(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
31 January 2002 (31.01.2002)

PCT

(10) International Publication Number
WO 02/009456 A3

(51) International Patent Classification[7]: H04L 12/28, H04Q 7/22, H04L 29/06, 29/08, G06F 17/30, H04L 12/56

(21) International Application Number: PCT/US01/22688

(22) International Filing Date: 19 July 2001 (19.07.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/219,508 20 July 2000 (20.07.2000) US

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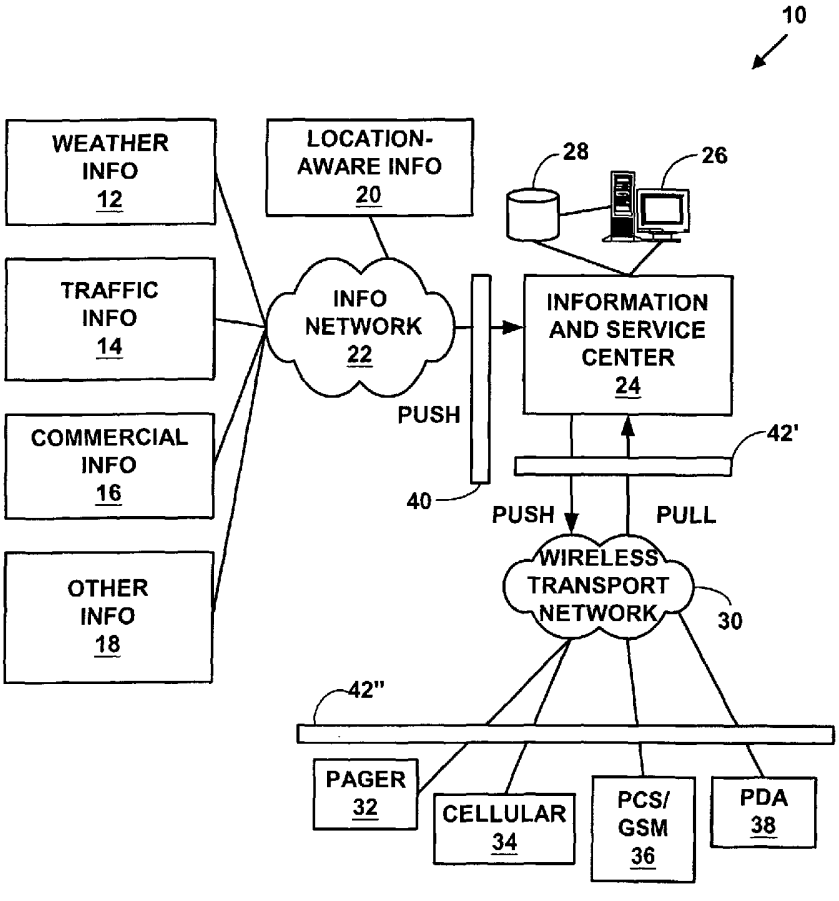
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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European

[Continued on next page]

(54) Title: METHOD, SYSTEM, AND PROTOCOL FOR LOCATION-AWARE MOBILE DEVICES



(57) Abstract: A method-independent location-aware network protocol provides communication with location-aware wireless mobile devices.The protocol is network-independent to support and deliver location-aware services over virtually any wireless or wired network transparently regardless of the protocols being used on a transport network. The protocol is location-aware of current geographic location of plural wireless mobile devices. Alert information is provided to a location-aware wireless mobile device with the network protocol and interfaces. Location-aware wireless mobile devices are located and provided with alert information with the network-independent location-aware network protocol and interfaces. The method, system, interfaces and protocol may help improve usuability of mobile devices by allowing the mobile devices to be location-aware.

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patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

(88) Date of publication of the international search report:
22 May 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/22688

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04L12/28 H04Q7/22 H04L29/06 H04L29/08 G06F17/30
H04L12/56

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04L G06F H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 028 514 A (LEMELSON JEROME H ET AL) 22 February 2000 (2000-02-22) abstract column 2, line 65 -column 4, line 14 figure 1	1-5,9-17
Y		5-8, 18-28

Y	GB 2 271 486 A (MOTOROLA LTD) 13 April 1994 (1994-04-13) abstract page 11, line 24 -page 12, line 13 figures 3,4	5

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 September 2002	- 2. OKT. 2002

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Nocentini, I

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

ıational application No.
PCT/US 01/22688

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 29-31
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☒ No protest accompanied the payment of additional search fees.

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 29-31

Present claims 29-31 relate to an extremely large number of possible apparatus and methods. In fact, the claims contain so many options and variables that a lack of clarity and conciseness within the meaning of Article 6 PCT arises to such an extent as to render a meaningful search of the claims impossible. Consequently, the search can be carried out for those parts of the application which do appear to be concise, namely claims 1-28 , assuming that the requirements of unity of invention would be fullfilled.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

International Application No. PCT/US 01 22688

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-5,9-28

   A protocol for communicating with wireless mobile devices using a plurality of management message tags to request a location of a mobile device.

2. Claims: 6-8

   A transport network interface for communicating with a plurality of mobile devices comprising a first interface component for receiving messages from a repository and a second interface component for sending information the the mobile devices.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/22688

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 809 415 A (ROSSMANN ALAIN) 15 September 1998 (1998-09-15) abstract column 3, line 26 -column 5, line 3 claim 1 figure 1 ---	6-8
Y	WO 98 08314 A (GINIGER MICHAEL L ;HILTON WARREN SCOTT (US)) 26 February 1998 (1998-02-26) abstract page 12, line 5 - line 19 page 15, line 18 - line 36 -----	18-28

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 01/22688

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6028514 A	22-02-2000	NONE	
GB 2271486 A	13-04-1994	NONE	
US 5809415 A	15-09-1998	EP 0779759 A2	18-06-1997
		JP 10011383 A	16-01-1998
		JP 2000231530 A	22-08-2000
		US 6119155 A	12-09-2000
		US 2001014615 A1	16-08-2001
		US 6405037 B1	11-06-2002
		US 2002039899 A1	04-04-2002
		US 6430409 B1	06-08-2002
WO 9808314 A	26-02-1998	US 6199045 B1	06-03-2001
		WO 9808314 A1	26-02-1998