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- (71) **Applicant (for all designated States except US):** QUALCOMM INCORPORATED [US/US]; ATTN: International IP Administration, 5775 Morehouse Drive, San Diego, CA 92121-1714 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** CHEN, An, M. [US/US]; 5775 Morehouse Drive, San Diego, CA 92121-1714 (US). STEENSTRA, Jack [US/US]; 5775 Morehouse Drive, San Diego, CA 92121-1714 (US).
- (74) **Agent:** JACOBS, Jeffrey, D.; ATTN: International IP Administration, 5775 Morehouse Drive, San Diego, CA 92121-1714 (US).

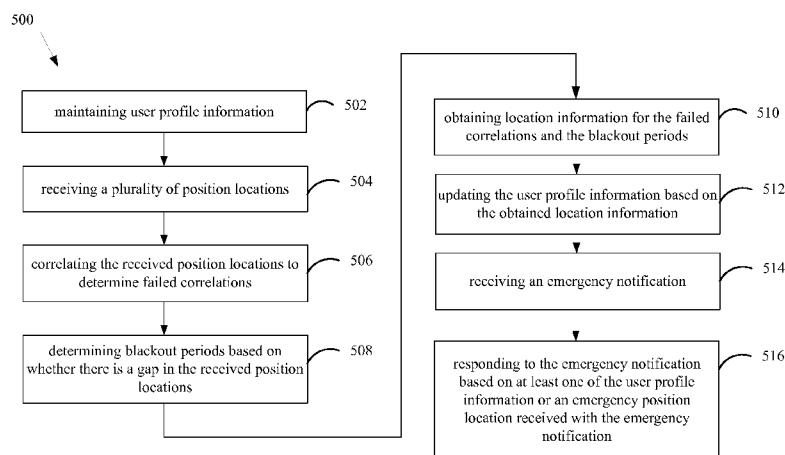
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**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

[Continued on next page]

(54) **Title:** METHOD AND APPARATUS FOR ENHANCED INDOOR POSITION LOCATION WITH ASSISTED USER PROFILES



**FIG. 5**

(57) **Abstract:** A method of wireless communication includes maintaining user profile information, receiving a plurality of position locations, correlating the received position locations to determine failed correlations, determining blackout periods based on whether there is a gap in the received position locations, obtaining location information for the failed correlations and the blackout periods, updating the user profile information based on the obtained location information, receiving an emergency notification, and responding to the emergency notification based on at least one of the user profile information or an emergency position location received with the emergency notification.

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# INTERNATIONAL SEARCH REPORT

International application No PCT/US2011/026376
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**A. CLASSIFICATION OF SUBJECT MATTER**  
 INV. H04W4/22  
 ADD.

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)  
 H04W H04L H04M

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

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 410 850 A (FISH MICHAEL [GB]) 10 August 2005 (2005-08-10) page 7, line 19 - page 10, line 5 Tracking of users; based on user defined journey or scheduled journey within user's profile; if mobile user's expected positions do not correlate with the actual positions emergency center contacts user.; page 14, line 28 - page 15, line 33 ----- <div style="text-align: center;">-/--</div>	1-40

Further documents are listed in the continuation of Box C.

See patent family 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
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- "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

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Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040,  
 Fax: (+31-70) 340-3016

Authorized officer

Tsapelis, Athanasios

## INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2007/024450 A1 (SHICHIKU RICARDO T [JP] ET AL) 1 February 2007 (2007-02-01) paragraph [0003] - paragraph [0018] Monitoring mobile users; receiving GPS positions; user profile with predetermined activity areas (time schedule), service center contacts mobile user when current position does not correlate with profile; paragraph [0089] - paragraph [0098] -----	1-40
A	US 2002/111172 A1 (DEWOLF FREDERIK M [US] ET AL) 15 August 2002 (2002-08-15)  Tracking of mobile users; providing info based on predicted routes and user profile; GPS positions raw, or using locations are provided; updating user's profile based on its activities; paragraph [0048] - paragraph [0072] -----	1,10,11, 20,21, 30,31,40
A	GOLDING D ET AL: "MOBILE MULTIMEDIA APPLICATIONS", BRITISH TELECOMMUNICATIONS ENGINEERING, BRITISH TELECOMMUNICATIONS ENGINEERING. LONDON, GB, vol. 17, no. 1, 1 April 1998 (1998-04-01), pages 18-24, XP000765545, ISSN: 0262-401X Method for providing assistance in case of emergency; tracking mobile users; in case of emergency (usin emergency button), current location of user is provided to emergency center -----	1,10,11, 20,21, 30,31,40
A	CA 2 500 082 A1 (DEMELLO AARON [CA]; MILLER ALEXANDER [CA]) 18 September 2006 (2006-09-18) Method of detecting unlawful behavior; mobile user is tracked and a geo-profile or behavior pattern is created; said profile is compared with known norms; page 9 - page 11 -----	1,10,11, 20,21, 30,31,40
A	EP 2 101 524 A1 (FUJITSU LTD [JP]) 16 September 2009 (2009-09-16)  Method for indoor positioning a mobile user in case of emergency; based on the time of emergency report a calculation is done whether the user is still in the coverage of the indoor base station; otherwise, neighboring cell info is used (before connecting to indoor base station); paragraph [0013] - paragraph [0043] -----	1,10,11, 20,21, 30,31,40

# INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2410850	A	10-08-2005	NONE
US 2007024450	A1	01-02-2007	JP 2006350869 A 28-12-2006
			US 2007024450 A1 01-02-2007
US 2002111172	A1	15-08-2002	NONE
CA 2500082	A1	18-09-2006	NONE
EP 2101524	A1	16-09-2009	EP 2101524 A1 16-09-2009
			JP 2009225015 A 01-10-2009
			US 2009233574 A1 17-09-2009