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

(19) World Intellectual Property Organization

International Bureau



(43) International Publication Date 25 January 2007 (25.01.2007)

(51) International Patent Classification: H040 7/00 (2006.01)

(21) International Application Number:

PCT/US2006/027657

(22) International Filing Date: 17 July 2006 (17.07.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/700,345 19 July 2005 (19.07.2005) US 11/244,223 6 October 2005 (06.10.2005) US

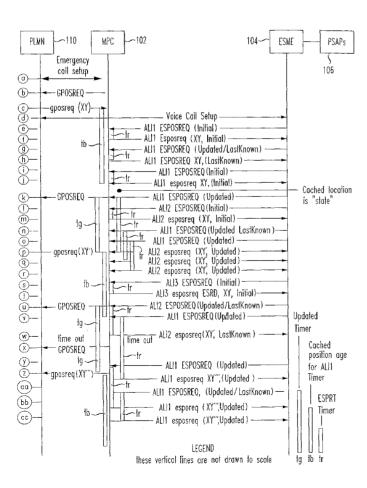
- (71) Applicant (for all designated States except US): TELECOMMUNICATION SYSTEMS, INC. [US/US]; 275 West Street, Suite 400, Annapolis, MD 21401 (US).
- (72) Inventors: ZHU, Yinjun; 1430 232nd Ave SE, Sammamish, WA 98075 (US). HINES, Gordon, John; 120 10th South, Kirkland, WA (US). BURTON, Victor; 12840 SE 67th Street, Bellevue, WA 98006 (US). LIAO, Hsin-Chih; 15525 29th Avenue SE, Mill Creek, WA 98012 (US).

(10) International Publication Number WO 2007/011860 A3

- (74) Agent: BOLLMAN, William, H.; MANELLI DENISON & SELTER PLLC, 2000 M Street, NW, 7th Floor, Washington, DC 20036 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: LOCATION SERVICE REQUESTS THROTTLING



(57) Abstract: A technique to allow a server such as a location server to throttle concurrent or closely timed location requests for the position of a given wireless device such that within a certain time period preferably only one location request will be initiated to the positioning engine and the remaining closely-timed location requests will be buffered or cached. When a position for the given wireless device is returned per the outstanding location request, then the retrieved position will be used to respond to each of the buffered location requests. Thus, a plurality of location requests are satisfied with a single request to the positioning engine. By optimizing the use of cached position requests, throttling of location requests per the invention reduces network traffic significantly, increases the efficiency of a positioning server (therefore reducing business cost), and provides for an improved grade or quality of location based services in general.



WO 2007/011860 A3



Published:

- with international search report
- (88) Date of publication of the international search report: $$18{\rm \;May\;}2007$$

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/US06/27657

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - H04Q 7/00 (2006.01) USPC - 370/329 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(8) H04Q 7/00 (2006.01) USPC - 370/329			
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 practicable, search terms used)			
MicroPatent			
C. DOCUMENTS CONSIDERED TO BE RELEVANT			
Category*	Citation of document, with indication, where a	ppropriate, of the relevant passages	Relevant to claim No.
X	US 2003/0016804 A1 (SHEHA et al) 23 January 2003	(23.01.2003), see whole document	1-11
Α	US 6,912,545 B1 (LUNDY et al) 28 June 2005 (28.06.2005), see whole document		1-11
Α	US 2003/0137961 (TSIRTSIS et al) 24 July 2003 (24.07.2003), see whole document		1-11
А	WO 00/40038 A2 (OBRADOVICH et al) 6 July 2000 (06.07.2000), see whole document .		1-11
Α	WO 02/057869 A2 (TAGG) 25 July 2002 (25.07.2002), see whole document		1-11
			,
Further documents are listed in the continuation of Box C.			
* Special categories of cited documents: "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand			
"E" earlier a	to be of particular relevance the principle or theory underlying the invention earlier application or patent but published on or after the international filing date "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive		
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other "		step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be	
-	ment referring to an oral disclosure, use, exhibition or other combined with one or more other such documents, such combination		
"P" docume	ent published prior to the international filing date but later than "&" document member of the same patent family ority date claimed		
Date of the actual completion of the international search Date of mailing of the international search re			ch report
29 December 2006		22 FEB 2007	
	railing address of the ISA/US T, Attn: ISA/US, Commissioner for Patents	Authorized officer: Blaine R. Copenhea	ver
P.O. Box 145	0, Alexandria, Virginia 22313-1450	PCT Helpdesk: 571-272-4300	·· · ·
racsimile N	0. 571-273-3201	PCT OSP: 571-272-7774	