- Copyright protection does not depend on any formalities such as registration or the deposit of copies in the 151 countries party to the Berne Convention for the Protection of Literary and Artistic Works.
- International copyright protection is automatic
- A patent must be applied for, in principle, in each country in which you seek patent protection.
- A patented invention shall be disclosed to the public.
- Patenting requirements can be legally and technically complex, and their compliance often requires a legal expert's assistance.
- Compared with copyright protection, the term of protection is much shorter.
- Complex requirements for the grant of patents, the costs for obtaining and enforcing a patent may be costly.
- The possibility and feasibility of using other types of intellectual property, such as trademarks, industrial designs and trade secret protection, may also be considered.

Why numerous patents for software-related inventions?

- Copyright protection extends only to expressions, and not to ideas, procedures, methods of operation or mathematical concepts as such.
- Although copyright protects the “literal expression” of computer programs.
- Copyright does not protect the “*invention*” underlying the computer program, which often have considerable commercial value.

What do you wish to protect from your competitors?

- Software may be incorporated in a computer or an apparatus, such as a household appliance or a car. But often, such software is created, reproduced and distributed on media (such as diskettes, CD-ROMs or an online network) which are separate from the hardware.
- Software may provide technical functions, such as controlling a machine or regulating the room temperature. It may be used to monitor communication network systems or provide interfaces between a computer and a human being. Or, it may be used to process scientific, financial, economic or social data in order to, for example, explore a new scientific theory or seek the highest possible return on an investment.
- Depending on how the software is used together with the hardware, what you wish to protect from your competitor may differ.
- The core part of your software-related innovation may lie in an apparatus, a system, an algorithm, a method, a network, the processing of data or the software itself.

Identify the core part of your innovation.

Is your invention patentable?

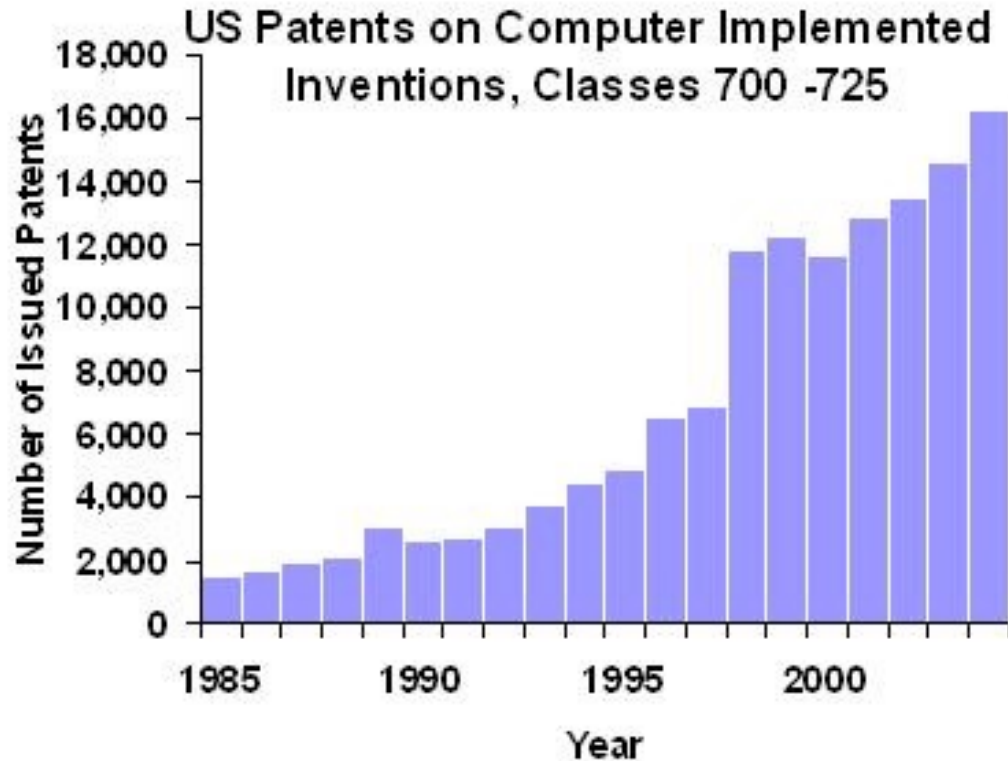
- To be eligible for patent protection, an invention must meet several criteria:
 - the invention must consist of patentable subject matter;
 - the invention must be capable of industrial application (or, in certain countries, be useful);
 - it must be new (novel);
 - it must involve an inventive step (be non-obvious); and
 - the disclosure of the invention in the patent application must meet certain formal and substantive standards.
- Since patent law is applicable to inventions in any field of technology without discrimination, to be patentable, software-related inventions and business method-related inventions must also comply with those requirements.
- In many countries, “*inventions*” are required to have a technical character, or to provide a solution.
- One should pay special attention as to whether your software-related innovation is covered by patentable subject matter under the relevant patent law.

Do you need protection abroad?

- If you wish to protect your innovation abroad, in principle, you need to obtain a patent in each country in which you are interested in accordance with the law of that country.
- Patentability requirements are not always the same in each country.
- The main requirement is concerning patentable subject matter.
 - In the US there is no specific exclusion of software or business methods from patentable subject matter.
 - The EPC expressly excludes “computer program *per se*” and “methods of doing business *per se*” from the patentable subject matter.

it may be that certain software-related innovations are considered as patentable subject matter in the USA, while the same innovations might fall outside of the scope of patentable subject matter in Europe or Japan.

Software Patents



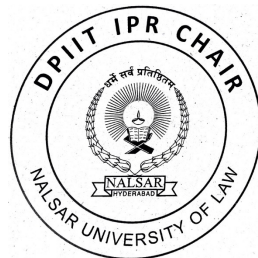
- Business methods
- Data compression
 - Data compression in general
 - Audio compression
 - Image compression
 - Video compression
- Data encryption
- Gaming systems
- Image processing
- Internet tools
- Fair division
- Search engines
- Telecommunications
- User interfaces



thank
you



NALSAR University of Law, Hyderabad
'Justice City', Shameerpet
Medchal-Malkajgiri District
Hyderabad 500 101, Telengana
INDIA



Prof. (Dr) Anindya Sircar.

*Chair Professor – IPR
Department for Promotion of Industry and Internal Trade
Ministry of Commerce & Industry
Government of India.*

Software Patents – A Comparison Across Prominent Jurisdictions

Country	Patent Eligibility	Computer-Implemented Inventions (CII)	Business Method Patents	Functional Claiming	Standard Essential Patent (SEP) & FRAND licenses
India	Computer program per se is not patentable but can be patented if it meets the criteria of a <i>"technical effect."</i>	Patentable based on the substance/subject matter of the claim rather than its literal interpretation.	Business methods are not patentable per se; however, they are patentable if a new method solves a <i>"technical"</i> problem, and an apparatus/system is involved.	Not allowed	No direct regulations or statutory requirements for the disclosure and licensing of SEPs. CCI has brought two investigations involving SEPs FRAND licensing obligations are yet to be considered in the courts
USA	Neither software nor computer programs are explicitly mentioned in US patent law. Restrictions on subject matter eligibility under Section 101 are a matter of ongoing judicial activity.	Technical effect doctrine.	Patentable - two-step test 1. Whether the claimed invention is directed to an abstract idea, law of nature, mathematical formula, or similar abstraction. 2. If yes, whether the way the claimed invention implements the abstraction contains an inventive concept, as contrasted with being routine and conventional.	Means -Plus-Function Claims under § 112(F)	A jury, not a judge, resolves FRAND damages disputes
UK	In addition to the standard patent requirements of novelty, inventiveness, and industrial application, it must also have a <i>"technical effect."</i>	Technical effect doctrine.	Four step test 1. Interpreting the patent claim. 2. Identifying the actual contribution. 3. Considering whether the contribution falls solely within the excluded subject matter. 4. Checking whether the contribution is technical.	Narrowly defined Means -Plus-Function Claims	Call for views on SEPs
Australia	Software is patentable if it - is a manner of manufacture - is novel - involves an inventive step - is useful - has not previously been used, even if in secret	The long list of guiding principles.	Patentable only if it has a physical aspect, being a concrete, tangible, physical, or observable effect or phenomenon.		No direct regulations or statutory requirements for the disclosure and licensing of SEPs. FRAND licensing obligations are yet to be considered in the courts

New Zealand	Patents Act 2013 excludes computer programs “as such from the definition of an invention.	A computer-implemented method is patentable if the contribution lies in a patent-eligible field.	Not Patentable	Not allowed	No direct regulations or statutory requirements for the disclosure and licensing of SEPs.
Canada	Neither computers nor software is mentioned explicitly in the Canadian Patent Act. As long as an invention meets the general patentability criteria.	Patentable	Patentable It must be more than an abstract idea or theorem and have a practical application.		No direct regulations or statutory requirements for the disclosure and licensing of SEPs. FRAND licensing obligations are yet to be considered in the courts
China	Patentable (“triple technical requirement”) use “technical means” to solve a “technical problem” and provide a “technical result.”	Patentable	Patentable. It must be implemented by computer hardware and not as a standalone method.		No direct regulations or statutory requirements for the disclosure and licensing of SEPs. Judge decides on FRAND damages disputes
European Union	European patent law explicitly excludes computer programs and methods of doing business from patent protection. EU Directive on the Patentability of Computer-Implemented Inventions relies on the “Technical effect doctrine.” For a claimed invention devised in a software and business context to be patentable, the claimed invention must define “technical” features which solve a “technical problem” in a non-obvious manner.		Business Methods per se are not patentable. A claim will not be refused as a business method per se if it contains technical subject matter, no matter how trivial (e.g., a computer or software having some degree of technical character when run), and has an inventive step.	EPO issued guidelines providing example claim formulations for computer-implemented inventions ⁶⁶	EU abuse of dominance law National courts on FRAND damages disputes
Israel	Patentable if 1. The claimed invention has expression or modification in the physical features beyond the regular operation of an integrated computer system. 2. Causes the computer to operate in a new manner, including, but not only improving the computer's performance or inter-operability created between components of the computer system in a manner that did not exist beforehand		Business methods per se that belong to the financial world are excluded, but not all business methods are excluded.	Possible	No direct regulations or statutory requirements for the disclosure and licensing of SEPs. FRAND licensing obligations are yet to be considered in the courts
Japan	No express provision in the Japanese Patent Law	Patentable provided they are based on the type of software / concrete hardware resources relationship described for the computer software-related inventions.		Possible	Japan Patent Office (JPO) “Guide to Licensing Negotiations Involving Standard Essential Patents.”

⁶⁶ EPO Guidelines for Examination, Available at: https://www.epo.org/law-practice/legal-texts/html/guidelines/e/f_iv_3_9.htm accessed on December 15, 2022

	Patentable when the claims are expressed such that information processing by the software is "concretely realized by using hardware resources."				
Singapore	Patentable if invention satisfies the relevant eligibility criteria (novelty and inventive step)	non-liquet	non-liquet	non-liquet	No direct regulations or statutory requirements for the disclosure and licensing of SEPs. CCCS deals with cases involving FRAND commitments in the context of competition concerns,
South Korea	It should be claimed as a computer-readable data structure recorded in computer memory or as a program physically stored in a digital medium.	Patentable	Not Patentable	Not allowed	SEP holder's injunction evaluated based on Korean Fair-Trade law Judge decides on FRAND damages disputes