AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Eastern District of Texas, Marshall Division on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
2:17-cv-00258	4/3/2017	Eastern District of Texas, Marshall Division

PLAINTIFF	DEFENDANT
UNILOC USA, INC. and UNILOC LUXEMBOURG, S.A.	APPLE INC.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	U.S. No. 9,414,199	8/9/2016	Uniloc Luxembourg, S.A.
2	U.S. No. 8,838,976	9/16/2014	Uniloc Luxembourg, S.A.
3	U.S. No. 8,239,852	8/7/2012	Uniloc Luxembourg, S.A.
4			
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/188,063	08/09/2016	9414199	UN-NP-LO-133	5670

96051 7590 07/20/2016

Uniloc USA Inc.
Legacy Town Center
7160 Dallas Parkway
Suite 380
Plano, TX 75024

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 135 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Uniloc Luxembourg S.A., Luxembourg, LUXEMBOURG;
Craig S. Etchegoyen, Plano, TX;

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO
(modified by Applicant)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	14/188,063
Filing Date	February 24, 2014
First Named Inventor	Craig S. Etchegoyen
Art Unit	2172
Examiner Name	Not yet assigned
Attorney Docket Number	UN-NP-LO-133

U. S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		7,057,556	06-06-2006	Hall et al.	
Change(s) applied to document, /Y.Y.S./ 7/7/2016		7,091,851	08-15-2006	Mason et al.	
		7,826,409	11-02-2010	Mock et al.	
		8,320,938	11-27-2012	Meyer et al.	
		8,606,220	12-10-2013	Soliman et al.	
		2003/0046022	03-06-2003	Silverman, Robert M.	
		2003/0134648	07-17-2003	Reed et al.	
		2003/0176196	09-18-2003	Hall et al.	
	20030222820	~~2003/022282~~	12-04-2003	Karr et al.	
		2004/0002346	01-01-2004	Santhoff, John	
		2004/0198392	10-07-2004	Harvey et al.	
		2005/0070306	03-31-2005	Kim et al.	
		2006/0270421	11-30-2006	Phillips et al.	
		2007/0197229	08-23-2007	Kalliola et al.	
		2007/0270164	11-22-2007	Maier et al.	
		2008/0085727	04-10-2008	Kratz, Tyler M.	
		2008/0102957	05-01-2008	Burman et al.	
		2008/0155094	06-26-2008	Roese et al.	
		2008/0167896	07-10-2008	Fast et al.	
		2008/0233956	09-25-2008	Wyk et al.	
		2010/0087166	04-08-2010	Agashe, Parag	

Examiner Signature		Date Considered	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /V.V./

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

96051 7590 06/30/2016

Uniloc USA Inc.
Legacy Town Center
7160 Dallas Parkway
Suite 380
Plano, TX 75024

EXAMINER
VU, VIET D

ART UNIT	PAPER NUMBER
2448	

DATE MAILED: 06/30/2016

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/188,063	02/24/2014	Craig S. Etchegoyen	UN-NP-LO-133	5670

TITLE OF INVENTION: PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	09/30/2016

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

96051 7590 06/30/2016

Uniloc USA Inc.
Legacy Town Center
7160 Dallas Parkway
Suite 380
Plano, TX 75024

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/188,063	02/24/2014	Craig S. Etchegoyen	UN-NP-LO-133	5670

TITLE OF INVENTION: PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	09/30/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
VU, VIET D	2448	709-219000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/188,063	02/24/2014	Craig S. Etchegoyen	UN-NP-LO-133	5670

96051 7590 06/30/2016

Uniloc USA Inc.
Legacy Town Center
7160 Dallas Parkway
Suite 380
Plano, TX 75024

EXAMINER	
VU, VIET D	

ART UNIT	PAPER NUMBER
2448	

DATE MAILED: 06/30/2016

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 14/188,063	Applicant(s) ETCHEGOYEN, CRAIG S.	
	Examiner VIET VU	Art Unit 2448	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Board decision dated 6/1/16*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-5*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/VIET VU/
Primary Examiner, Art Unit 2448

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14188063	ETCHEGOYEN, CRAIG S.
	Examiner	Art Unit
	VIET VU	2448

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
709	204, 204, 217, 219, 223, 224	12/13/14	vv
updated	all	3/25/15	vv

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Text only see printout	12/13/14	vv
updated all	6/10/16	vv

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
H04W	4/028, 14, 206	6/10/16	vv

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14188063	ETCHEGOYEN, CRAIG S.
	Examiner	**Art Unit**
	VIET VU	2448

CPC						
Symbol					**Type**	**Version**
H04W		4	/	028	F	2013-01-01
H04W		4	/	14	A	2013-01-01
H04W		4	/	206	A	2013-01-01
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	5	
/VIET VU/ Primary Examiner.Art Unit 2448	06/16/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14188063	ETCHEGOYEN, CRAIG S.
	Examiner	**Art Unit**
	VIET VU	2448

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
709	219		

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	5	
/VIET VU/ Primary Examiner.Art Unit 2448	06/16/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14188063	ETCHEGOYEN, CRAIG S.
	Examiner	**Art Unit**
	VIET VU	2448

☒ **Claims renumbered in the same order as presented by applicant** ☐ **CPA** ☐ **T.D.** ☐ **R.1.47**

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 5	
/VIET VU/ Primary Examiner.Art Unit 2448 (Primary Examiner)	06/16/2016 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
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96051 7590 06/30/2016

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(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/188,063	02/24/2014	Craig S. Etchegoyen	UN-NP-LO-133	5670

TITLE OF INVENTION: PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	09/30/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
VU, VIET D	2448	709-219000

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(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

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1 Sean D. Burdick
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Uniloc Luxembourg S.A.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Luxembourg, Luxembourg

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

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☐ Applicant asserting small entity status. See 37 CFR 1.27

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Authorized Signature /Sean D. Burdick/ Date June 30, 2016

Typed or printed name Sean D. Burdick Registration No. 51,513

Electronic Patent Application Fee Transmittal

Application Number:	14188063
Filing Date:	24-Feb-2014
Title of Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY
First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Filer:	Sean Dylan Burdick/Kris Pangan
Attorney Docket Number:	UN-NP-LO-133

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**480**

Electronic Acknowledgement Receipt

EFS ID:	26225465
Application Number:	14188063
International Application Number:	
Confirmation Number:	5670
Title of Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY
First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Customer Number:	96051
Filer:	Sean Dylan Burdick/Kris Pangan
Filer Authorized By:	Sean Dylan Burdick
Attorney Docket Number:	UN-NP-LO-133
Receipt Date:	30-JUN-2016
Filing Date:	24-FEB-2014
Time Stamp:	14:08:49
Application Type:	Utility under 35 USC 111(a)

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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96051 7590 06/01/2016

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EXAMINER
VU, VIET D

ART UNIT	PAPER NUMBER
2448	

NOTIFICATION DATE	DELIVERY MODE
06/01/2016	ELECTRONIC

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kris.pangan@unilocusa.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte CRAIG S. ETCHEGOYEN

Appeal 2016-003054
Application 14/188,063
Technology Center 2400

Before HUNG H. BUI, NABEEL U. KHAN, and MICHAEL M. BARRY, *Administrative Patent Judges.*

BUI, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellant[1] seeks our review under 35 U.S.C. § 134(a) of the Examiner's Final Rejections of claims 1–5. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.[2]

---

[1] According to Appellant, the real parties in interest are Uniloc Luxembourg S.A., and Uniloc USA, Inc.

[2] Our Decision refers to Appellant's Appeal Brief filed Aug. 21, 2015 ("App. Br."); Reply Brief filed Jan. 19, 2016 ("Reply Br."); the Examiner's Answer mailed Nov. 19, 2015 ("Ans."); Final Office Action mailed Mar. 31, 2015 ("Final Act."); and original Specification filed Feb. 24, 2014 ("Spec.").

STATEMENT OF THE CASE

Appellant's Invention

Appellant describes the invention as directed to location-based services and methods for delivery of information to a user device based on: (1) the current location and (2) the location history of the device. Spec ¶ 2. According to Appellant, the location history of the user device is analyzed to periodically predict future locations of the device and the likelihood for the device to be at certain future locations is ascertained so that information can be sent to a user device based on predicted future locations of the device. *Id.* at ¶ 5. Independent claim 1 is illustrative of the invention, as reproduced below with disputed limitations emphasized:

> 1. A method for delivering information to two or more user devices, the method comprising:
>
> retrieving the information from one or more data records that associate the information with one or more predetermined locations, a predetermined maximum amount of time, a predetermined likelihood, and one or more predetermined actions; and
>
> for each of the two or more user devices:
>
> *predicting whether the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood*; and
>
> in response to the predicting that the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood, performing the one or more predetermined actions;
>
> wherein at least one of the actions includes delivering the information to the user device.

App. Br. 10 (Claims App'x).

Examiner's Rejection

Claims 1–5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tseng (U.S. Publication 2013/0036165 A1; Feb. 7, 2013) and Nasu (U.S. Publication 2005/0249175 A1; Nov. 10, 2005). Final Act. 2–3.

ISSUE

Based on Appellant's arguments, the dispositive issue on appeal is whether the Examiner's combination of prior art references teaches or suggests the limitation "predicting whether the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood" as recited in claim 1. App. Br. 5–8; Reply Br. 3–5.

ANALYSIS

With respect to independent claim 1, the Examiner finds Tseng teaches Appellant's method for delivering information to two or more user devices including "retrieving the information from one or more data records that associate the information with one or more predetermined locations, a predetermined maximum amount of time (i.e., delivery time ranges), a predetermined likelihood (i.e., user interests)" and "determining whether the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood." Final Act. 2–3 (citing Tseng ¶¶ 50, 53). The Examiner acknowledges Tseng does not teach "predicting user locations" but relies on Nasu as teaching this feature, i.e., a method for predicting future locations of

a mobile device based on past location history for delivering information to the mobile device, in order to support the conclusion of obviousness. *Id.* at 3 (citing Nasu ¶ 69).

Appellant disputes the Examiner's factual findings regarding Tseng. In particular, Appellant argues: (1) Tseng does not teach or suggest Appellant's claimed "predetermined likelihood"; (2) Tseng's disclosure of "user interest" is not the same as Appellant's claimed "predetermined likelihood"; (3) Nasu does not teach or suggest any "predetermined likelihood" for any of the predicted times; and, as such, (4) neither Tseng nor Nasu teaches or suggests any "predetermined likelihood" or, in particular, Appellant's claimed "predicting whether the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood" as recited in claim 1. App. Br. 5–8; Reply Br. 3–5.

The Examiner responds that the term "predetermined likelihood" can be interpreted to encompass not only Tseng's disclosure of a user's interest as originally cited, but also the computed "interest value" or "relevance score" as disclosed in paragraphs 53–54 of Tseng. Ans. 4.

We disagree with the Examiner. During examination, claim terms are given their broadest reasonable interpretation consistent with the specification. *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1369 (Fed. Cir. 2004). However, "the proper BRI construction is not just the broadest construction, but rather the broadest *reasonable* construction *in light of the specification*." *In re Man Mach. Interface Techs. LLC*, No. 2015-1562, 2016 WL 1567181, at *3 (Fed. Cir. 2016), citing *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015) ("A construction that is

unreasonably broad and which does not reasonably reflect the plain language and disclosure will not pass muster.") (internal quotation marks and citations omitted).

In this case, the term "predetermined likelihood" is recited in Appellant's claim 1 in the context of "predicting whether the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time [with at least the predetermined likelihood]." In that context and in the context of Appellant's Specification, the "predetermined likelihood" refers to the probability or the percentage likelihood that a mobile device will be at a predicted location in the future. *See* Spec. ¶ 41.

> For example, the user of user device 102A might have lunch at the same place at least three (3) days each work week - typically at about 12:30pm. If the current time is 12:00pm and it is currently a work week day, server 106 can determine that the <u>likelihood of user device 102A going to that same place within the next hour to be three in five, or 60%</u>.

Id. (emphasis added).

In contrast to Appellant's claimed "predetermined likelihood," Tseng's disclosure of a user's interest refers to a user's personal preference of different categories (e.g., shopping items), as Appellant explains. App. Br. 6 (citing Tseng ¶ 50). Similarly, the computed "interest value" or "relevance score" as disclosed by Tseng refers the combination of scores calculated for each of the different categories of users' interests in the context of social networking systems. Neither the computed "interest value" nor the "relevance score" as disclosed by Tseng describes the likelihood of a user device will be at a predicted location in the future. As such, and

because Nasu's disclosure also does not teach or suggest any likelihood of prediction, we do not agree with the Examiner that Appellant's claimed term "predetermined likelihood" can be broadly interpreted to encompass either the computed "interest value" or the "relevance score" as disclosed by Tseng.

"[O]bviousness requires a suggestion of all limitations in a claim." *CFMT, Inc. v. Yieldup Int'l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)). In light of the Examiner's incorrect interpretation of Appellant's claimed term and in the absence of a teaching or suggestion of all limitations of claim 1, we do not sustain the Examiner's obviousness rejection of claim 1.

CONCLUSION

On the record before us, we conclude Appellant has demonstrated the Examiner erred in rejecting claims 1–5 under 35 U.S.C. § 103(a).

DECISION

As such, we REVERSE the Examiner's Final Rejection of claims 1–5.

REVERSED

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/188,063	02/24/2014	Craig S. Etchegoyen	UN-NP-LO-133	5670

96051 7590 02/10/2016

Uniloc USA Inc.
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7160 Dallas Parkway
Suite 380
Plano, TX 75024

EXAMINER	
VU, VIET DUY	

ART UNIT	PAPER NUMBER
2448	

NOTIFICATION DATE	DELIVERY MODE
02/10/2016	ELECTRONIC

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tkiatkulpiboone@unilocusa.com
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UNILOC USA INC.
LEGACY TOWN CENTER
7160 DALLAS PARKWAY
SUITE 380
PLANO, TX 75024

Appeal No: 2016-003054
Application: 14/188,063
Appellant: Craig S. Etchegoyen et al.

Patent Trial and Appeal Board Docketing Notice

Application 14/188,063 was received from the Technology Center at the Board on January 28, 2016 and has been assigned Appeal No: 2016-003054.

In all future communications regarding this appeal, please include both the application number and the appeal number.

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By order of the Patent Trial and Appeal Board.

ALT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Patent Trial and Appeal Board

In re Application of:	Patent Examiner: Viet Duy Vu
Etchegoyen, Craig S.	Group Art Unit: 2448
Serial No.: 14/188,063	Confirmation No.: 5670
Filed: February 24, 2014	
For: PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY	*January 19, 2016*

REPLY BRIEF

Applicant respectfully requests that the Patent Trial and Appeal Board ("the Board") consider the following remarks in response to the Examiner's Answer dated November 19, 2015.

Table of Contents

I. ARGUMENT

A. The Obviousness Rejection of Claims 1-5 Over *Tseng* and *Nasu* Should Be Reversed Because *Tseng* and *Nasu* Fail to Teach All Claimed Elements, Particularly, Predicting Whether The User Device Will Be At Any Of The One Or More Predetermined Locations Within The Predetermined Maximum Amount Of Time With At Least The Predetermined Likelihood

The Office Action rejected claims 1-5 under 35 USC §103(a) as being unpatentable over U.S. Application Pub. 2013/0036165 ("*Tseng*") in view of U.S. Application Pub. 2005/0249175 ("*Nasu*"). This rejection is appealed and reversal of this rejection is respectfully requested.

Claim 1 recites "predicting whether the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood." The final Office Action cited *Tseng* at ¶ 0050 as teaching "a predetermined likelihood (i.e., user interests)". The final Office Action at 2. The Examiner's Answer, at page 4, reiterates the argument that "likelihood" can refer to a person's subjective preferences or affinities: "it is … the computed 'interest value' or 'relevance score' that would meet the reasonable interpretation of the claimed 'predetermined likelihood'." Applicant respectfully submits that user interests or numerical measurements of them are well beyond the broadest reasonable interpretation of "likelihood."

At ¶ 0050, *Tseng* teaches "Content objects … are assigned 325 categories … . The categories may be associated with the interests themselves, e.g., if a user 'likes' an article about a brand of shoes, the category may be the brand. … For example, for an incentive offering 20% off a specialty coffee drink at a particular coffee shop, the promotion may be assigned a category 'food,' type 'beverage,' and subtype 'coffee.' These tags can be matched to categories associated with user interests."

Thus, *Tseng* teaches that a user interest can be something a user likes, such as a particular type of food. However, "likelihood" has nothing to do with what a person subjectively likes. In the Appeal Brief filed August 29, 2015 ("Appeal Brief"), Applicant cited numerous definitions of "likelihood" as a measure of chance or probability. The Examiner's Answer maintains that "likelihood" can also be a measurement of how much a person likes something. However, Applicant is unaware of any such interpretation of "likelihood" and there is no cited definition supporting this interpretation on the record. Applicant respectfully challenges the Examiner's Answer's assertion that "likelihood" can be a measurement of how much a person likes something and requests supporting documentation that persons of ordinary skill in the art would understand such to be a customary and ordinary meaning of "likelihood".

Absent some factual showing that ordinary and customary meanings of "likelihood" include a measurement of how much a person likes something, *Tseng* neither teaches nor suggests a predetermined likelihood given the term's broadest reasonable interpretation.

The Examiner's Answer cites a teaching in *Tseng* of "predicting whether the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time" at pages 4-5: "*Tseng* also teaches determining a maximum amount of time, i.e., a time window, based upon the current time for delivering specific data to users. For example, the delivery time window is used as a cut-off delivering a lunch-time coupon (see para. 53)." However, *Tseng* describes clearly in paragraph [0053] that the time window is evaluated using the current time. Applicant finds no evidence in *Tseng* of any appreciation for predicting a future state of a device. All factors mentioned in paragraph [0053] of *Tseng* appear to pertain to the current state of the device: current location, current time, the user's current interests, etc. Thus, the time window taught by *Tseng* is not a time window in which a device is predicted to be somewhere in the future but is instead only compared to the current time.

Applicant argued in the Appeal Brief that *Nasu* neither taught nor suggested predicting a future location of a device within a predetermined maximum amount

of time and with a predetermined likelihood. The Examiner's Answer appears not to have argued otherwise.

Thus, neither *Tseng* nor *Nasu* teach or suggest any "predetermined likelihood" or, in particular, "predicting whether the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood" as recited in claim 1. Claim 1 is therefore allowable over any combination of *Tseng* and *Nasu*, assuming arguendo such combination is properly made under prevailing U.S. law.

Claims 2-5 depend from claim 1 and therefore include the limitations of claim 1 discussed above. Accordingly, claims 2-5 are allowable over any combination of *Tseng* and *Nasu* for at least both reasons given above with respect to claim 1.

Rejection of claims 1-5 is therefore appealed.

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/

/

/

Conclusion

The claims are patentable over the art of record. Reversal of the obviousness rejections is respectfully requested.

Very truly yours,

Sean Burdick
Registration No. 51,513
Attorney for Applicant

Doc code: WFEE.APPEAL
Doc Description: Certification and Transmittal of Appeal Forwarding Fee

PTO/AIA/34 (06-14)

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	Application Number: 14/188,063 — Filed: February 24, 2014
	For: PREDICTIVE DELIVERY OF INFORMATION...
	Art Unit: 2448 — Examiner: Viet Duy Vu

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☑ attorney or agent of record Registration number 51,513

☐ attorney or agent acting under 37 CFR 1.34 Registration number _____

Signature /Sean D. Burdick/

Typed or printed name Sean D. Burdick

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Application Number:	14188063
Filing Date:	24-Feb-2014
Title of Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY
First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Filer:	Sean Dylan Burdick/Tanya Kiatkulpiboone
Attorney Docket Number:	UN-NP-LO-133

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Appeal Forwarding Fee	2413	1	1000	1000
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1000**

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EFS ID:	24665746
Application Number:	14188063
International Application Number:	
Confirmation Number:	5670
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First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Customer Number:	96051
Filer:	Sean Dylan Burdick/Tanya Kiatkulpiboone
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Attorney Docket Number:	UN-NP-LO-133
Receipt Date:	19-JAN-2016
Filing Date:	24-FEB-2014
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Application Type:	Utility under 35 USC 111(a)

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1	Reply Brief Filed	UN-NP-LO-133_Reply_Brief_FINAL.pdf	89167 7d6a864de82d0f31c7a8305007e9bae4621a5b8d	no	7
Warnings:					
Information:					
2	Fee Worksheet (SB06)	LO-133_Appeal_Fwd_Fee.pdf	120041 062eac78550d4c0bd76104a4c128c09c29f4ea12	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30555 cb94c2688370de22daa58b6d0a21ffe8ace622ed	no	2
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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/188,063	02/24/2014	Craig S. Etchegoyen	UN-NP-LO-133	5670

96051 7590 11/19/2015

Uniloc USA Inc.
Legacy Town Center
7160 Dallas Parkway
Suite 380
Plano, TX 75024

EXAMINER
VU, VIET DUY

ART UNIT	PAPER NUMBER
2448	

NOTIFICATION DATE	DELIVERY MODE
11/19/2015	ELECTRONIC

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Application Number: 14/188,063
Filing Date: February 24, 2014
Appellant(s): ETCHEGOYEN, CRAIG S.

Sean Burdick
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed August 21, 2015.

(1) Grounds of Rejection to be Reviewed on Appeal

Every ground of rejection set forth in the Office action dated March 31, 2015 from which the appeal is taken is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tseng et al, US. Pat. Pat. Pub. No. 2013/0036165 in view of Nasu, U.S. Pat. Appl. Pub. No. 2005/0249175.

Per claim 1, Tseng discloses a method for delivering information to two or more user devices comprising:

a) retrieving the information from one or more data records that associate the information with one or more predetermined locations, a predetermined maximum amount of time (i.e., delivery time ranges), a predetermined likelihood (i.e., interest value) (see para. 50, 53); and

b) for each of the two or more user devices:

i) determining whether the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood (see para. 53); and

ii) in response to the determining that the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood, performing the one or more actions including delivering information to the user device (see para. 54).

Tseng teaches obtaining user location from user device at predetermined time intervals (see para. 37). Tseng however does not teach predicting user arriving at predetermined locations. Nasu discloses a method for calculating/predicting locations of mobile users/devices for delivering information to mobile devices (see para. 69).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Nasu teachings in Tseng because it would have enabled the system to determine locations of traveled mobile users/devices to properly and timely deliver specific location-based data to a traveled mobile user (see Nasu, para. 72).

Per claims 2-5, Nasu teaches determining location of the device by analyzing past location and movement of the device (see para. 69).

(2) Response to Argument

Appellant alleges that Tseng does not teach "predetermined likelihood". Appellant asserts that Tseng user's interest is not the same as the claimed "likelihood".

The examiner disagrees. Tseng teaches retrieving information from data one or more records that identify user's interests associated with each category (see para. 50). Tseng also teaches using the retrieved user's interests to determine an "interest value", i.e., a computed score for each category, which indicates relevancy level to user (see para. 53-54). Thus, the examiner submits that it is not "user's interest" for each category, but rather the computed "interest value" or "relevance score" that would meet the reasonable interpretation of the claimed "predetermined likelihood".

Appellant also alleges that neither Tseng nor Nasu teach predicting whether the user device will be at any of the one or more predetermined locations within maximum amount of time with the at least predetermined likelihood.

The examiner disagrees. In addition to the use of "predetermined likelihood" to deliver data to user as discussed above, Tseng also teaches determining a maximum amount of time, i.e., time window, based upon current time for delivering specific data to users. For example, the delivery time window is

used as a cut-off time for delivering a lunch-time coupon (see para. 53). Nasu, on the other hand, teaches predicting or computing user arrival time at a predetermined location (see Nasu, para. 69). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Nasu's arrival time prediction in Tseng because it would have enabled the system properly and timely delivering specific location-based data to a traveled mobile user (see Nasu, para. 72).

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/VIET VU/

Primary Examiner, Art Unit 2448

Conferees:

/AARON STRANGE/

Primary Examiner, Art Unit 2448

/LYNN FEILD/

Supervisory Patent Examiner, Art Unit 2448

Requirement to pay appeal forwarding fee. In order to avoid dismissal of the instant appeal in any application or ex parte reexamination proceeding, 37 CFR 41.45 requires payment of an appeal forwarding fee within the time permitted by 37 CFR 41.45(a), unless appellant had timely paid the fee for filing a brief required by 37 CFR 41.20(b) in effect on March 18, 2013.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Patent Examiner: Viet Duy Vu
Etchegoyen, Craig S.	Group Art Unit: 2448
Serial No.: 14/188,063	Confirmation No.: 5670
Filed: February 24, 2014	
For: PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY	*August 29, 2015*

Applicant respectfully requests that the Patent Trial and Appeal Board ("the Board") review the final rejection in the above-captioned application. The review is requested in view of clear errors identified below in the final Office Action mailed March 31, 2015. These errors are summarized on the following pages.

Applicant filed a Notice of Appeal (Form PTO/SB/31) on June 29, 2015.

Table of Contents

I. REAL PARTY IN INTEREST

The real parties in interest are the assignee Uniloc Luxembourg S.A., and Uniloc USA, Inc.

II. RELATED APPEALS, INTERFERENCES, AND TRIALS

The instant application has not previously been appealed to the Board. No related application has been appealed to the Board or other tribunal.

III. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates generally to network-based computer services and, more particularly, methods of and systems for delivery of information to a device based on the location history of the device. See Specification ("Spec.") at paragraph ("¶") 0002.[1]

A server sends information to user devices based on not only the current location of those devices but also predicted future locations of those devices. Over time, the server gathers location information from the user devices to collect location histories of the devices and uses the location histories to periodically predict future locations of the devices. (Spec. at ¶ 0006).

[1] References are made to the Specification as filed

A number of actions are associated with one or more predetermined locations, a predetermined maximum amount of time, and a predetermined minimum likelihood. When the server determines that a given user device is likely to be in one of the predetermined locations within the predetermined maximum amount of time with at least the predetermined minimum likelihood, the server performs the associated actions with respect to the user device. An example of such an action is sending a promotion or advertisement to the user device, e.g., as an SMS message. (Spec. at ¶ 0007).

Unlike conventional location-based services in which information is presented to a user device based on its current location only, the information presented to a user device in the manner described herein can actually influence the future location of the user device by offering an alternative trip the user can take rather than the trip typically taken in the current context. (Spec. at ¶ 0012).

Claim 1 recites a method for delivering information to two or more user devices, the method comprising: retrieving the information from one or more data records that associate the information with one or more predetermined locations, a predetermined maximum amount of time, a predetermined likelihood, and one or more predetermined actions (Spec. at ¶ 0036 and FIG. 5); and for each of the two or more user devices (Spec. at ¶ 0040): predicting whether the user device will be

at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood (Spec. at ¶¶ 0041-0046); and in response to the predicting that the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood, performing the one or more predetermined actions (Spec. at ¶ 0046); wherein at least one of the actions includes delivering the information to the user device (Spec. at ¶ 0037).

IV. ARGUMENT

A. The Obviousness Rejection of Claims 1-5 Over *Tseng* and *Nasu* Should Be Reversed Because *Tseng* and *Nasu* Fail to Teach All Claimed Elements, Particularly, Predicting Whether The User Device Will Be At Any Of The One Or More Predetermined Locations Within The Predetermined Maximum Amount Of Time With At Least The Predetermined Likelihood

The Office Action rejected claims 1-5 under 35 USC §103(a) as being unpatentable over U.S. Application Pub. 2013/0036165 ("*Tseng*") in view of U.S. Application Pub. 2005/0249175 ("*Nasu*"). This rejection is appealed and reversal of this rejection is respectfully requested.

Claim 1 recites "predicting whether the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of

time with at least the predetermined likelihood." The final Office Action cited *Tseng* at ¶ 0050 as teaching "a predetermined likelihood (i.e., user interests)". The final Office Action at 2. Applicant respectfully submits that user interests are well beyond the broadest reasonable interpretation of "likelihood."

At ¶ 0050, *Tseng* teaches "Content objects … are assigned 325 categories … . … The categories may be associated with the interests themselves, e.g., if a user 'likes' an article about a brand of shoes, the category may be the brand. … For example, for an incentive offering 20% off a specialty coffee drink at a particular coffee shop, the promotion may be assigned a category 'food,' type 'beverage,' and subtype 'coffee.' These tags can be matched to categories associated with user interests."

Thus, *Tseng* teaches that a user interest can be something a user likes, such as a particular type of food. However, "likelihood" has nothing to do with what a person subjectively likes.

Merriam-Webster (see Appendix A) defines "likelihood" as "the chance that something will happen" or "probability." Dictionary.reference.com (see Appendix B) defines "likelihood" as "the state of being likely or probable; probability" or "a probability or chance of something." Many definitions of "likelihood" are given by thefreedictionary.com (see Appendix C), all of which pertain to probability and

none of which pertain to what a person subjectively likes.

Accordingly, *Tseng* neither teaches nor suggests a predetermined likelihood given the term's broadest reasonable interpretation.

The final Office Action stated, "*Tseng* does not teach predicting user locations. *Nasu* discloses a method for calculating/predicting locations of mobile users/devices for delivering information to mobile devices (see par. 69)." Final Office Action at 3. While *Nasu* does teach a movement time of a client device from one location to another, *Nasu* neither teaches nor suggests that this movement time is evaluated in the context of any "predetermined maximum amount of time" or that the prediction has "at least a predetermined likelihood" as recited by claim 1.

Instead, *Nasu* teaches comparison of one predicted time to another predicted time. In particular, *Nasu* teaches that "The time (delivery completion time) taken till the delivering of data to the client terminal A through the mobile network is completed is compared with a time (movement time) taken for the client terminal A to move to a place where the client terminal B is positioned." *Nasu* at ¶ 0040. The delivery completion time is not predetermined but is taught to be calculated contemporaneously with the movement time. At ¶ 0049, *Nasu* teaches that the delivery completion time requires information regarding the current status of the

involved networks, including transmission rates *r1* and *r2* and transmission delay times *d1* and *d2*.

The essence of *Nasu* appears to be delivering data to a user as quickly as possible, choosing between delivery straight to a mobile client terminal A and delivery to a presumably stationary client terminal B to which client terminal A can be connected once client terminal A has moved to the location of client terminal B. Accordingly, a predetermined maximum movement time would be ineffective in the context of *Nasu*, and *Nasu* instead teaches calculating the delivery completion time anew for each delivery of data to client terminal A.

Nasu neither teaches nor suggests any minimum "predetermined likelihood" for any of the predicted times.

Thus, neither *Tseng* nor *Nasu* teach or suggest any "predetermined likelihood" or, in particular, "predicting whether the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood" as recited in claim 1. Claim 1 is therefore allowable over any combination of *Tseng* and *Nasu*, assuming arguendo such combination is properly made under prevailing U.S. law.

Claims 2-5 depend from claim 1 and therefore include the limitations of

claim 1 discussed above. Accordingly, claims 2-5 are allowable over any combination of *Tseng* and *Nasu* for at least both reasons given above with respect to claim 1.

Rejection of claims 1-5 is therefore appealed.

Conclusion

The claims are patentable over the art of record. Reversal of the obviousness rejections is respectfully requested.

Very truly yours,

Sean Burdick
Registration No. 51,513
Attorney for Applicant

V. CLAIMS APPENDIX

1. A method for delivering information to two or more user devices, the method comprising:

retrieving the information from one or more data records that associate the information with one or more predetermined locations, a predetermined maximum amount of time, a predetermined likelihood, and one or more predetermined actions; and

for each of the two or more user devices:

predicting whether the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood; and

in response to the predicting that the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood, performing the one or more predetermined actions;

wherein at least one of the actions includes delivering the information to the user device.

2. The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device.

3. The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device for day- and time-based patterns related to a current time and a current day.

4. The method of claim 1 wherein predicting comprises:

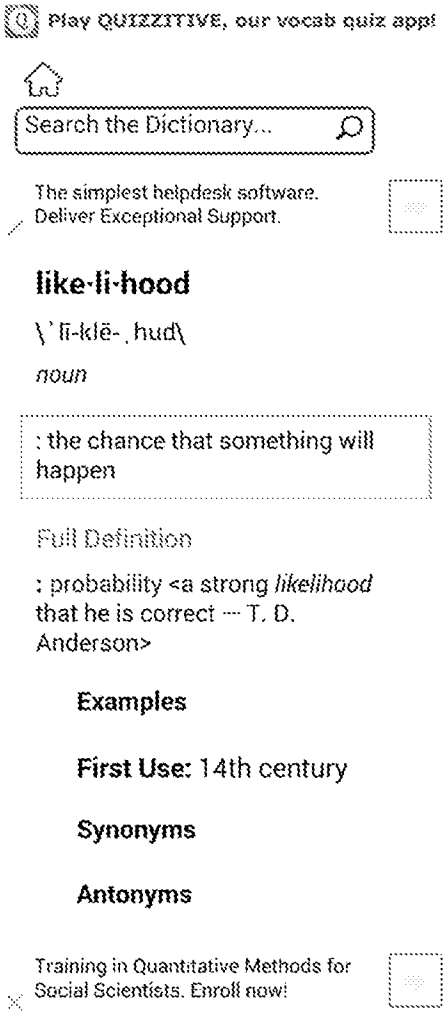
analyzing a location history of the user device for movement patterns related to a current location of the user device.

5. The method of claim 1 further comprising:

analyzing a location history of the user device for patterns that involve day- and time-based and movement related to a current time, a current day, and a current location of the user device.

6-15. (canceled)

V. APPENDIX A – DEFINITION OF "LIKELIHOOD" FROM MERRIAM-WEBSTER.COM



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Search the Dictionary...

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like·li·hood

\ˈlī-klē-ˌhud\

noun

: the chance that something will happen

Full Definition

: probability <a strong *likelihood* that he is correct — T. D. Anderson>

Examples

First Use: 14th century

Synonyms

Antonyms

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VI. APPENDIX B – DEFINITION OF "LIKELIHOOD" FROM DICTIONARY.REFERENCE.COM

Dictionary (http://dictionary.reference.com/browse/likelihood)
Thesaurus (http://www.thesaurus.com/browse/likelihood)
Translate (http://translate.reference.com/translate?query=likelihood)

[redacted]

likelihood (http://translate.reference.com/translate?query=likelihood) (http://static.sfdict.com/staticrep/dictaudio/L02/L0252700.mp3)

[**lahyk**-lee-hoo d]

noun

1. the state of being likely (http://dictionary.reference.com/browse/likely) or probable; probability.

2. a probability or chance of something:
   There is a strong likelihood of his being elected.

Examples for likelihood

His lawyers would in all *likelihood* have told him that a successful insanity defense was at best a Pyrrhic victory.

(http://www.thedailybeast.com/articles/2012/08/06/jared-loughner-s-legal-options-examined.html?source=dictionary) Jared Loughner's Legal Options Examined (http://www.thedailybeast.com/articles/2012/08/06/jared-loughner-s-legal-options-examined.html?source=dictionary)

Gerald L. Shargel (http://www.thedailybeast.com/contributors/gerald-l-shargel.html?source=dictionary)

August 5, 2012

But if you have the luxury of choosing, in all *likelihood*, you choose based on reputation.

(http://www.thedailybeast.com/articles/2012/05/15/the-insane-cost-of-higher-education.html?source=dictionary) The Insane Cost of Higher Education (http://www.thedailybeast.com/articles/2012/05/15/the-insane-cost-of-higher-education.html?source=dictionary)

Michael Tomasky (http://www.thedailybeast.com/contributors/michael-tomasky.html?source=dictionary)

May 14, 2012

Now, the *likelihood* that any candidate will clinch the nomination before late May or even June seems increasingly distant.

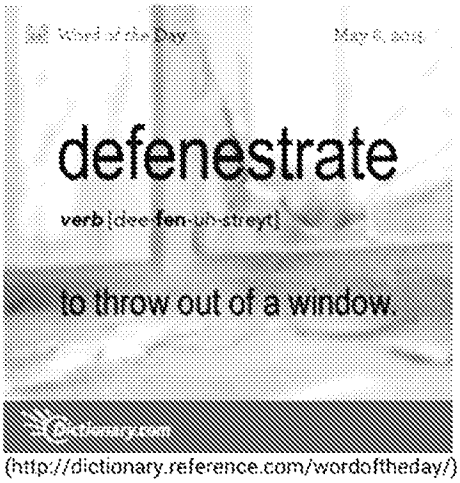
(http://www.thedailybeast.com/articles/2012/02/17/the-gop-s-chaotic-primary-calendar-makes-early-nomination-clinch-tough.html?source=dictionary) The GOP's Chaotic Primary Calendar Makes Early Nomination Clinch Tough (http://www.thedailybeast.com/articles/2012/02/17/the-gop-s-chaotic-primary-calendar-makes-early-nomination-clinch-tough.html?source=dictionary)

John Avlon (http://www.thedailybeast.com/contributors/john-avlon.html?source=dictionary)

February 15, 2012

Origin

1350-1400; Middle English *liklihood*. See likely (http://dictionary.reference.com/browse/likely), -hood (http://dictionary.reference.com/browse/-hood)



(http://dictionary.reference.com/wordoftheday/)

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Feedback (mailto:feedback@dictionary.com?subject=Feedback%20for%20Dictionary.com%20Mobile%20Web%20Site)
Privacy (http://dictionary.reference.com/privacy) Terms (http://dictionary.reference.com/terms)
About (http://content.dictionary.com/) Apps (http://dictionary.reference.com/apps)

follow Dictionary.com

VII. APPENDIX C – DEFINITION OF "LIKELIHOOD" FROM THEFREEDICTIONARY.COM

likelihood - definition of likelihood by The Free Dictionary

http://www.thefreedictionary.com/likelihood

likelihood

Also found in: Medical, Legal, Idioms, Encyclopedia, Wikipedia.

like·li·hood (līk'lē-hood')

n.

1. The state of being probable; probability.
2. Something probable.

likelihood (ˈlaɪ kliˌhʊd) *or* likeliness

n

1. the condition of being likely or probable; probability
2. something that is probable
3. (Statistics) *statistics* the probability of a given sample being randomly drawn regarded as a function of the parameters of the population. The likelihood ratio is the ratio of this to the maximized likelihood. See also maximum likelihood

like•li•hood (ˈlaɪ kliˌhʊd) also like'li•ness,

n.

a probability or chance of something.

[1350–1400]

Thesaurus

Legend: Synonyms ↔ Related Words ≠ Antonyms

Noun 1. likelihood - the probability of a specified outcome

Likeliness

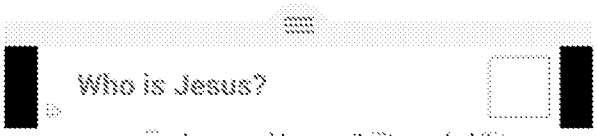
↔ probability - the quality of being probable, a probable event or the most probable event; "for a while mutiny seemed a probability"; "going by past experience there was a high probability that the visitors were lost"

↔ odds - the likelihood of a thing occurring rather than not occurring

⌘ unlikelihood, unlikeliness - the improbability of a specified outcome

likelihood

noun ⌗ probability, chance, possibility, prospect, liability, good chance, strong possibility, reasonableness, likeliness
The likelihood is that people would be willing to pay.



⌗ chance, odds, possibility, probability, prospect (used in plural)

Translations

Select a language: Spanish / Español ▾

likelihood [ˈlaɪ ɪ kl ɪ h ʊ d] *N* → probabilidad *f*

what is the likelihood of a successful outcome? → ¿qué probabilidad hay de que el resultado sea favorable?
there is no likelihood of infection → no hay probabilidad de infección
there is little/every likelihood that he'll come → es poco/muy probable que venga
there is a strong likelihood they'll be elected → es muy probable que salgan elegidos
in all likelihood the explosion was caused by a bomb → lo más probable es que una bomba causase la explosión

Electronic Acknowledgement Receipt

EFS ID:	23283062
Application Number:	14188063
International Application Number:	
Confirmation Number:	5670
Title of Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY
First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Customer Number:	96051
Filer:	Sean Dylan Burdick/Tanya Kiatkulpiboone
Filer Authorized By:	Sean Dylan Burdick
Attorney Docket Number:	UN-NP-LO-133
Receipt Date:	21-AUG-2015
Filing Date:	24-FEB-2014
Time Stamp:	19:12:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Appeal Brief Filed	UN-NP-LO-133_Appeal_Brief_FINAL.pdf	2666812 32911015f5289bb956f67258609238436101e5de	no	17

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/31 (03-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

NOTICE OF APPEAL FROM THE EXAMINER TO THE PATENT TRIAL AND APPEAL BOARD

Docket Number (Optional)
UN-NP-LO-133

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on _____.

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In re Application of
Craig S. ETCHEGOYEN

Application Number	Filed
14/188,063	February 24, 2014

For
PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

Art Unit	Examiner
2448	Viet Duy Vu

Applicant hereby **appeals** to the Patent Trial and Appeal Board from the last decision of the examiner.

The fee for this Notice of Appeal is (37 CFR 41.20(b)(1)) $ 800.00

☑ Applicant asserts small entity status. See 37 CFR 1.27. Therefore, the fee shown above is reduced by 50%, and the resulting fee is: $ 400.00

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Therefore, the fee shown above is reduced by 75%, and the resulting fee is: $ _____
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 50-6053.

☐ Payment made via EFS-Web.

☐ A petition for an extension of time under 37 CFR 1.136(a) (PTO/AIA/22 or equivalent) is enclosed.
For extensions of time in reexamination proceedings, see 37 CFR 1.550.

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☑ attorney or agent of record
Registration number 51,513

☐ attorney or agent acting under 37 CFR 1.34
Registration number _____

Signature /Sean D. Burdick/

Typed or printed name Sean D. Burdick

Telephone Number 972-905-9580 x227

Date June 29, 2015

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☑ * Total of 1 forms are submitted.

Electronic Patent Application Fee Transmittal

Application Number:	14188063
Filing Date:	24-Feb-2014
Title of Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY
First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Filer:	Sean Dylan Burdick/Kris Pangan
Attorney Docket Number:	UN-NP-LO-133

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Notice of Appeal	2401	1	400	400
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**400**

Electronic Acknowledgement Receipt

EFS ID:	22766676
Application Number:	14188063
International Application Number:	
Confirmation Number:	5670
Title of Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY
First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Customer Number:	96051
Filer:	Sean Dylan Burdick/Kris Pangan
Filer Authorized By:	Sean Dylan Burdick
Attorney Docket Number:	UN-NP-LO-133
Receipt Date:	29-JUN-2015
Filing Date:	24-FEB-2014
Time Stamp:	11:37:02
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$400
RAM confirmation Number	11460
Deposit Account	506053
Authorized User	PANGAN, KRIS

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Notice of Appeal Filed	LO-133_Notice_of_Appeal.pdf	103734 26d5e362dfce7fb53ddf589e4f1dd8ebe9703033	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30570 b3e485dd2bf2584dc8c9ac6f04a9d7e690e91807	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	134304		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
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<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/188,063	02/24/2014	Craig S. Etchegoyen	UN-NP-LO-133	5670

96051 7590 03/31/2015

Uniloc USA Inc.
Legacy Town Center
7160 Dallas Parkway
Suite 380
Plano, TX 75024

EXAMINER
VU, VIET DUY

ART UNIT	PAPER NUMBER
2448	

NOTIFICATION DATE	DELIVERY MODE
03/31/2015	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

sean.burdick@unilocusa.com
tkiatkulpiboone@unilocusa.com
kris.pangan@unilocusa.com

Office Action Summary	Application No. 14/188,063	Applicant(s) ETCHEGOYEN, CRAIG S.	
	Examiner VIET VU	Art Unit 2448	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *3/17/15*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-5* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-5* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *3/15*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

Art Rejections:

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tseng et al, Us. Pat. Pat. Pub. No. 2013/0036165 in view of Nasu, U.S. pat. Appl. Pub. No. 2005/0249175.

Per claim 1, Tseng discloses a method for delivering information to a user device two or more user devices comprising:

a) retrieving the information from one or more data records that associate the information with one or more predetermined locations, a predetermined maximum amount of time (i.e., delivery time ranges), a predetermined likelihood (i.e., user interests) (see par. 50); and

b) for each of the two or more user devices:

i) determining whether the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood (see par. 53); and

ii) in response to the determining that the user device will be at any of the one or more predetermined locations within

the predetermined maximum amount of time with at least the predetermined likelihood, performing the one or more actions including delivering information to the user device (see par. 54).

Tseng teaches obtaining user location from user/device at predetermined time intervals (see par. 37). Tseng does not teach predicting user locations. Nasu discloses a method for calculating/predicting locations of mobile users/devices for delivering information to mobile devices (see par. 69).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Nasu teachings in Tseng because it would have enabled the system to properly determine locations of traveled mobile users/devices at particular times (see Nasu in par. 72).

Per claims 2-5, Nasu teaches determining location of the device by analyzing past location and movement of the device (see par. 69).

Response to Amendment:

3. Applicant's arguments filed on March 17, 2015 with respect to claims 1-5 have been fully considered but are moot in view of new ground of rejection set forth above.

Conclusion:

4. Applicant's amendment necessitated the new grounds of rejection. Accordingly, THIS ACTION IS MADE FINAL. See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Viet Vu whose telephone number is 571-272-3977. The examiner can normally be reached on Monday through Thursday from 8:00am to 6:00pm. The Group general information number is 571-272-2400. The Group fax number is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild, can be reached on 571-272-2092.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov.

Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Viet Vu/
Primary Examiner, Art Unit 2448
3/25/15

Notice of References Cited	Application/Control No. 14/188,063	Applicant(s)/Patent Under Reexamination ETCHEGOYEN, CRAIG S.	
	Examiner VIET VU	Art Unit 2448	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2013/0036165	02-2013	Tseng et al.	709/204
*	B	US-2011/0010245	01-2011	Priebatsch et al.	705/14.58
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14188063	ETCHEGOYEN, CRAIG S.
	Examiner	Art Unit
	VIET VU	2448

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
709	204, 204, 217, 219, 223, 224	12/13/14	vv
updated	all	3/25/15	vv

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Text only see printout	12/13/14	vv

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	476871	(determin$3 predict$3) near5 location	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/03/25 09:13
L2	2201575	("within" during) near4 time	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/03/25 09:14
L3	13080	1 same 2	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/03/25 09:14
L4	103245	(content ad) near3 deliver$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/03/25 09:14
L5	37	3 same 4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/03/25 09:14

3/25/2015 9:24:58 AM
C:\Users\vvu\Documents\EAST\Workspaces\Default EAST Workspace 1600x1200.wsp

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO
(modified by Applicant)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	14/188,063
Filing Date	February 24, 2014
First Named Inventor	Craig S. ETCHEGOYEN
Art Unit	2448
Examiner Name	Viet Duy Vu
Attorney Docket Number	UN-NP-LO-133

U. S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		6,151,631	11-21-2000	Ansell et al.	
		2011/0196711	08-11-2011	Craig et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Foreign Patent Document Country Code – Number – Kind Code	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
		EP 2 287 820	02/23/2011	Universitat Duisburg-Essen		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date page(s), volume-issue number(s), publisher, city and/or country where published.	T

Examiner Signature	/Viet Vu/	Date Considered	03/25/2015

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /V.V./

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO
(modified by Applicant)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
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Attorney Docket Number	UN-NP-LO-133

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		2011/0196711	08-11-2011	Craig et al.	

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Examiner Initials	Cite No.	Foreign Patent Document Country Code – Number – Kind Code	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
		EP 2 287 820	02/23/2011	Universitat Duisburg-Essen		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date page(s), volume-issue number(s), publisher, city and/or country where published.	T

Examiner Signature		Date Considered	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Electronic Patent Application Fee Transmittal

Application Number:	14188063
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Attorney Docket Number:	UN-NP-LO-133

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Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	2806	1	90	90
		Total in USD ($)		**90**

Electronic Acknowledgement Receipt

EFS ID:	21794236
Application Number:	14188063
International Application Number:	
Confirmation Number:	5670
Title of Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY
First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Customer Number:	96051
Filer:	Sean Dylan Burdick/Tanya Kiatkulpiboone
Filer Authorized By:	Sean Dylan Burdick
Attorney Docket Number:	UN-NP-LO-133
Receipt Date:	17-MAR-2015
Filing Date:	24-FEB-2014
Time Stamp:	15:11:30
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$90
RAM confirmation Number	1377
Deposit Account	506053
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	LO-133_Response_to_20141218_OA_FINAL.pdf	109925 706c1a7113ac97038c4e60a4a6047bea1800d32b	no	9
Warnings:					
Information:					
2	Transmittal Letter	LO-133_IDS_Transmittal.pdf	59508 07e828af9eec492d6ae99a74b2e0ea4885f604ee	no	2
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	LO-133_IDS.pdf	26826 02e2bd96ce54aa789fdaffd121d4f3157e743a10	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Fee Worksheet (SB06)	fee-info.pdf	30743 5a01e4cf740dedd6dfddf264a7217c44b449e871	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	227002		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. no.:	14/188,063	Conf. no.	5670
Applicant:	Craig S. ETCHEGOYEN	Art Unit:	2448
Filed:	February 24, 2014	Examiner:	Viet Duy Vu

Title: PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

RESPONSE TO OFFICE ACTION

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir,

In response to the Office Action mailed December 18, 2014 ("Office Action"), please amend the present application as follows:

Amendments to the Specification are provided on page 2.

Amendments to the Claims are provided on page 3.

Remarks begin on page 5.

IN THE SPECIFICATION:

Please replace the paragraph beginning on p. 2 at line 9 with the following amended paragraph:

[0007] To make a prediction regarding future locations of the user device, the server considers the user device's location history in a current context. One part of the current context is the current day and the current time. To appreciate this context, it is helpful to consider an example. Consider that a new ~~sushi~~ department store has opened at a given location. The manager of the department store can request that anyone that is at least 50% likely to visit a store considered to be in competition of the department store within one hour should be sent a promotional code entitling that person to a discount. To do so, the manager can specify locations of all competing stores within a five-mile radius of the given location as the one or more predetermined locations. In addition, the manager can specify 50% as the predetermined minimum likelihood and one hour as the predetermined maximum amount of time. The manager can also specify days and times at which the actions are applicable, e.g., only during hours at which the new department store is open.

IN THE CLAIMS:

1. (currently amended) A method for delivering information to ~~a user device~~ two or more user devices, the method comprising:

retrieving the information from one or more data records that associate the information with one or more predetermined locations, a predetermined maximum amount of time, a predetermined likelihood, and one or more predetermined actions; and

for each of the two or more user devices:

predicting whether the user device will be at any of the one or more predetermined locations within [[a]] the predetermined maximum amount of time with at least [[a]] the predetermined likelihood; and

in response to the predicting that the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood, performing the one or more predetermined actions ~~that are associated with the predetermined locations, the predetermined maximum amount of time, and the predetermined likelihood~~;

wherein at least one of the actions includes delivering the information to the user device.

2. (original) The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device.

3. (original) The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device for day- and time-based patterns related to a current time and a current day.

4. (original) The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device for movement patterns related to a current location of the user device.

5. (original) The method of claim 1 further comprising:

analyzing a location history of the user device for patterns that involve day- and time-based and movement related to a current time, a current day, and a current location of the user device.

6-15. (canceled)

REMARKS

Applicant thanks Examiner Vu for his thorough review of the application and his opinion on patentability.

Claims 1-5 are pending in the application. Claim 1 is amended. Applicant respectfully requests reconsideration in view of the amendments and remarks herein.

Support for the Amendments

Claim 1 is amended to recite "retrieving the information from one or more data records that associate the information with one or more predetermined locations, a predetermined maximum amount of time, a predetermined likelihood, and one or more predetermined actions." This amendment is supported at least by FIGS. 4, 5, 6 and 9, particularly action data 942, and corresponding text in the specification.

Claim 1 is further amended to recite that the steps of predicting and performing are performed "for each of the two or more user devices." This amendment is supported at least by FIG. 7 and paragraph 0023, which teaches that "User devices 102A-D are analogous to one another and description of user device 102A is equally applicable to user devices 102B-D unless otherwise noted herein. It should also be noted that, while four (4) user devices are shown in this illustrative example, more or fewer than four (4) user devices can report locations for receiving future-location-based information in the manner described herein."

No new matter is added.

Response to Rejections Under 35 USC §101

Claims 1-5 were rejected under 35 USC §101 as not falling within one of the four statutory categories of invention. Applicant respectfully traverses and requests reconsideration and withdrawal of this rejection.

The Office Action applied the "machine or transformation" test for determining whether a patent claim recites statutory subject matter, citing *In re Bilski*, 88 USPQ2d 1385, 545 F.3d 943 (Fed. Cir. 2008). However, the notion that the "machine or transformation" test articulated by the Federal Circuit in *In re Bilski* is the sole test for patentable subject matter under §101 was struck down by the Supreme Court in *Bilski v. Kappos*, 561 U.S. 593 (2010). The Supreme

Court dramatically changed the test for determining whether a patent claim recites statutory subject matter in *Alice Corp. v. CLS Bank International*, 573 U.S. ___ , 134 S.Ct. 2347 (2014). *See, e.g.*, "2014 Interim Guidance on Patent Subject Matter Eligibility", 79 Federal Register 241 (December 16, 2014), pp. 74618-74633.

Accordingly, the test for whether a claim recites statutory subject matter articulated by the Federal Circuit in *In re Bilski* and applied in the Office Action is inconsistent with currently prevailing U.S. law. By applying a legal test that is no longer consistent with prevailing law, the Office Action has not made a prima facie case for rejection of the claims under 35 USC §101.

Response to Rejections Under 35 USC §102

Claims 1-5 were rejected under 35 USC §102(b) as being clearly anticipated by U.S. Application Pub. 2005/0249175 (*"Nasu"*). Applicant respectfully traverses and requests reconsideration and withdrawal of this rejection in view of the amendments to the claims.

Claim 1 recites "in response to the predicting that the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood, performing the one or more predetermined actions." While *Nasu* does teach a movement time of a client device from one location to another, *Nasu* neither teaches nor suggests that this movement time is evaluated in the context of any "predetermined maximum amount of time" or that the prediction has "at least a predetermined likelihood" as recited by claim 1.

Instead, *Nasu* teaches comparison of one predicted time to another predicted time. In particular, *Nasu* teaches that "The time (delivery completion time) taken till the delivering of data to the client terminal A through the mobile network is completed is compared with a time (movement time) taken for the client terminal A to move to a place where the client terminal B is positioned." *Nasu* at paragraph [0040]. The delivery completion time is not predetermined but is taught to be calculated contemporaneously with the movement time. At paragraph 0049, *Nasu* teaches that the delivery completion time requires information regarding the current status of the involved networks, including transmission rates r1 and r2 and transmission delay times d1 and d2.

The essence of *Nasu* appears to be delivering data to a user as quickly as possible, choosing between delivery straight to a mobile client terminal A and delivery to a presumably stationary client terminal B to which client terminal A can be connected once client terminal A has moved to the location of client terminal B. Accordingly, a predetermined maximum movement time would be ineffective in the context of *Nasu*, and *Nasu* instead teaches calculating the delivery completion time anew for each delivery of data to client terminal A.

Nasu neither teaches nor suggests any minimum "predetermined likelihood" for any of the predicted times.

Claim 1 also recites "retrieving the information from one or more data records that associate the information with one or more predetermined locations, a predetermined maximum amount of time, a predetermined likelihood, and one or more predetermined actions." As discussed above, *Nasu* teaches comparison of an estimated time for client terminal A to move to client terminal B, not to any predetermined maximum amount of time but instead, to an estimated delivery time based on current network transmission rates and transmission delays. Accordingly, *Nasu* teaches away from storing any predetermined maximum amount of time in one or more data records that associate the predetermined maximum amount of time with a location of client terminal B.

In addition, claim 1 recites "predicting whether [each of at least two user devices] will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood." Thus, the same one or more predetermined locations and the predetermined maximum amount of time apply to at least two user devices. *Nasu* teaches a one-to-one relationship between client terminal A and client terminal B, presumably under the control of a single user since client terminal A is likely to be coupled directly to client terminal B at some point. Thus, a second instance of client terminal A would be associated with a separate second instance of client terminal B. In addition, since *Nasu* teaches comparison of movement time to a delivery time to client terminal A of a product to be downloaded to client terminal A, it is highly unlikely that two distinct mobile client terminals, operated by different people at different locations, would simultaneously request downloading of products of identical size. Even if two distinct mobile client terminals request downloading of products of identical size simultaneously, each will have a different delivery time to compare to

their respective movement times since each delivery time is estimated from current network transmission rates and transmission delays to each distinct mobile client terminal.

Thus, claim 1 is allowable over *Nasu* for at least four (4) distinct reasons: (i) *Nasu* neither teaches nor suggests "in response to the predicting that the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time … , performing the one or more predetermined actions"; (ii) *Nasu* neither teaches nor suggests "in response to the predicting that the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood, performing the one or more predetermined actions"; (iii) *Nasu* neither teaches nor suggests "retrieving the information from one or more data records that associate the information with one or more predetermined locations, a predetermined maximum amount of time, a predetermined likelihood, and one or more predetermined actions"; and (iv) *Nasu* neither teaches nor suggests "predicting whether [each of at least two user devices] will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood." Claims 2-5 depend from claim 1 and are therefore allowable over *Nasu* for at least the reasons given above with respect to claim 1.

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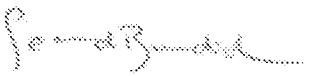
Conclusion

In view of all of the above, applicant believes that all pending claims are in condition for allowance and earnestly requests that these claims be passed to issuance. If the Examiner believes that a telephone conversation would help to expedite prosecution, please call the undersigned attorney at the number below.

Respectfully Submitted,



Sean D. Burdick
Reg. No. 51,513

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7160 N. Dallas Parkway, Suite 380
Plano, Texas 75024
(972) 905-9580 x227

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. no.:	14/188,063	Conf. no.	5670
Applicant:	Uniloc Luxembourg S.A.	Art Unit:	2448
Filed:	February 24, 2014	Examiner:	Viet Duy Vu

Title: PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant hereby submits, without admission of prior art effect thereof, form(s) PTO/SB/08 pursuant to the duty of disclosure requirements of 37 CFR §§ 1.56, 1.97 and 1.98.

Applicant has listed publication dates on the attached form(s) PTO/SB/08 based on information presently available to the undersigned. However, the listed publication dates should not be construed as an admission that the information was actually published on the date indicated.

It is respectfully requested that the Examiner initial and return a copy of the enclosed forms PTO/SB/08, and to indicate in the official file wrapper of this patent application that the documents have been considered.

Applicant submits concurrently herewith the fee set forth in § 1.17(p).

Respectfully Submitted,

Sean D. Burdick
Reg. No. 51,513

Uniloc USA, Inc.
7160 N. Dallas Parkway
Suite 380
Plano, TX 75024
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. no.:	14/188,063	Conf. no.	5670
Applicant:	Craig S. ETCHEGOYEN	Art Unit:	2448
Filed:	February 24, 2014	Examiner:	Viet Duy Vu

Title: PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

RESPONSE TO OFFICE ACTION

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir,

In response to the Office Action mailed December 18, 2014 ("Office Action"), please amend the present application as follows:

Amendments to the Specification are provided on page 2.

Amendments to the Claims are provided on page 3.

Remarks begin on page 5.

IN THE SPECIFICATION:

Please replace the paragraph beginning on p. 2 at line 9 with the following amended paragraph:

[0007] To make a prediction regarding future locations of the user device, the server considers the user device's location history in a current context. One part of the current context is the current day and the current time. To appreciate this context, it is helpful to consider an example. Consider that a new ~~sushi~~ department store has opened at a given location. The manager of the department store can request that anyone that is at least 50% likely to visit a store considered to be in competition of the department store within one hour should be sent a promotional code entitling that person to a discount. To do so, the manager can specify locations of all competing stores within a five-mile radius of the given location as the one or more predetermined locations. In addition, the manager can specify 50% as the predetermined minimum likelihood and one hour as the predetermined maximum amount of time. The manager can also specify days and times at which the actions are applicable, e.g., only during hours at which the new department store is open.

IN THE CLAIMS:

1. (currently amended) A method for delivering information to ~~a user device~~ two or more user devices, the method comprising:

retrieving the information from one or more data records that associate the information with one or more predetermined locations, a predetermined maximum amount of time, a predetermined likelihood, and one or more predetermined actions; and

for each of the two or more user devices:

predicting whether the user device will be at any of the one or more predetermined locations within [[a]] the predetermined maximum amount of time with at least [[a]] the predetermined likelihood; and

in response to the predicting that the user device will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood, performing the one or more predetermined actions ~~that are associated with the predetermined locations, the predetermined maximum amount of time, and the predetermined likelihood~~;

wherein at least one of the actions includes delivering the information to the user device.

2. (original) The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device.

3. (original) The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device for day- and time-based patterns related to a current time and a current day.

4. (original) The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device for movement patterns related to a current location of the user device.

5. (original) The method of claim 1 further comprising:

analyzing a location history of the user device for patterns that involve day- and time-based and movement related to a current time, a current day, and a current location of the user device.

6-15. (canceled)

REMARKS

Applicant thanks Examiner Vu for his thorough review of the application and his opinion on patentability.

Claims 1-5 are pending in the application. Claim 1 is amended. Applicant respectfully requests reconsideration in view of the amendments and remarks herein.

Support for the Amendments

Claim 1 is amended to recite "retrieving the information from one or more data records that associate the information with one or more predetermined locations, a predetermined maximum amount of time, a predetermined likelihood, and one or more predetermined actions." This amendment is supported at least by FIGS. 4, 5, 6 and 9, particularly action data 942, and corresponding text in the specification.

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No new matter is added.

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Claims 1-5 were rejected under 35 USC §101 as not falling within one of the four statutory categories of invention. Applicant respectfully traverses and requests reconsideration and withdrawal of this rejection.

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In addition, claim 1 recites "predicting whether [each of at least two user devices] will be at any of the one or more predetermined locations within the predetermined maximum amount of time with at least the predetermined likelihood." Thus, the same one or more predetermined locations and the predetermined maximum amount of time apply to at least two user devices. *Nasu* teaches a one-to-one relationship between client terminal A and client terminal B, presumably under the control of a single user since client terminal A is likely to be coupled directly to client terminal B at some point. Thus, a second instance of client terminal A would be associated with a separate second instance of client terminal B. In addition, since *Nasu* teaches comparison of movement time to a delivery time to client terminal A of a product to be downloaded to client terminal A, it is highly unlikely that two distinct mobile client terminals, operated by different people at different locations, would simultaneously request downloading of products of identical size. Even if two distinct mobile client terminals request downloading of products of identical size simultaneously, each will have a different delivery time to compare to

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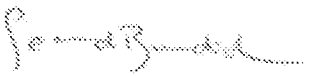
Respectfully Submitted,



Sean D. Burdick
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. no.:	14/188,063	Conf. no.	5670
Applicant:	Uniloc Luxembourg S.A.	Art Unit:	2448
Filed:	February 24, 2014	Examiner:	Viet Duy Vu

Title: PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

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Reg. No. 51,513

Uniloc USA, Inc.
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Plano, TX 75024
(972)905-9580 x227

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO
(modified by Applicant)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	14/188,063
Filing Date	February 24, 2014
First Named Inventor	Craig S. ETCHEGOYEN
Art Unit	2448
Examiner Name	Viet Duy Vu
Attorney Docket Number	UN-NP-LO-133

U. S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		6,151,631	11-21-2000	Ansell et al.	
		2011/0196711	08-11-2011	Craig et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Foreign Patent Document Country Code – Number – Kind Code	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
		EP 2 287 820	02/23/2011	Universitat Duisburg-Essen		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date page(s), volume-issue number(s), publisher, city and/or country where published.	T

Examiner Signature		Date Considered	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Electronic Patent Application Fee Transmittal

Application Number:	14188063
Filing Date:	24-Feb-2014
Title of Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY
First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Filer:	Sean Dylan Burdick
Attorney Docket Number:	UN-NP-LO-133

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	2806	1	90	90
		Total in USD ($)		**90**

Electronic Acknowledgement Receipt

EFS ID:	21793870
Application Number:	14188063
International Application Number:	
Confirmation Number:	5670
Title of Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY
First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Customer Number:	96051
Filer:	Sean Dylan Burdick
Filer Authorized By:	
Attorney Docket Number:	UN-NP-LO-133
Receipt Date:	17-MAR-2015
Filing Date:	24-FEB-2014
Time Stamp:	15:01:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	LO-133_Response_to_20141218_OA_FINAL.pdf	109925 706c1a7113ac97038c4e60a4a6047bea1800d32b	no	9

Warnings:	
Information:	

2	Transmittal Letter	LO-133_IDS_Transmittal.pdf	59508 07e828af9eec492d6ae99a74b2e0ea4885f604ee	no	2
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	LO-133_IDS.pdf	26826 02e2bd96ce54aa789fdaffd121d4f3157e743a10	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Fee Worksheet (SB06)	fee-info.pdf	30560 b83819c22eda7556dd8c25508f66d3fc39126378	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	226819		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/188,063	Filing Date 02/24/2014	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT

03/17/2015	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 5	Minus	** 20	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/LASHAWN MARKS/

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United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/188,063	02/24/2014	Craig S. Etchegoyen	UN-NP-LO-133	5670

96051 7590 12/18/2014

Uniloc USA Inc.
Legacy Town Center
7160 Dallas Parkway
Suite 380
Plano, TX 75024

EXAMINER
VU, VIET DUY

ART UNIT	PAPER NUMBER
2448	

NOTIFICATION DATE	DELIVERY MODE
12/18/2014	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

sean.burdick@unilocusa.com
tkiatkulpiboone@unilocusa.com
kris.pangan@unilocusa.com

Office Action Summary	Application No. 14/188,063	Applicant(s) ETCHEGOYEN, CRAIG S.	
	Examiner VIET VU	Art Unit 2448	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *3/10/14*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-5* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-5* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *2/24/14* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☒ All b)☐ Some** c)☐ None of the:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *3/14*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

1. The present application is being examined under the pre-AIA first to invent provisions.

Non-Art Rejection:

2. 35 U.S.C. § 101 reads as follows:
Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title".

3. Claims 1-5 are rejected under 35 U.S.C. § 101 as not falling within one of the four statutory categories of invention.

While the claims recite a series of steps or acts to be performed, a statutory process under 35 USC 101 must be to particular machine, or transform underlying subject matter (such as article or material) to a different state or thing. See page 10 of In Re Bilski 88USPQ2d 1385. The instant claims are neither positively tied to a particular machine that accomplishes the claimed method steps nor transform underlying subject matter, and therefore do not qualify as a statutory process. The method including steps that are broad enough such that the claimed steps could be completely performed mentally, verbally or without a machine nor is any transformation apparent.

Art Rejections:

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Nasu et al, U.S. pat. Appl. Pub. No. 2005/0249175.

Per claim 1, Nasu discloses a method for delivering information to a user device, comprising:

a) calculating/predicting whether the user device will be at any of one or more predetermined locations within a predetermined maximum amount of time with at least a predetermined likelihood (see par. 40, 69);

b) in response to the predicting, performing one or more predetermined actions that are associated with the predetermined locations, the predetermined maximum amount of time, and the predetermined likelihood, wherein at least one of the actions includes delivering the information to the user device (see par. 42).

Per claims 2-5, Nasu teaches determining location of the device by analyzing past location and movement of the device (see par. 69).

Conclusion:

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Viet Vu whose telephone number is 571-272-3977. The examiner can normally be reached on Monday through Thursday from 8:00am to 6:00pm. The Group general information number is 571-272-2400. The Group fax number is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild, can be reached on 571-272-2092.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Viet Vu/
Primary Examiner, Art Unit 2448
12/15/14

Notice of References Cited	Application/Control No. 14/188,063	Applicant(s)/Patent Under Reexamination ETCHEGOYEN, CRAIG S.	
	Examiner VIET VU	Art Unit 2448	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2012/0271884	10-2012	Holmes et al.	709/204
*	B	US-2009/0319177	12-2009	Khosravy et al.	701/207
*	C	US-2005/0249175	11-2005	Nasu et al.	370/338
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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BIB DATA SHEET

CONFIRMATION NO. 5670

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/188,063	02/24/2014	709	2448	UN-NP-LO-133

APPLICANTS
Uniloc Luxembourg S.A., Luxembourg, LUXEMBOURG, Assignee (with 37 CFR 1.172 Interest);

INVENTORS
Craig S. Etchegoyen, Plano, TX;

**** CONTINUING DATA ***************************
This appln claims benefit of 61/774,305 03/07/2013

**** FOREIGN APPLICATIONS ***************************
AUSTRALIA 2013100804 06/07/2013

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
03/11/2014

Foreign Priority claimed ☑ Yes ☐ No 35 USC 119(a-d) conditions met ☑ Yes ☐ No Verified and Acknowledged /VIET VU/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		TX	6	5	1

ADDRESS

Uniloc USA Inc.
Legacy Town Center
7160 Dallas Parkway
Suite 380
Plano, TX 75024
UNITED STATES

TITLE

PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

FILING FEE RECEIVED		
730	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO
(modified by Applicant)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	14/188,063
Filing Date	February 24, 2014
First Named Inventor	Craig S. Etchegoyen
Art Unit	2172
Examiner Name	Not yet assigned
Attorney Docket Number	UN-NP-LO-133

U. S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		7,057,556	06-06-2006	Hall et al.	
		7,091,851	08-15-2006	Mason et al.	
		7,826,409	11-02-2010	Mock et al.	
		8,320,938	11-27-2012	Meyer et al.	
		8,606,220	12-10-2013	Soliman et al.	
		2003/0046022	03-06-2003	Silverman, Robert M.	
		2003/0134648	07-17-2003	Reed et al.	
		2003/0176196	09-18-2003	Hall et al.	
		2003/022282	12-04-2003	Karr et al.	
		2004/0002346	01-01-2004	Santhoff, John	
		2004/0198392	10-07-2004	Harvey et al.	
		2005/0070306	03-31-2005	Kim et al.	
		2006/0270421	11-30-2006	Phillips et al.	
		2007/0197229	08-23-2007	Kalliola et al.	
		2007/0270164	11-22-2007	Maier et al.	
		2008/0085727	04-10-2008	Kratz, Tyler M.	
		2008/0102957	05-01-2008	Burman et al.	
		2008/0155094	06-26-2008	Roese et al.	
		2008/0167896	07-10-2008	Fast et al.	
		2008/0233956	09-25-2008	Wyk et al.	
		2010/0087166	04-08-2010	Agashe, Parag	

Examiner Signature		Date Considered	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /V.V./

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO
(modified by Applicant)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 2 of 2

Complete if Known	
Application Number	14/188,063
Filing Date	February 24, 2014
First Named Inventor	Craig S. Etchegoyen
Art Unit	2172
Examiner Name	Not yet assigned
Attorney Docket Number	UN-NP-LO-133

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Foreign Patent Document Country Code – Number – Kind Code	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
		EP 1 739 879 A1	01-03-2007	Research in Motion Ltd		
		EP 2 096 597 A2	09-02-2009	Palo Alto Research Center Inc.		
		EP 2 182 752	05-05-2010	Vodafone Group		
		WO 2008/055865	05-15-2008	Komerca BV		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date page(s), volume-issue number(s), publisher, city and/or country where published.	T

Examiner Signature	/Viet Vu/	Date Considered	12/13/2014

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /V.V./

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14188063	ETCHEGOYEN, CRAIG S.
	Examiner	Art Unit
	VIET VU	2448

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
709	204, 204, 217, 219, 223, 224	12/13/14	vv

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Text only see printout	12/13/14	vv

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	64293	deliver$3 near3 (content data) near3 (user device client)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/12/13 22:35
L2	28569	predict$3 near5 location	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/12/13 22:36
L3	550683	history	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/12/13 22:36
L4	937	2 same 3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/12/13 22:36
L5	1	1 same 4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/12/13 22:36
L6	1083	1 same 3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/12/13 22:40
L7	35	predict$3 same 6	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/12/13 22:40

12/13/2014 10:48:44 PM
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/188,063	02/24/2014	Craig S. Etchegoyen	UN-NP-LO-133

CONFIRMATION NO. 5670

96051
Uniloc USA Inc.
Legacy Town Center
7160 Dallas Parkway
Suite 380
Plano, TX 75024

PUBLICATION NOTICE

Title:PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

Publication No.US-2014-0258471-A1
Publication Date:09/11/2014

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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Alexandria, VA 22313-1450
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UNILOC USA INC.
LEGACY TOWN CENTER
7160 DALLAS PARKWAY
SUITE 380
PLANO TX 75024

In re Application of
Etchegoyen, Craig S.
Application No.: 14/188,063
Filed: February 24, 2014
Attorney Docket No. UN-NP-LO-133
For: PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

: DECISION ON REQUEST TO
: PARTICIPATE IN THE PATENT
: PROSECUTION HIGHWAY
: PROGRAM AND PETITION
: TO MAKE SPECIAL UNDER
: 37 CFR 1.102(a)

This is a decision on the request to participate in the Patent Prosecution Highway (PPH) program and the petition under 37 CFR 1.102(a), filed March 10, 2014, to make the above-identified application special.

The request and petition are **GRANTED**.

DISCUSSION

A grantable request to participate in the PPH pilot program and petition to make special require:

1. The U.S. application and the corresponding application filed in the PPH 2.0 participating office (with the allowable/patentable claim(s)) must have the same priority/filing date. In particular, the U.S. application (including national stage entry of a PCT application and a so-called bypass application filed under 35 U.S.C. 111 which validly claims benefit under 35 U.S.C. 120 to a PCT application):

    a. is an application that validly claims priority under 35 U.S.C. § 119(a) and 37 CFR 1.55 to one or more applications filed with the PPH 2.0 participating office, or
    b. is an application which is the basis of a valid priority claim under the Paris Convention for the application filed in the PPH 2.0 participating office, or
    c. is an application which shares a common priority document with the application filed in the PPH 2.0 participating office, or
    d. the application filed in the PPH 2.0 participating office are derived from/related to a PCT application having no priority claim

2. Applicant must:
   a. Ensure all the claims in the U.S. application must sufficiently correspond or be amended to sufficiently correspond to the allowable/patentable claim(s) in the PPH 2.0 participating office application(s) and
   b. Submit a claims correspondence table in English;

3. Examination of the U.S. application has not begun;

4. Applicant must submit:
   a. Documentation of prior office action:
      i. a copy of the office action(s) just prior to the "Decision to Grant a Patent" from each of the PPH 2.0 participating office application(s) containing the allowable/patentable claim(s) or
      ii. if the allowable/patentable claims(s) are from a "Notification of Reasons for Refusal" then the Notification of Reasons for Refusal or
      iii. if the PPH 2.0 participating office application is a first action allowance then no office action from the PPH 2.0 participating office is necessary should be indicated on the request/petition form;
   b. An English language translation of the PPH 2.0 participating office action from (4)(a)(i)-(ii) above

5. Applicant must submit:
   a. An IDS listing the documents cited by the PPH 2.0 participating office examiner in the PPH 2.0 participating office action (unless already submitted in this application)
   b. Copies of the documents except U.S. patents or U.S. patent application publications (unless already submitted in this application);

The request to participate in the PPH pilot program and petition comply with the above requirements. Accordingly, the above-identified application has been accorded "special" status.

Telephone inquiries concerning this decision should be directed to the undersigned at (571) 272-3206.

All other inquiries concerning the examination or status of the application is accessible in the PAIR system at http://www.uspto.gov/ebc.index.html.

This application will be forwarded to the examiner for action on the merits commensurate with this decision once this application's formality reviews have been completed.

/Liana Walsh/
Liana Walsh
Petitions Paralegal Specialist
Office of Petitions

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United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/188,063	02/24/2014	2172	730	UN-PR-LO-133	5	1

CONFIRMATION NO. 5670

96051
Uniloc USA Inc.
Legacy Town Center
7160 Dallas Parkway
Suite 380
Plano, TX 75024

FILING RECEIPT

OC000000067115906

Date Mailed: 03/14/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)
Craig S. Etchegoyen, Plano, TX;

Applicant(s)
Uniloc Luxembourg S.A., Luxembourg, LUXEMBOURG

Assignment For Published Patent Application
Uniloc Luxembourg S.A., Luxembourg, LUXEMBOURG

Power of Attorney: None

Domestic Priority data as claimed by applicant
This appln claims benefit of 61/774,305 03/07/2013

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
AUSTRALIA 2013100804 06/07/2013 No Access Code Provided

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 03/11/2014
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/188,063**
Projected Publication Date: 09/11/2014
Non-Publication Request: No
Early Publication Request: No
** **SMALL ENTITY** **

Title

PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

Preliminary Class

715

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/188,063

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	5 minus 20 =	*	x 40 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 210 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	730		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. no.:	14/188,063	Conf. no.	5670
Applicant:	Uniloc Luxembourg S.A.	Art Unit:	2172
Filed:	February 24, 2014	Examiner:	Not yet assigned

Title: PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

PRELIMINARY AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir,

Before conducting substantive examination of the present application, please amend the present application as follows:

Amendments to the Claims begin on page .

Remarks begin on page .

IN THE CLAIMS:

1. (original) A method for delivering information to a user device, the method comprising:

predicting whether the user device will be at any of one or more predetermined locations within a predetermined maximum amount of time with at least a predetermined likelihood;

in response to the predicting, performing one or more predetermined actions that are associated with the predetermined locations, the predetermined maximum amount of time, and the predetermined likelihood;

wherein at least one of the actions includes delivering the information to the user device.

2. (original) The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device.

3. (original) The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device for day- and time-based patterns related to a current time and a current day.

4. (original) The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device for movement patterns related to a current location of the user device.

5. (original) The method of claim 1 further comprising:

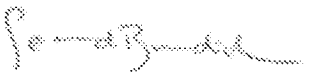
analyzing a location history of the user device for patterns that involve day- and time-based and movement related to a current time, a current day, and a current location of the user device.

6-15. (canceled)

REMARKS

Applicant respectfully requests entry of this amendment prior to conducting substantive examination.

Respectfully Submitted,



Sean D. Burdick
Reg. No. 51,513

Uniloc USA, Inc.
7160 N. Dallas Parkway, Suite 380
Plano, TX 75024
(972) 905-9580 x227

Electronic Patent Application Fee Transmittal

Application Number:	14188063
Filing Date:	
Title of Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY
First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Filer:	Sean Dylan Burdick/Tanya Kiatkulpiboone
Attorney Docket Number:	UN-NP-LO-133

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	2806	1	90	90
		Total in USD ($)		**90**

Electronic Acknowledgement Receipt

EFS ID:	18418691
Application Number:	14188063
International Application Number:	
Confirmation Number:	5670
Title of Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY
First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Customer Number:	96051
Filer:	Sean Dylan Burdick/Tanya Kiatkulpiboone
Filer Authorized By:	Sean Dylan Burdick
Attorney Docket Number:	UN-NP-LO-133
Receipt Date:	10-MAR-2014
Filing Date:	
Time Stamp:	15:46:41
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$90
RAM confirmation Number	2628
Deposit Account	506053
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Examination support document	42386_OA3.pdf	1687497 9c5182c54ef3ad746fef8ae06c4bf8d14db7942b	no	4
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	LO-133_IDS_List.pdf	43955 88c5d62d821badbb4c4c0ef060601cbc59e18e0c	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	D1_EP1739879A1_713801_1.PDF	1162677 51ae8a331f42037602592d9094aa60a3289babce	no	16
Warnings:					
Information:					
4	Foreign Reference	D2_EP2096597A2_713879_1.PDF	758764 1cb08ada529af3b279c0d8c7e57a5e8a2a57c887	no	11
Warnings:					
Information:					
5	Foreign Reference	EP2182752_Vodafone.pdf	660202 ecc6e7484f23d1f2b259635389b9f243f1bc8109	no	11
Warnings:					
Information:					
6	Foreign Reference	WO_2008055865_Komerca.pdf	854506 f7829b13391c7e3d76c8073a962d6c802ad0354f	no	9
Warnings:					
Information:					
7	Petition to make Special under PCT-Patent Pros Hwy	UN-NP-LO-133_sb0020au_PPH_Request.pdf	163339 e4cccb6d4177e9d223867e7b490b807277675d55	no	3
Warnings:					
Information:					
8	Preliminary Amendment	LO-133_Preliminary_Amendment.pdf	66008 b2730898882e5e39bce737db2eb78f2090c5f649	no	3
Warnings:					
Information:					
9	Fee Worksheet (SB06)	fee-info.pdf	30384 0e59f3ad6c5861446dcd38d67c69e8a8c39b56ab	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	5427332

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Australian Government
IP Australia

Madderns
06 FEB 2014

ABN 38 113 072 755
Discovery House, Phillip ACT 2606
PO Box 200, Woden ACT 2606
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Address: Madderns Patent & Trade Mark Attorneys
GPO Box 2752
ADELAIDE SA 5001
Australia

Date of issue: 3 February 2014

Innovation Patent Examination Report No. 3

Application Details

Patent Application No.:	2013100804
Applicant(s):	Uniloc Luxembourg S.A.
Applicant reference:	42386
Earliest Priority Date:	07 March 2013
Examination Request Date:	03 July 2013
Examination Requested By:	Madderns Patent & Trade Mark Attorneys

Your application has been examined under Section 101B of the Patents Act 1990. I consider that the application does not meet the requirements of the Act for the reasons indicated below.

Actions you can take

You have until 09 February 2014 to remove all grounds of revocation otherwise your Innovation Patent will cease.

Basis of the report

Last proposed amendment item no. 2

In examining your application I have taken into account:

- the accepted innovation patent
- the proposed amendments under S104 filed on 09 October 2013

Statement of Novelty, Innovative Step and Patentable Subject Matter

Novelty/Innovative Step	Claim No. NONE Claim No. 1 - 5	**Yes** **No**
Patentable Subject Matter	Claim No. 1 - 5 Claim No. NONE	**Yes** **No**

Documents Cited or Considered Relevant

D1 : EP 1739879 A1 (RESEARCH IN MOTION LIMITED) 03 January 2007 *****
Category: **A** Claims: 1 - 5

D2 : EP 2096597 A2 (PALO ALTO RESEARCH CENTER INCORPORATED) 02 September 2009 ****
Category: **X** Claims: 1 - 5

****

***** Document found in an AU Search. Please see attached Search Information Statement for search details.

Special categories of cited documents (based on PCT standard):

X: The claimed invention cannot be considered novel or cannot be considered to involve an innovative step when the document is taken alone.
A: Document defining the general state of the art which is not considered to be of particular relevance.

Novelty and Innovative Step

4 Applicant's submissions regarding the novelty of present claims have been carefully considered and subsequently objection based on citation D1 has been withdrawn. However, it is considered that the present claims 1 - 5 lack novelty (and do not involve an innovative step) when compared with the disclosure of citation D2. Contrary to the applicant's submissions D2 does disclose a system which predicts the user's future predetermined location within a predetermined amount of time and invites bids from advertisers based on this prediction. For example D2 discloses:

"Activity-modeling/prediction module 108 can reside on a customer's mobile device or within advertising system 100. During operation, activity modeling/prediction module 108 makes predictions of the future activities of a customer. In one embodiment, activity-modeling/prediction module 108 uses context data 106 to derive past and current activities, and make predictions of future activities associated with a customer. For example, the customer's cell phone can be equipped with a GPS. Based on pre-stored venue information and the traces of the customer's locations at different times, activity-modeling/prediction module 108 can determine that at a certain time of day the customer typically engages in a particular activity.

Context data 106 can include different types of information that can be used to determine the customer's past, current, or future activities. Such information can include physical information such as time of day, day of week, weather condition, the customer's location, speed of motion, etc. Context data 106 can also include logical contents pertaining to the customer, such as the content of the customer's calendar, instant messages, and emails, history of the customer's past activities, and the customer's previous response to advertisements. In one embodiment, context data 106 can be collected by a mobile device, such as a cell phone, carried by the customer.

In one embodiment, presentation mechanisms 104 can include a variety of devices that can present an advertisement. Such devices can include a mobile phone, PDA, computer, public display, radio, TV, in-vehicle navigation system, etc.

Based on the activity prediction, context data 106, and information about available presentation mechanisms 104 which are in the vicinity of the customer (e.g., the customer's cell phone or a dynamic billboard close to the customer), advertising-opportunity-identification module 102 identifies suitable receptive opportunities for advertising. For example, the system might identify an activity of "eat" when a customer is waiting on a platform for a commuter train, and has not yet had dinner. Correspondingly, advertising-opportunity-identification module 102 produces an opportunity description, which can include the time, presentation mechanism, and topic (which corresponds to the identified activity) for advertisements."

Furthermore, the citation discloses use of context data which includes different types of information that can be used to determine the customer's past, current, or future activities. For example:

"Such information can include physical information such as time of day, day of week, weather condition, the customer's location, speed of motion, etc. Context data 106 can also include logical contents pertaining to the customer, such as the content of the customer's calendar, instant messages, and emails, history of the customer's past activities, and the customer's previous response to advertisements."

See para [0033] to para [0041] and para [0046] for more details.

Additional Comments

This report has been reviewed by the Supervising Examiner responsible for this section.

How to contact us

Examiner: Vivek Joshi
Patent Examination B
A5 - Melbourne Patent Examination Centre
(03) 9935 9616

Mail: IP Australia
PO Box 200
Woden, ACT 2606

Corporate Telephone 1300 651 010
(9am-5pm Mon- Fri)

Website: www.ipaustralia.gov.au

Website QR code

View your application in AusPat by going to http://www.ipaustralia.gov.au/auspat/ and entering your application number.
Did you know you can now submit all types of service requests including Examination responses through IP Australia's eServices? For more information on how to register for eServices please visit us at http://www.ipaustralia.gov.au/about-us/corporate/current-initiatives/eservices/

Please note: From February 2014 all service requests to IP Australia should be submitted via the eServices channel. Service requests sent by email to IP Australia will not be accepted after this date. We encourage all customers to begin using the eServices channel as soon as they are able.

PTO/SB/20AU (02-12)
Approved for use through 01/31/2015. OMB 0651-0058
U.S. Patent and Trademark Office; U.S DEPARTMENT OF COMMERCE

REQUEST FOR PARTICIPATION IN THE PATENT PROSECUTION HIGHWAY (PPH) PILOT PROGRAM BETWEEN IP AUSTRALIA (IPAU) AND THE USPTO

Application No.:	14188063	First Named Inventor:	Craig S. Etchegoyen
Filing Date:	February 24, 2014	Attorney Docket No.:	UN-NP-LO-133
Title of the Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY		

THIS REQUEST FOR PARTICIPATION IN THE PPH PILOT PROGRAM ALONG WITH THE REQUIRED DOCUMENTS MUST BE SUBMITTED VIA EFS-WEB. INFORMATION REGARDING EFS-WEB IS AVAILABLE AT HTTP://WWW.USPTO.GOV/EBC/EFS_HELP.HTML.

APPLICANT HEREBY REQUESTS PARTICIPATION IN THE PATENT PROSECUTION HIGHWAY (PPH) PILOT PROGRAM AND PETITIONS TO MAKE THE ABOVE-IDENTIFIED APPLICATION SPECIAL UNDER THE PPH PILOT PROGRAM.

The above-identified application and the corresponding AU application(s) have the same priority/filing date. If IPAU is not the office of first filing (OFF), identify the OFF and the OFF application no.

The AU application number(s) is/are: 2013100804

The filing date of the AU application(s) is/are: June 7, 2013

I. List of Required Documents:

a. **A copy of the latest AU office action prior to the "Decision to Grant a Patent"* in the above-identified AU application(s)**

☑ is attached.

☐ is not attached because the AU application was allowed in a first office action.

* It is not necessary to submit a copy of the "Decision to Grant a Patent."

b. **(1) An information disclosure statement listing the documents cited in the AU office action**

☑ is attached.

☐ has already been filed in the above-identified U.S. application on _____.

(2) Copies of all documents (except for U.S. patents or U.S. patent application publications)

☑ are attached.

☐ have already been filed in the above-identified U.S. application on _____ .

REQUEST FOR PARTICIPATION IN THE PPH PILOT PROGRAM BETWEEN IPAU AND THE USPTO
(continued)

Application No.:	14188063	First Named Inventor:	Craig S. Etchegoyen

II. Claims Correspondence Table:

Claims in US Application	Patentable Claims in AU Application	Explanation regarding the correspondence
1	1	identical
2	2	identical
3	3	identical
4	4	identical
5	5	identical

III. All the claims in the US application sufficiently correspond to the patentable/allowable claims in the AU application.

Signature /Sean D. Burdick/	Date March 10, 2014
Name (Print/Typed) Sean D. Burdick	Registration Number 51513

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO
(modified by Applicant)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	14/188,063
Filing Date	February 24, 2014
First Named Inventor	Craig S. Etchegoyen
Art Unit	2172
Examiner Name	Not yet assigned
Attorney Docket Number	UN-NP-LO-133

U. S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		7,057,556	06-06-2006	Hall et al.	
		7,091,851	08-15-2006	Mason et al.	
		7,826,409	11-02-2010	Mock et al.	
		8,320,938	11-27-2012	Meyer et al.	
		8,606,220	12-10-2013	Soliman et al.	
		2003/0046022	03-06-2003	Silverman, Robert M.	
		2003/0134648	07-17-2003	Reed et al.	
		2003/0176196	09-18-2003	Hall et al.	
		2003/022282	12-04-2003	Karr et al.	
		2004/0002346	01-01-2004	Santhoff, John	
		2004/0198392	10-07-2004	Harvey et al.	
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Examiner Initials	Cite No.	Foreign Patent Document Country Code – Number – Kind Code	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
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Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date page(s), volume-issue number(s), publisher, city and/or country where published.	T

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(54) Probabilistic location prediction for a mobile station

(57) A probabilistic prediction is made of the location of a wireless-enabled mobile station in a wireless local area network. The prediction comprises calculating a vector representing movement of the mobile station through a space in which two or more access points of the network are located, and determining a region surrounding the vector in which the mobile station has at least a given probability to be located within a certain period of time.

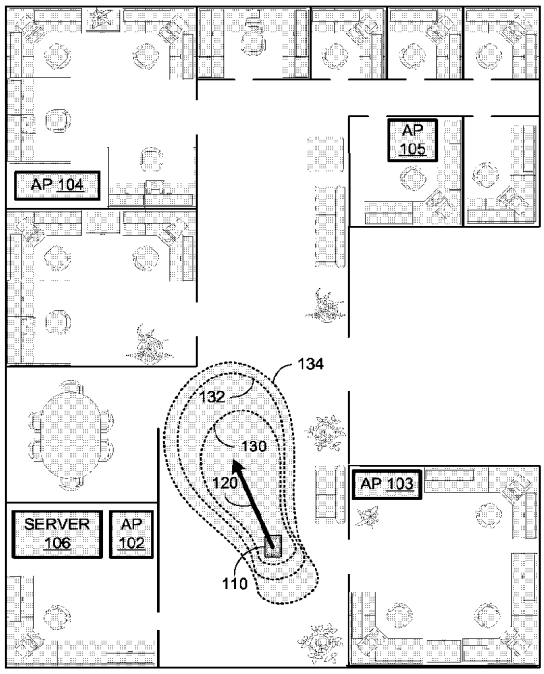

FIG. 1

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Description

[0001] The invention generally relates to wireless networks. In particular, embodiments of the invention relate to probabilistic prediction of a location of a wireless-enabled mobile station.

[0002] Wireless networks, specifically those based on the Institute of Electrical and Electronic Engineers (IEEE) 802.11 standard, are experiencing rapid growth. Some users, for example laptop users, use the network while stationary (or associated with a single access point (AP)), and before moving, the user ceases operation only to continue using the network after moving to a new location. This is known as "discrete mobility" and "nomadic roaming". Other users, for example voice-based application users, use the network while moving. This is known as "continuous mobility" and "seamless roaming".

[0003] Currently, the handoff procedure as a mobile station roams from one AP to another entails too much latency to support voice and multimedia applications. This handoff procedure results in a transfer of physical layer connectivity and state information from one AP to another with respect to the mobile station. Moreover, APs have limited resources, and it is possible that as a mobile station enters the coverage area of an AP, that AP does not have the resources to support the mobile station.

[0004] A probabilistic prediction may be made of the location of a wireless-enabled mobile station in a wireless local area network. The prediction may include calculating a vector representing movement of the mobile station through a space in which two or more access points of the network are located, and determining a region surrounding the vector in which the mobile station has at least a given probability to be located within a certain period of time.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] Embodiments of the invention are illustrated by way of example and not limitation in the figures of the accompanying drawings, in which like reference numerals indicate corresponding, analogous or similar elements, and in which:

[0006] Figure 1 is an illustration of an exemplary deployment of a wireless local area network (LAN) in a building, according to an embodiment of the invention. The LAN includes access points (APs) and a switched, routed fabric including a server;

[0007] Figure 2 is a flowchart of a method implemented at least in part by the server of Figure 1, according to an embodiment of the invention;

[0008] Figure 3 is a block diagram of an exemplary server, according to some embodiments of the invention; and

[0009] Figure 4 is a block diagram of an exemplary mobile station, according to some embodiments of the invention.

[0010] It will be appreciated that for simplicity and clarity of illustration, elements shown in the figures have not necessarily been drawn to scale. For example, the dimensions of some of the elements may be exaggerated relative to other elements for clarity.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

[0011] In the following detailed description, numerous specific details are set forth in order to provide a thorough understanding of embodiments of the invention. However it will be understood by those of ordinary skill in the art that the embodiments of the invention may be practiced without these specific details. In other instances, well-known methods, procedures, and components have not been described in detail so as not to obscure the embodiments of the invention.

[0012] Figure 1 is an illustration of an exemplary deployment of a wireless local area network (LAN) in a building, according to an embodiment of the invention. The WLAN includes APs 102, 103, 104 and 105 and a switched, routed fabric including a server 106.

[0013] A mobile station 110 may be active in the WLAN. A non-exhaustive list of examples for mobile station 110 includes a wireless-enabled laptop, a wireless-enabled cellphone, a wireless-enabled personal digital assistant (PDA), a wireless-enabled video camera, a wireless-enabled gaming console, a wireless Internet-Protocol (IP) phone and any other suitable wireless-enabled mobile station.

[0014] In the example of Figure 1, APs 102, 103, 104 and 105, server 106 and mobile station 110 are "802.11-enabled", which means that wireless communications in the WLAN via the respective WLAN controllers of the wireless devices are in accordance with one or more of the following standards defined by the Institute of Electrical and Electronic Engineers (IEEE) for Wireless LAN MAC and Physical layer (PHY) specifications. However, it will be obvious to those of ordinary skill in the art how to modify the following for other existing WLAN standards or future related standards, including 802.11i, 802.11n and 802.11r.

Standard	Published	Maximum Speed	Frequency	Modulation
802.11	1997	2 Mbps	2.4 GHz	Phase-Shift

(continued)

Standard	Published	Maximum Speed	Frequency	Modulation
802.11a	1999	54 Mbps	5.0 GHz	Orthogonal Frequency Division Multiplexing
802.11b	1999	11 Mbps	2.4 GHz	Complementary Code Keying
802.11g	2003	54 Mbps	2.4 GHz	Orthogonal Frequency Division Multiplexing

[0015] Figure 2 is a flowchart of a method implemented, at least partially, by server 106, according to an embodiment of the invention.

[0016] A vector representing motion of mobile station 110 is calculated (200). The vector may be calculated by server 106, or by mobile station 110 and then transmitted wirelessly via the WLAN to server 106 for further processing.

[0017] An exemplary vector 120 is shown in Figure 1, based at the current position of mobile station 110, having a direction representing the direction of motion of mobile station 110 and a length representing the speed of motion of mobile station 110. The vector may be calculated on the basis of any one or any combination of instantaneous, projected and historic information. The information may be specific to mobile station 110 or to a group or class of users to which mobile station 110 belongs, or may be global information applicable to all mobile stations. The historic information may be incorporated using a forgetting factor so that more recent information has more of an effect than less recent information.

[0018] For example, mobile station 110 may transmit signal strength measurements to server 106 as it moves through the building, and server 106 may use these measurements, the fixed locations of APs 102, 103, 104 and 105, and the layout of the building to calculate the vector. In this example, the signal strength measurements are specific to mobile station 110, and the fixed locations of the access points in the network and the layout of the building are global information applicable to all mobile stations.

[0019] In another example, mobile station 110 may transmit global positioning system (GPS) information to server 106, and server 106 may use this information to calculate the vector. In this example, the GPS information is specific to mobile station 110 and may include instantaneous and/or historical information.

[0020] In another example, server 106 may use handoff information regarding mobile station 110 and/or regarding mobile stations belonging to a class or group of users to which mobile station 110 also belongs. For example, if mobile station 110 belongs to a user in a group of users that generally roam in a certain pattern in the building, for example, users that share an office, then that certain roaming pattern may be used to calculate the vector. Moreover, if mobile station 110 belongs to a user in a particular class of users, for example, managers, that frequently roam to certain locations in the building, for example, the meeting room, then that information may be used to calculate the vector. In a further example, women who work in one building and then roam to another building tend to visit the meeting rooms and women's washrooms of the other building and never visit the men's washrooms of the other building. In yet another example, maintenance and facilities staff access areas of buildings (for example, heating, ventilation and air conditioning areas, wiring rooms) that other staff members do not.

[0021] Server 106 then determines a region in which mobile station 110 is likely to be located with at least a given probability within a certain period of time (202). Three exemplary regions 130, 132 and 134 are shown in Figure 1. Regions 130 and 132 are for the same period of time, but the probability that mobile station 110 is located in region 130 is higher than the probability that mobile station 110 is located in region 132.

Regions 132 and 134 are for the same probability, but region 134 is for a longer period of time than region 132.

[0022] Although vector 120 and regions 130, 132 and 134 are illustrated as planar in Figure 1, embodiments of this invention may be generalized to three dimensions when appropriate, for example, buildings with multiple floors.

[0023] Similarly, although this description relates to a single vector and a region around the vector, persons of ordinary skill in the art can modify embodiments of this invention to apply to a sequence of vectors or a curved path approximated thereby.

[0024] Server 106 may take various factors into account when determining the region. A non-exhaustive list of examples for such factors includes:

1. Global Factors

    a) a user of a mobile station tends to move in a straight line;

    b) it is unlikely that a user will reverse direction;

    c) the physical structure of a building will affect the route of a user of a mobile station (for example, the placement of walls, stairs, doors, elevators and the like).

2. Class/Group Factors

a) visitors to the building tend to visit certain areas;

b) users with preferred access to resources may be allotted larger regions than normal users;

c) the history of routes of other users in the same class or group;

3. Individual Factors

a) the individual history of the user;

b) the user is sedentary, or the user moves around a lot;

c) if the user is in a wheelchair, exclude routes involving stairs, increase the likelihood of visiting wheelchair-accessible washrooms, and decrease the likelihood of entering non-wheelchair-accessible rooms.

[0025] The historic information may be incorporated using a forgetting factor so that more recent information has more of an effect than less recent information.

[0026] For example, if mobile station 110 is stationary, and no other factors are taken into account, the vector is a point and the region may be a circle around mobile station 110. As mobile station 110 moves, this circle may be deformed in the direction of motion. The faster mobile station 110 moves in a particular direction, the longer the vector representing the motion of mobile station 110, and the more deformed the region is from a circle and the more area covered by the region.

[0027] Once server 106 has determined the region in which mobile station 110 has at least a given probability to be located within a certain period of time, server 106 may identify which, if any, of APs 102, 103, 104 and 105 have a coverage area that overlaps, even partially, the determined region (204). For example, the coverage areas of APs 102 and 103 may overlap regions 130, 132 and 134, while the coverage area of AP 104 may overlap regions 132 and 134 only, and the coverage area of AP 105 may not overlap any of regions 130, 132 and 134.

[0028] The coverage areas of the APs may have been calculated or measured. For example, server 106 may calculate the coverage area of an access point based on its location, make, model and some characteristic data for such an access point. In another example, server 106 may dynamically calculate the coverage area of an access point from collected data of when, where and at what received signal strength indication (RSSI) mobile stations roam.

[0029] A non-exhaustive list of examples for actions that server 106 may take upon identifying the access points includes:

a) Initiating pre-authentication processes with one or more of the identified APs (206), by signaling either mobile station 110 or the AP to begin and with which communications partner. For example, pre-authentication may be performed at the Data Link layer ("layer 2") of the WLAN, or at the Data Link layer ("layer 2") and the Network layer ("layer 3") of the WLAN, according to the Open Systems Interconnection (OSI) communication model. If regions of different given probabilities are determined, pre-authentication at "layer 2" and "layer 3" may be done for APs that are accessible by mobile station 110 from within the region of higher probability and pre-authentication at "layer 2" may be done for APs that are accessible by mobile station 110 only from within the region of lower probability. Pre-authentication may accelerate the handoff procedure as mobile station roams from one AP to another.

b) Reserving resources for mobile station 110 at one or more of the identified APs (208). For example, if mobile station 110 has a probability of 60% of roaming to a particular AP within 1 minute, bandwidth may be reserved for mobile station at the particular AP. However, if a different mobile station has a probability of 90% of roaming to the particular AP, the resource needs of the different mobile station may trump the needs of mobile station 110.

c) Pre-caching or routing content for the user of mobile station 110 at one or more of the identified APs (210). A non-exhaustive list of examples for this content includes targeted advertising, telephone calls, and the like.

d) Notifying voice over IP (VoIP) servers that a call endpoint might be about to roam (so that the call data could start to be multicasted to the APs in the region).

e) Initiating roaming procedures to other networks (for example, roaming from the WLAN to a cellular network).

f) Updating presence information (which in turn can be used to route phone calls, update calendar appointments,

create lists of meeting attendees, notify conference call participants of the names of people in the room on the other end, and the like).

[0030] Figure 3 is a block diagram of an exemplary server, according to some embodiments of the invention. Server 106 includes at least one antenna 300 coupled to a radio 302, which in turn is coupled to a WLAN controller 304. WLAN controller 304 may be coupled to a memory 306 storing firmware 308 to be executed by WLAN controller 304. Server 106 includes a processor 310 and a memory 312 coupled to processor 310. Memory 312 may store executable code 314 to be executed by processor 310. Executable code 314, when executed by processor 310, may cause server 106 to implement all or a portion of the method of Figure 2.

[0031] Processor 310 may be coupled to WLAN controller 304 and may be able to control, at least in part, the operation of WLAN controller 304. Server 106 includes a battery 316 to provide power to radio 302, WLAN controller 304, processor 310 and memories 306 and 312. Server 106 may include other components that, for clarity, are not shown.

[0032] Radio 302, WLAN controller 304, processor 310 and memories 306 and 312 are functional blocks and may be implemented in any physical way in server 106. For example, radio 302, WLAN controller 304, processor 310 and memories 306 and 312 may be implemented in separate integrated circuits, and optionally in additional discrete components. Alternatively, some of the functional blocks may be grouped in one integrated circuit. Furthermore, the functional blocks may be parts of application specific integrated circuits (ASIC), field programmable gate arrays (FPGA) or application specific standard products (ASSP).

[0033] Figure 4 is a block diagram of an exemplary mobile station, according to some embodiments of the invention. Mobile station 110 includes at least one antenna 400 coupled to a radio 402, which in turn is coupled to a WLAN controller 404. WLAN controller 404 may be coupled to a memory 406 storing firmware 408 to be executed by WLAN controller 404. Mobile station 110 includes a processor 410 and a memory 412 coupled to processor 410. Memory 412 may store executable code 414 to be executed by processor 410. Executable code 414, when executed by processor 410, may cause mobile station 110 to calculate a vector representing movement of mobile station 110 through a space in which two or more APs are located, as at 200 of the method of Figure 2.

[0034] Processor 410 may be coupled to WLAN controller 404 and may be able to control, at least in part, the operation of WLAN controller 404. Mobile station 110 includes a battery 416 to provide power to radio 402, WLAN controller 404, processor 410 and memories 406 and 412. Mobile station 110 may include other components that, for clarity, are not shown.

[0035] Radio 402, WLAN controller 404, processor 410 and memories 406 and 412 are functional blocks and may be implemented in any physical way in mobile station 110. For example, radio 402, WLAN controller 404, processor 410 and memories 406 and 412 may be implemented in separate integrated circuits, and optionally in additional discrete components. Alternatively, some of the functional blocks may be grouped in one integrated circuit. Furthermore, the functional blocks may be parts of application specific integrated circuits (ASIC), field programmable gate arrays (FPGA) or application specific standard products (ASSP).

[0036] A non-exhaustive list of examples for processors 310 and 410 includes a central processing unit (CPU), a digital signal processor (DSP), a reduced instruction set computer (RISC), a complex instruction set computer (CISC) and the like.

[0037] Memories 306 and 312 may be fixed in or removable from server 106. Similarly, memories 406 and 412 may be fixed in or removable from mobile station 110. A non-exhaustive list of examples for memories 306, 312, 406 and 412 includes any combination of the following:

a) semiconductor devices such as registers, latches, read only memory (ROM), mask ROM, electrically erasable programmable read only memory devices (EEPROM), flash memory devices, non-volatile random access memory devices (NVRAM), synchronous dynamic random access memory (SDRAM) devices, RAMBUS dynamic random access memory (RDRAM) devices, double data rate (DDR) memory devices, static random access memory (SRAM), universal serial bus (USB) removable memory, and the like;

b) optical devices, such as compact disk read only memory (CD ROM), and the like; and

c) magnetic devices, such as a hard disk, a floppy disk, a magnetic tape, and the like.

[0038] A non-exhaustive list of examples for antennae 300 and 400 includes a dipole antenna, a monopole antenna, a multilayer ceramic antenna, a planar inverted-F antenna, a loop antenna, a shot antenna, a dual antenna, an omnidirectional antenna and any other suitable antenna.

[0039] Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described above. Rather, the specific features and acts described above are disclosed as example

forms of implementing the claims.

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Claims

1. A method for probabilistic prediction of a location of a wireless-enabled mobile station (110) in a wireless local area network, the method comprising:

   calculating a vector (120) representing movement of said wireless-enabled mobile station (110) through a space in which two or more access points (102, 103, 104, 105) of said network are located; and
   determining a region (130, 132, 134) surrounding said vector (120) in which said mobile station (110) has at least a given probability to be located within a certain period of time.

2. The method of claim 1, further comprising:

   identifying which of said access points (102, 103, 104, 105) are accessible by said mobile station (110) from within said region (130, 132, 134).

3. The method of claim 2, further comprising:

   reserving resources for said mobile station (110) at one or more of said access points (130, 132, 134) that are accessible.

4. The method of claim 2 or 3, further comprising:

   pre-authenticating said mobile station (110) with one or more of said access points (130, 132, 134) that are accessible.

5. The method of claim 4, wherein pre-authenticating said mobile station (110) comprises at least:

   pre-authentication at the Data Link layer of said network according to the Open Systems Interconnection communication model, and/or
   pre-authentication at the Data Link layer and the Network layer of said network according to the Open Systems Interconnection communication model.

6. The method of any one of claims 1 to 5, wherein calculating said vector (120) comprises:

   using global positioning system data for said mobile station (110), and/or
   using signal strength information regarding signals received at said mobile station (110) and using the locations of one or more access points (102, 103, 104, 105) generating said signals, and/or
   using signal strength information regarding signals transmitted by said mobile (110) station and using the locations of one or more access points (102, 103, 104, 105) receiving said signals, and/or
   using handoff information regarding said mobile station (110) as it moves and using the locations of one or more access points (102, 103, 104, 105), and/or
   calculating said vector (120) based on any one or any combination of instantaneous, projected and historic information, and/or
   calculating said vector (120) based, at least in part, on information that is specific to said mobile station (110), and/or
   calculating said vector (120) based, at least in part, on information that is specific to a group or class of users to which the user of said mobile station (110) belongs, and/or
   calculating said vector (120) based, at least in part, on global information that is applicable to all mobile stations (110).

7. The method of any one of claims 1 to 6, wherein determining said region (130, 132, 134) comprises:

determining said region (130, 132, 134) based, at least in part, on information that is specific to said mobile station (110), and/or
determining said region (130, 132, 134) based, at least in part, on factors that are specific to a class or group of users to which the user of said mobile station (110) belong, and/or
determining said region (130, 132, 134) based, at least in part, on factors that are applicable to all mobile stations (110).

8. The method of any one of claims 1 to 7, further comprising:

determining another region (130, 132, 134) surrounding said vector (120) in which said mobile station (110) has at least a different given probability to be located within said certain period of time.

9. A wireless system implementing a wireless local area network, the system comprising:

two or more access points (102, 103, 104, 105);
a wireless-enabled mobile station (110); and
a server (106) able to calculate a vector (120) representing movement of said mobile station (110) through a space in which said two or more access points (102, 103, 104, 105) are located and to determine a region (130, 132, 134) surrounding said vector (120) in which said mobile station (110) has at least a given probability to be located within a certain period of time.

10. A wireless system implementing a wireless local area network, the system comprising:

two or more access points (102, 103, 104, 105);
a wireless-enabled mobile station (110) able to calculate a vector (120) representing movement of said mobile station (110) through a space in which said two or more access points (102, 103, 104, 105) are located; and
a server (106) able to receive said vector (120) from said mobile station (110) in a wireless transmission over said network and able to determine a region (130, 132, 134) surrounding said vector (120) in which said mobile station (110) has at least a given probability to be located within a certain period of time.

11. The wireless system of claim 9 or claim 10, wherein said server (106) is able to identify which of said access points (102, 103, 104, 105) are accessible by said mobile station (110) from within said region and/or wherein said access points (102, 103, 104, 105), said mobile station (110) and said server (106) are compatible with 802.11.

12. A server (106) comprising:

an antenna (300);
a radio (302) coupled to said antenna (300);
a wireless local area network controller (304) coupled to said radio (302) through which said server (106) is able to communicate over a wireless local area network;
a processor (310) coupled to said wireless local area network controller (304); and
memory (312) arranged to store executable code means (314) which, when executed by said processor (310), calculate a vector (120) representing movement of a wireless-enabled mobile station (110) through a space in which two or more access points (102, 103, 104, 105) of said network are located and determine a region (130, 132, 134) surrounding said vector (120) in which said mobile station (110) has at least a given probability to be located within a certain period of time.

13. The server (106) of claim 12, wherein said executable code means (314), when executed by said processor (310), identify which of said access points (102, 103, 104, 105) are accessible by said mobile station (110) from within said region (130, 132, 134) and/or wherein said wireless local area network controller (304) is compatible with 802.11.

14. A mobile station (110) comprising:

an antenna (400);
a radio (402) coupled to said antenna (400);
a wireless local area network controller (404) coupled to said radio (402) through which said mobile station

(110) is able to communicate over a wireless local area network;
a processor (410) coupled to said wireless local area network controller (404); and
memory (412) to store executable code means (414) which, when executed by said processor (410), calculate a vector (120) representing movement of said mobile station (110) through a space in which two or more access points (102, 103, 104, 105) of said network are located.

15. The mobile station (110) of claim 14, wherein said wireless local area network controller (404) is compatible with 802.11.

16. A computer program product for probabilistic prediction of a location of a wireless-enabled mobile station (110) in a wireless local area network, the computer program product comprising a computer readable medium embodying program code means executable by a processor of a server (106) and/or said mobile station (110) for implementing the method of any one of claims 1 to 8.

17. A wireless communications network comprising at least one mobile station (110) of claim 14 or claim 15 and/or a server (106) of claim 12 or claim 13.

Amended claims in accordance with Rule 86(2) EPC.

1. A method for prediction of a location of a wireless-enabled mobile station (110) in a wireless local area network, the method comprising:

generating a probabilistic prediction of said location by:

calculating a vector (120) representing movement of said wireless-enabled mobile station (110) through a space in which two or more access points (102, 103, 104, 105) of said network are located; and
determining a region (130, 132, 134) surrounding said vector (120) in which said mobile station (110) has at least a given probability to be located within a certain period of time.

2. The method of claim 1, further comprising:

identifying which of said access points (102, 103, 104, 105) are accessible by said mobile station (110) from within said region (130, 132, 134).

3. The method of claim 2, further comprising:

reserving resources for said mobile station (110) at one or more of said access points (130, 132, 134) that are accessible.

4. The method of claim 2 or 3, further comprising:

pre-authenticating said mobile station (110) with one or more of said access points (130, 132, 134) that are accessible.

5. The method of claim 4, wherein pre-authenticating said mobile station (110) comprises at least:

pre-authentication at the Data Link layer of said network according to the Open Systems Interconnection communication model, and/or
pre-authentication at the Data Link layer and the Network layer of said network according to the Open Systems Interconnection communication model.

6. The method of any one of claims 1 to 5, wherein calculating said vector (120) comprises:

using global positioning system data for said mobile station (110), and/or
using signal strength information regarding signals received at said mobile station (110) and using the locations of one or more access points (102, 103, 104, 105) generating said signals, and/or
using signal strength information regarding signals transmitted by said mobile station (110) and using the loca-

tions of one or more access points (102, 103, 104, 105) receiving said signals, and/or
using handoff information regarding said mobile station (110) as it moves and using the locations of one or more access points (102, 103, 104, 105), and/or
calculating said vector (120) based on any one or any combination of instantaneous, projected and historic information, and/or
calculating said vector (120) based, at least in part, on information that is specific to said mobile station (110), and/or
calculating said vector (120) based, at least in part, on information that is specific to a group or class of users to which the user of said mobile station (110) belongs, and/or
calculating said vector (120) based, at least in part, on information that is applicable to all mobile stations (100).

7. The method of any one of claims 1 to 6, wherein determining said region (130, 132, 134) comprises:

determining said region (130, 132, 134) based, at least in part, on information that is specific to said mobile station (110), and/or
determining said region (130, 132, 134) based, at least in part, on factors that are specific to a class or group of users to which the user of said mobile station (110) belong, and/or
determining said region (130, 132, 134) based, at least in part, on factors that are applicable to all mobile stations (110).

8. The method of any one of claims 1 to 7, further comprising:

determining another region (130, 132, 134) surrounding said vector (120) in which said mobile station (110) has at least a different given probability to be located within said certain period of time.

9. A wireless system implementing a wireless local area network, the system comprising:

two or more access points (102, 103, 104, 105);
a wireless-enabled mobile station (110); and
a server (106) able to generate a probabilistic prediction of a location of said mobile station (100) by calculating a vector (120) representing movement of said mobile station (110) through a space in which said two or more access points (102, 103, 104, 105) are located and determining a region (130, 132, 134) surrounding said vector (120) in which said mobile station (110) has at least a given probability to be located within a certain period of time.

10. A wireless system implementing a wireless local area network, the system comprising:

two or more access points (102, 103, 104, 105);
a wireless-enabled mobile station (110) able to calculate a vector (120) representing movement of said mobile station (110) through a space in which said two or more access points (102, 103, 104, 105) are located; and
a server (106) able to receive said vector (120) from said mobile station (110) in a wireless transmission over said network and able to determine a region (130, 132, 134) surrounding said vector (120) in which said mobile station (110) has at least a given probability to be located within a certain period of time.

11. The wireless system of claim 9 or claim 10, wherein said server (106) is able to identify which of said access points (102, 103, 104, 105) are accessible by said mobile station (110) from within said region and/or wherein said access points (102, 103, 104, 105), said mobile station (110) and said server (106) are compatible with IEEE Standard 802.11.

12. A server (106) comprising:

an antenna (300);
a radio (302) coupled to said antenna (300);
a wireless local area network controller (304) coupled to said radio (302) through which said server (106) is able to communicate over a wireless local area network;
a processor (310) coupled to said wireless local area network controller (304); and
memory (312) arranged to store executable code means (314) which, when executed by said processor (310), calculate a vector (120) representing movement of a wireless-enabled mobile station (110) through a space in which two or more access points (102, 103, 104, 105) of said network are located and determine a region (130,

132, 134) surrounding said vector (120) in which said mobile station (110) has at least a given probability to be located within a certain period of time.

13. The server (106) of claim 12, wherein said executable code means (314), when executed by said processor (310), identify which of said access points (102, 103, 104, 105) are accessible by said mobile station (110) from within said region (130, 132, 134) and/or wherein said wireless local area network controller (304) is compatible with IEEE Standard 802.11.

14. A computer program product for probabilistic prediction of a location of a wireless-enabled mobile station (110) in a wireless local area network, the computer program product comprising a computer readable medium embodying program code means executable by a processor of a server (106) and/or a mobile station (110) for implementing the method of any one of claims 1 to 8.

15. A wireless communications network comprising at least one mobile station (110) and a server (106) of claim 12 or claim 13.

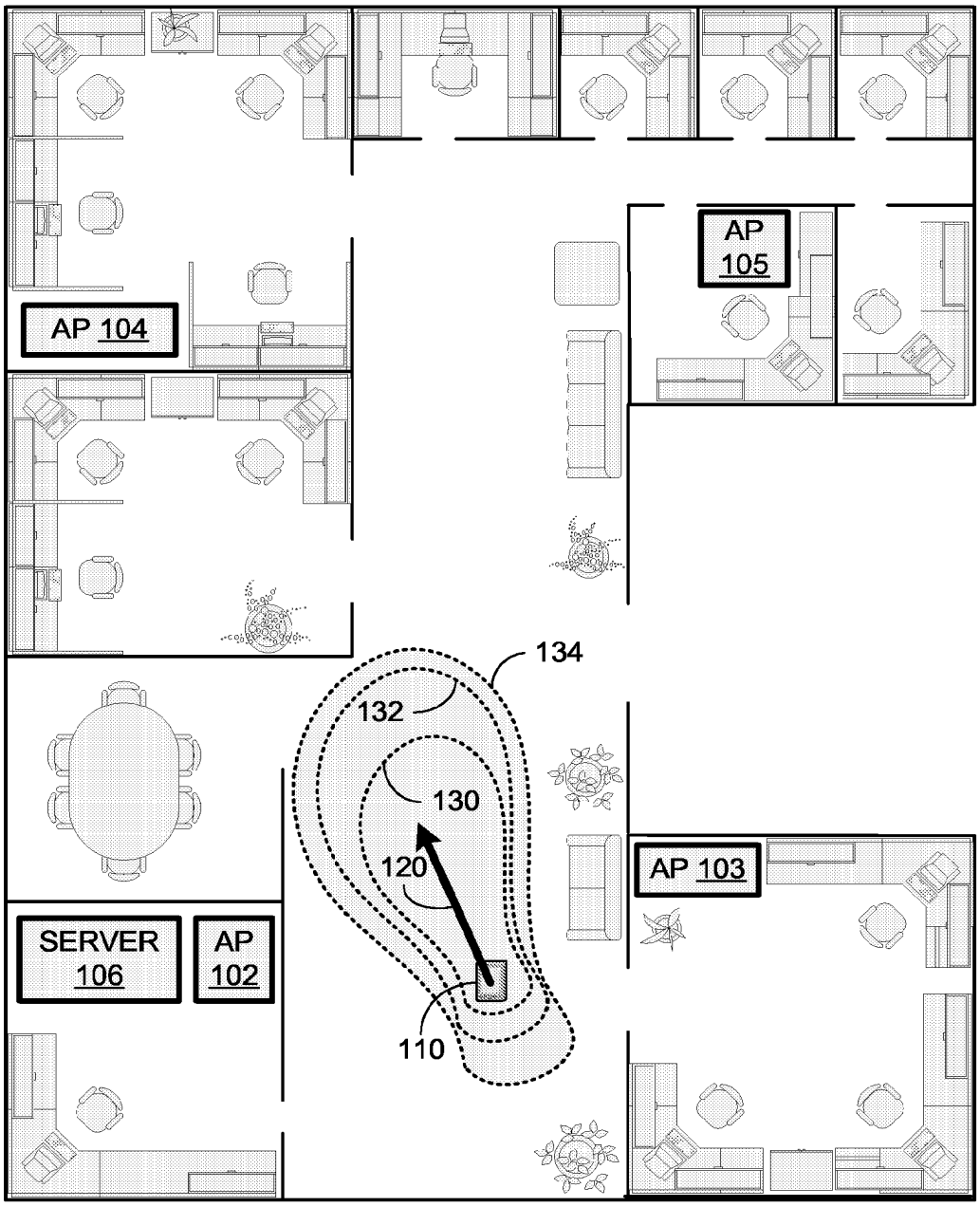

FIG. 1

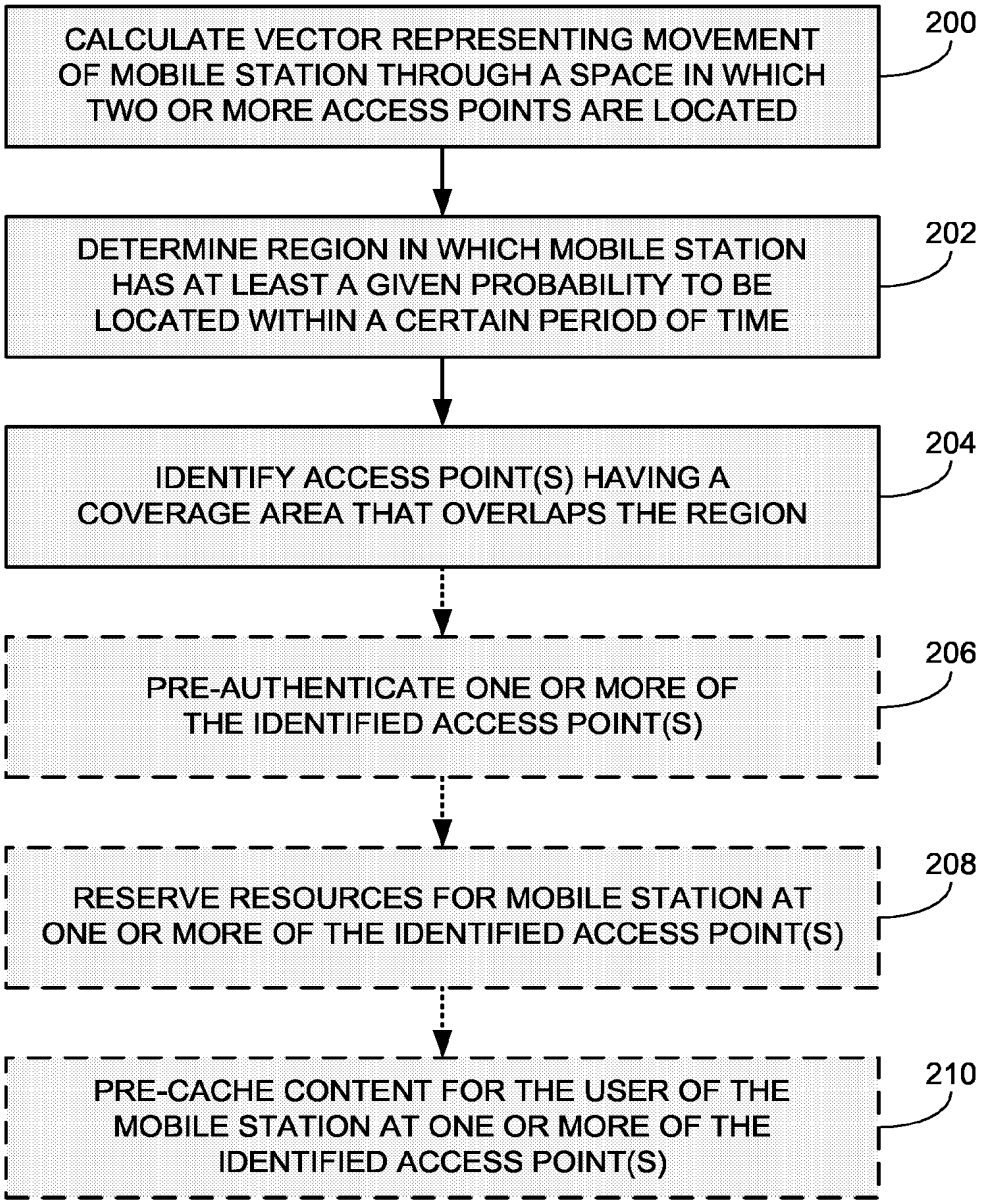

FIG. 2

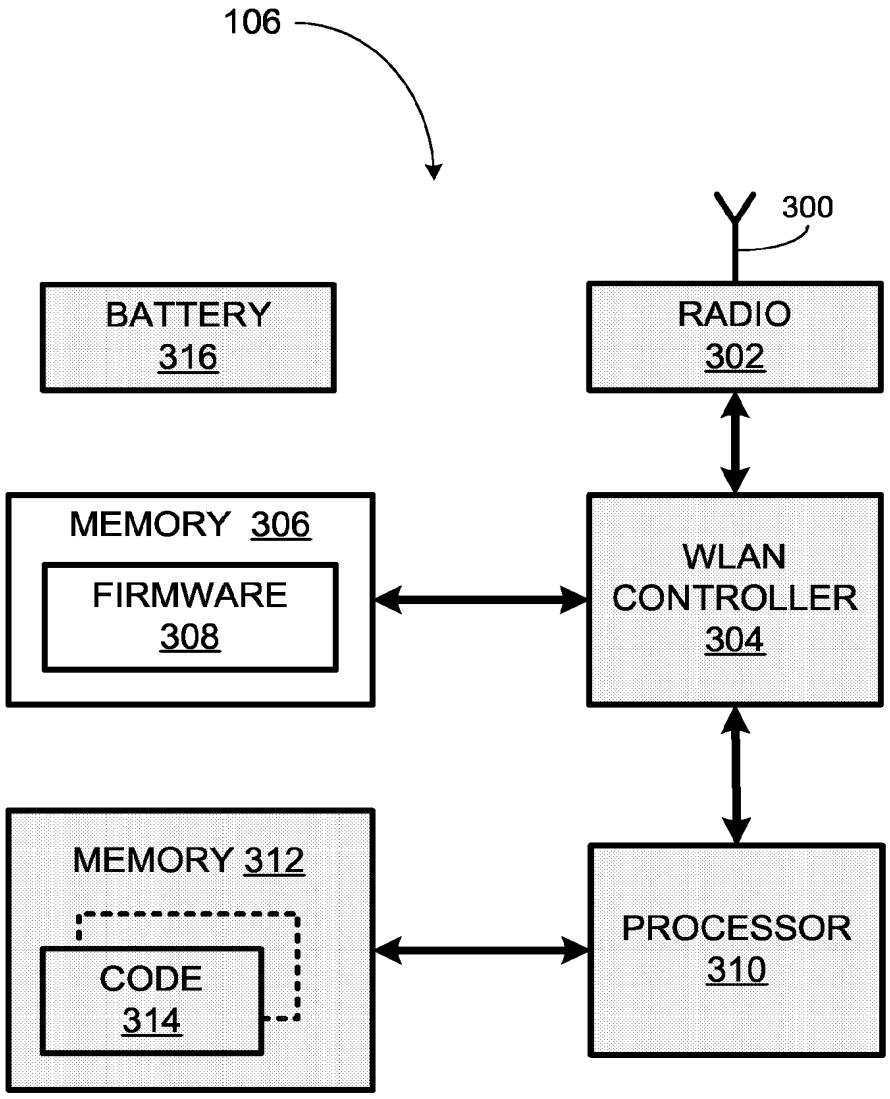

FIG. 3

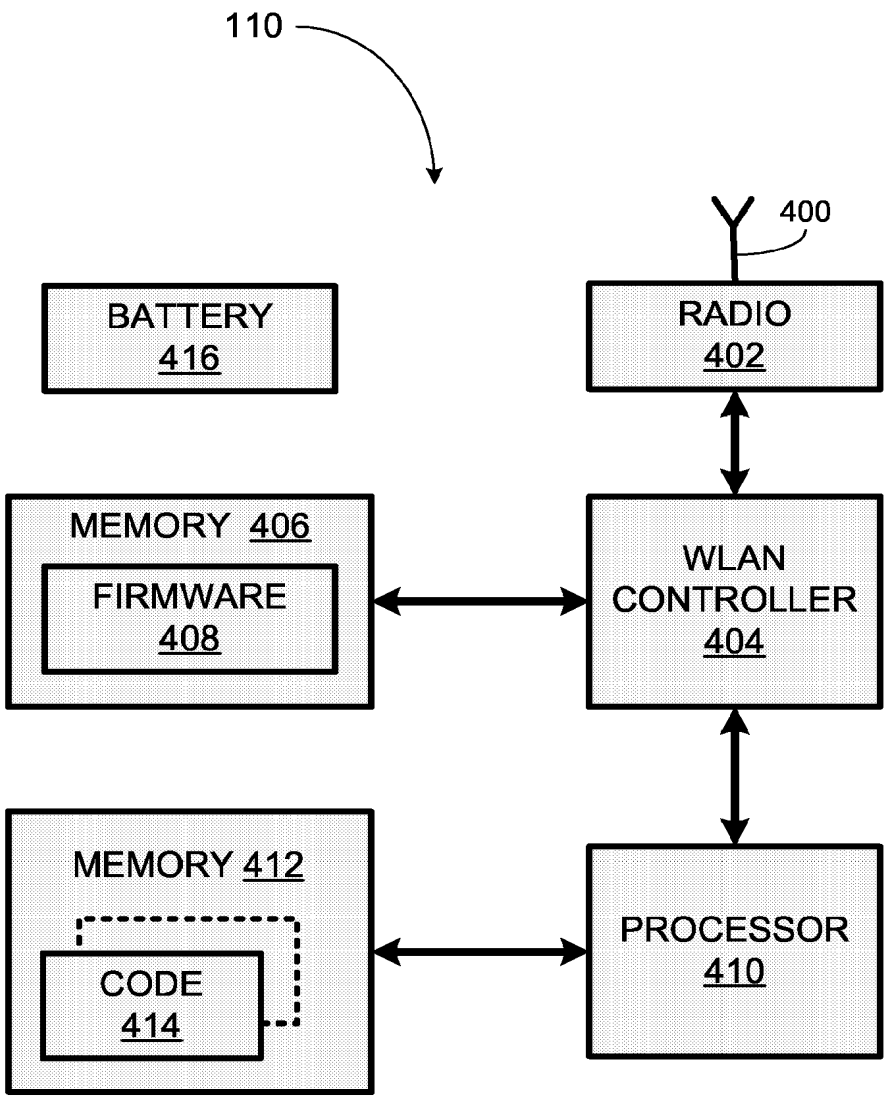

FIG. 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 10 5773

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	US 2003/224799 A1 (SQUIBBS ROBERT FRANCIS ET AL) 4 December 2003 (2003-12-04) * paragraph [0002] - paragraph [0009] * * paragraph [0032] * * paragraph [0037] * * paragraph [0040] * * paragraph [0048] * * figure 2 * -----	1,9,10, 12,14, 16,17 2-8,11, 13,15	H04L12/28 H04Q7/38
Y	US 2003/065712 A1 (CHEUNG GENE ET AL) 3 April 2003 (2003-04-03) * paragraph [0009] - paragraph [0010] * * paragraph [0051] * * paragraph [0060] - paragraph [0061] * * figure 4 * -----	2-8,11, 13,15	
A	US 2004/166864 A1 (HILL STEPHEN ET AL) 26 August 2004 (2004-08-26) * paragraph [0113] - paragraph [0128] * -----	1-17	
A	EP 1 302 783 A (ELISA COMMUNICATIONS OYJ) 16 April 2003 (2003-04-16) * paragraph [0017] - paragraph [0022] * -----	1-17	TECHNICAL FIELDS SEARCHED (IPC) H04L H04Q

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	24 November 2005	Rabe, M

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 10 5773

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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24-11-2005

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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(54) Advertising Payment based on Confirmed Activity Prediction

(57) One embodiment of the present invention provides a system for facilitating presentation of activity-based advertising. During operation, the system receives a set of contextual data of a customer and makes a prediction of the customer's future activity. The system then receives a number of advertisements from the advertisers. Based on the prediction, the system chooses a received advertisement to present to the customer. The system further determines the customer's subsequent activity and confirms the prediction of the customer's activity. The system then receives payments from the advertisers whose advertisement is presented based on whether the prediction is confirmed.

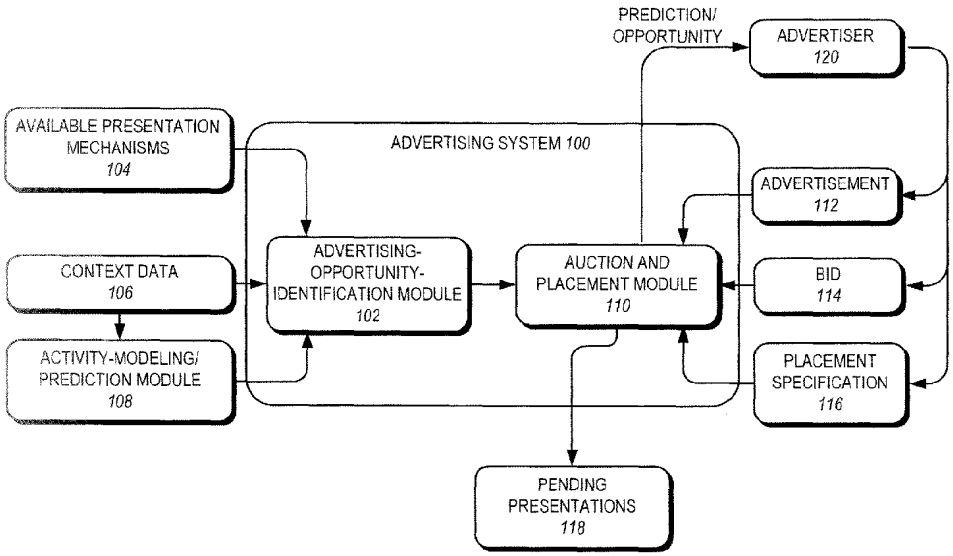

FIG. 1

EP 2 096 597 A2

Description

BACKGROUND

[0001] This disclosure generally relates to advertising systems. In particular, this disclosure relates to presenting advertisements based on receptive opportunities and a customer's activities.

[0002] The ubiquitous Internet connectivity coupled with wide deployment of wireless devices is drastically changing the advertising industry. Of the $385 billion spent globally on advertising in 2005, online and wireless spending accounted for $19 billion. Internet advertising was the fastest-growing form of advertisement, with a cumulative annual growth rate of 18.1 percent. However, Internet advertising has its limitations, and new opportunities remain to be discovered to sustain the dramatic rate of growth in new media advertising.

[0003] Existing Internet advertisements only work when a user is online and watching a computer screen. Traditional advertising, in contrast, comes in many forms. For example, signs can advertise products inside retail stores. Radio programs can advertise products when the listener engages in a wide variety of activities. Printed advertisements can appear anywhere paper is used, from newspapers, to flyers, receipts, and ticket stubs. Although Internet advertising surpasses traditional advertising in its ability to better target consumer interest, it still cannot be closely tailored to human activities.

[0004] Delivering activity-based advertisements to a customer's mobile device is a new technique that compliments the conventional advertising methods. Activity-based advertising can better target a customer's needs and dynamically adjust to a customer's activity. However, in mobile, activity-based advertising systems, it can be challenging to predict a customer's future activity correctly, and yet it is valuable to present advertising based on accurately predicted future activities. Hence, it is important to have a viable payment mechanism that is tailored to the dynamic nature of activity-based advertising and that can sufficiently incentivize the advertisers to pay for such activity-based advertising.

BRIEF DESCRIPTION OF THE FIGURES

[0005] FIG. 1 illustrates an exemplary architecture for a receptive-opportunity-based advertising system that allows advertiser payment based on confirmed activity prediction, in accordance with an embodiment of the present invention.

[0006] FIG. 2 presents a block diagram illustrating an exemplary mode of operation of a receptive-opportunity-based advertising system, in accordance with an embodiment of the present invention.

[0007] FIG. 3 presents a flowchart illustrating an exemplary process of auctioning activity-based advertising opportunities and collecting advertiser payments based on confirmed prediction, in accordance with an embodiment of the present invention.

[0008] FIG. 4 illustrates an exemplary computer system that facilitates an advertising system that facilitates confirmed-prediction-based payments, in accordance with an embodiment of the present invention.

[0009] In the drawings, the same reference numbers identify identical or substantially similar elements or acts. The most significant digit or digits in a reference number refer to the figure number in which that element is first introduced. For example, element 102 is first introduced in and discussed in conjunction with FIG. 1.

SUMMARY

[0010] One embodiment of the present invention provides a system for facilitating presentation of activity-based advertising. During operation, the system receives a set of contextual data of a customer and makes a prediction of the customer's future activity. The system then receives a number of advertisements from the advertisers. Based on the prediction, the system chooses a received advertisement to present to the customer. The system further determines the customer's subsequent activity and confirms the prediction of the customer's activity. The system then receives payments from the advertisers whose advertisement is presented based on whether the prediction is confirmed.

[0011] In a variation of this embodiment, the system auctions advertising opportunities to the advertisers based on the prediction, and receives one or more bids from the advertisers.

[0012] In a further variation, the system computes an estimated accuracy of the prediction.

[0013] In a further variation, the system determines the winning bids based on the estimated accuracy.

[0014] In a further variation, the system communicates the estimated accuracy of the prediction to the advertisers, thereby allowing the advertisers to set their bids accordingly.

[0015] In a variation of this embodiment, payment is only received when the prediction is confirmed.

[0016] In a variation of this embodiment, the system allows an advertiser to set a portion of the payment that is contingent upon whether the prediction is confirmed.

[0017] In a variation of this embodiment, the system allows an advertiser to purchase an insurance under which the advertiser can receive a refund when the prediction is not confirmed by the customer's subsequent behavior.

[0018] In a variation of this embodiment, the system receives payments from the advertisers whose advertisement is presented based on the customer's subsequent purchase behavior as a result of the advertisement.

In one embodiment of the computer system of claim 11, the payment mechanism is further configured to allow an advertiser to set a portion of the payment that is contingent upon whether the prediction is confirmed.

In a further embodiment the payment mechanism is fur-

ther configured to receive payments from advertisers based on the customer's subsequent purchase behavior as a result of the advertisement.

DETAILED DESCRIPTION

[0019] The following description is presented to enable any person skilled in the art to make and use the invention, and is provided in the context of a particular application and its requirements. Various modifications to the disclosed embodiments will be readily apparent to those skilled in the art, and the general principles defined herein may be applied to other embodiments and applications without departing from the spirit and scope of the present invention. Thus, the present invention is not limited to the embodiments shown, but is to be accorded the widest scope consistent with the principles and features disclosed herein.

[0020] In activity-based advertising, it is useful to predict future activities of customers. Such predictions, if accurate, will be valuable for advertisers. For example, the knowledge that a customer is driving to a vacation resort can help a system identify opportunities for advertising services in the resort area. Unfortunately, predicting the future is not always easy, and the predictions are not always accurate. Hence, advertisers may not always wish to rely on such predictions. This disclosure describes a method where advertisers are charged based on confirmed predictions. As a result, advertisers can have less financial risk when the predictions are inaccurate.

[0021] Embodiments of the present invention provide an advertising system that presents advertisements based predictions of a customer's activities and allows advertisers to pay for these advertisements based on confirmed predictions. This system can dynamically adjust the payment for advertisements based on the accuracy of its prediction of customer activities.

[0022] In some embodiments, the system targets advertising to mobile customers (e.g., via cell phones, personal digital assistants (PDAs), and in some cases nearby electronic billboards), and delivers activity-targeted advertising that can influence the customer's future purchase behavior. The system can receive a customer's contextual information, such as his location, current time, weather, etc., to predict what activity the customer is likely to perform next. Based on this prediction, the system can identify a good opportunity for presenting advertisements.

[0023] The present novel advertising system includes a charging mechanism that charges an advertiser based on correct predictions. In one embodiment, the advertiser pays only when the customer's subsequent activity confirms the prediction. For example, if the customer is predicted to visit a shopping center, an advertisement is presented, and the customer does in fact visit the shopping center, then the advertiser will pay a corresponding charge according to the confirmed prediction.

[0024] This disclosure uses the following terminologies:

[0025] *Advertiser.* This term typically refers to a company wishing to advertise its service or products. This disclosure uses the terms "advertiser" and "advertisement broadly to refer to content provider and content, where, for example, the content provider is willing to pay to have targeted content delivered to customers, even if that content does not advertise a specific service or product. The typical advertiser would like to maximize profit, where advertising is one of the costs. For this reason, well targeted advertising is more effective for advertisers.

[0026] *Customer.* This term refers to a recipient of the advertising - a potential customer of the advertisers. Customers typically welcome some advertisements but prefer not to receive other kinds of advertisements. For this reason, well targeted advertising is more acceptable for customers. This disclosure uses the term "customer" broadly to include people who receive content, even if that content is not meant to include to the person as a customer of the advertiser.

[0027] *Provider.* This term refers to the provider of the service that delivers advertisements to customers. The provider is responsible for delivering well targeted advertising. Embodiments of the present invention provide the technology that a provider can use to deliver advertisements based on a customer's activity and context. In some embodiments, there can be a separate *publisher* who provides the channels for presentation to the customer. The *provider* can choose the advertisements and the publisher's channel, and, depending on the payment mechanism, charges the advertiser and rewards the publisher.

[0028] *Presentation.* This term refers to the showing of an advertisement to a customer. Note that embodiments of the present invention are independent from the form of the presentation. Presentation might include adding a banner or pop-up to a PDA or cell phone, playing an audio message by phone, music player, or car stereo, modifying a map on a GPS navigation device, or changing a billboard near the customer.

[0029] *Payment.* This term refers to the amount an advertiser pays the provider after a "successful" presentation. Successful presentations can be defined in many different ways. Correspondingly, the payment can also be structured differently. It could be pay-per-presentation, pay-per-click, or pay-per-action (a form of commission defined by the advertiser). In one embodiment, a new pay-per-confirmed-prediction payment structure is used for activity-based advertising.

[0030] *Activity.* This term refers to the activity of the customer. For example, a customer's activity might be "walking towards a train station." The activity can be described at different semantic levels. For example, "walking towards a train station" might also be described as "commuting home after work." In the advertising system in accordance with some embodiments, the activity may be partially described with objectives, such as "to obtain

exercise," tools, such as "with a bicycle," skill levels, such as "expert," and other modifiers/qualifiers of the activity. Activity-targeting or activity-based advertising may rely on complete or partial descriptions on different semantic levels to facilitate reaching large numbers of relevant activities.

[0031] *Context.* This term refers to additional information surrounding the customer's activity. For example, the activity might be occurring on a rainy day. In some embodiments, both the activity description and the context description are used for activity-based presentation of advertisements. Note that the term "context" if often used in conjunction with terms related to activities. The terms "activity," "activity targeting," and "activity-based advertising" are typically used in a way that involves features of the activity as well as possible additional context for targeting the advertising.

[0032] *Opportunity.* Also referred to as "advertising opportunity," "presentation opportunity," or "receptive opportunity," this term refers to a time window identified by the adverting system during which selected advertisements can be presented to a customer.

[0033] In some embodiments of the present invention, the provider makes predictions, and the advertisers bid on opportunities that contain predictions. For example, based on a customer's location trace (which can be provided by the customer's GPS-equipped mobile device), the provider predicts that a customer will visit a shopping center. Subsequently, the provider identifies a good advertising opportunity corresponding to the time the customer spends waiting at a bus station. An advertiser can bid on that opportunity which is based on the prediction. The bid amount may include a component that will be paid only if the prediction is confirmed. In this example, the advertiser will pay only when the customer actually visits the shopping center. If the customer does not go to the shopping center, the component in the bid amount that is contingent upon the confirmed prediction will be foregone.

[0034] In one embodiment, the provider can estimate the accuracy of its predictions based on historic data and the current context. With this estimate, the provider can compute the expected financial return from each advertiser's bid, since a respective bid may contain a portion that is only paid when the prediction is confirmed. The provider can then rank the bids based on each bid's expected return and select the bids that generate the highest expected returns.

[0035] FIG. 1 illustrates an exemplary architecture for a receptive-opportunity-based advertising system that allows advertiser payment based on confirmed activity prediction, in accordance with an embodiment of the present invention. In one embodiment, an advertising system 100 includes two modules, an advertising-opportunity-identification module 102 and an auction and placement module 110. Advertising-opportunity-identification module 102 is in communication with available presentation mechanisms 104 and receives context data 106, which indicates the current context of the customer. In addition, advertising-opportunity-identification module 102 is also in communication with an activity-modeling/prediction module 108, which predicts or derives the customer's activities.

[0036] Activity-modeling/prediction module 108 can reside on a customer's mobile device or within advertising system 100. During operation, activity modeling/prediction module 108 makes predictions of the future activities of a customer. In one embodiment, activity-modeling/prediction module 108 uses context data 106 to derive past and current activities, and make predictions of future activities associated with a customer. For example, the customer's cell phone can be equipped with a GPS. Based on pre-stored venue information and the traces of the customer's locations at different times, activity-modeling/prediction module 108 can determine that at a certain time of day the customer typically engages in a particular activity.

[0037] Context data 106 can include different types of information that can be used to determine the customer's past, current, or future activities. Such information can include physical information such as time of day, day of week, weather condition, the customer's location, speed of motion, etc. Context data 106 can also include logical contents pertaining to the customer, such as the content of the customer's calendar, instant messages, and emails, history of the customer's past activities, and the customer's previous response to advertisements. In one embodiment, context data 106 can be collected by a mobile device, such as a cell phone, carried by the customer.

[0038] In one embodiment, presentation mechanisms 104 can include a variety of devices that can present an advertisement. Such devices can include a mobile phone, PDA, computer, public display, radio, TV, in-vehicle navigation system, etc.

[0039] Based on the activity prediction, context data 106, and information about available presentation mechanisms 104 which are in the vicinity of the customer (e.g., the customer's cell phone or a dynamic billboard close to the customer), advertising-opportunity-identification module 102 identifies suitable receptive opportunities for advertising. For example, the system might identify an activity of "eat" when a customer is waiting on a platform for a commuter train, and has not yet had dinner. Correspondingly, advertising-opportunity-identification module 102 produces an opportunity description, which can include the time, presentation mechanism, and topic (which corresponds to the identified activity) for advertisements.

[0040] Note that advertising-opportunity-identification module 102 can reside on a customer's mobile device or on a server at the provider's premise.

[0041] Once good advertising opportunities are identified, the system then auctions the prediction-based opportunities to the advertisers. In one embodiment, auction and placement module 110 can optionally communicate activity prediction and advertising opportunity to

an advertiser 120, which is a bidder in this auction. This communication is optional because in some embodiments the advertiser may already know what predicted activity might be a valuable target and submit, in advance, a bid 114, a corresponding advertisement 112, and a set of placement specification 116 which includes the predicted activity or activities as a target for placing advertisement. Note that, as described above, bid 114 may include a portion that is contingent upon the success of the activity prediction.

Although the example in FIG. 1 only shows one bidding advertiser, advertising system 100 can accommodate multiple bidders. After the bids are received, auction and placement module 110 then selects the bids with the highest expected returns. The advertisements submitted with these winning bids are then identified as pending presentations 118 which will be presented during the receptive opportunity.

[0042] In some embodiments, advertising system 100 can use a pay-per-confirmed-prediction method to charge the bidders. That is, a winning bidder does not have to pay for the advertisement unless the activity predication is confirmed by a customer's subsequent behavior.

[0043] Note that the payment does not need to be exclusively based on the pay-per-confirmed-prediction method. The pay-per-confirmed-prediction component can be a part of a larger formula that also includes other methods of charging and advertiser.

[0044] There can be other variations to the above scheme. In one embodiment, the advertiser can choose the magnitude of the pay-per-confirmed-prediction component in the charge, and the provider can evaluate the bid as described above. In another embodiment, the advertiser can develop payment formulas that include a component based on a confirmed prediction, a component that depends on presentation, and a component that depends on subsequent actions taken by the customer. The bidders can use these formulas to determine their bids.

[0045] Note that it can be option for the provider to release estimates of the accuracy of its predictions. If the estimates are released, then advertisers can better strategize their bidding. However, not releasing estimates simplifies the system. One of the benefits of pay-per-confirmed-prediction payment is that it can allocate the risks associated with prediction to the provider.

[0046] Note that an interesting scenario might arise when an advertiser bids on a prediction, presents an advertisement, and then the customer responds to the advertisement and invalidates the prediction. For example, an advertiser, which is a shop located outside a shopping center, bids in an auction based on the prediction that a customer is about to visit the shopping center. (Indeed, this will likely be a valuable pattern in activity-based advertising, where businesses with poor locations bid to co-opt the flow of customers to nearby popular locations.) In one embodiment, when the advertising succeeds but invalidates the prediction (e.g., when the customer actually decided not to visit the shopping center, but instead visits the shop located outside), the provider can use a payment formula that charges the advertiser when the customer's subsequent behavior is positively influenced by the advertising.

[0047] In a further embodiment, the provider can offer insurance to the advertisers against undesirable prediction outcome. In this case, the advertisers would bid for advertisement placement and pay for placement of the advertisement. They could also pay extra for insurance so that if the user's future behavior does not match the provider's prediction, the advertisers would be refunded a portion of their payment. In some embodiments, the advertiser can also bid for this insurance. If the provider has an accurate predictor of user behavior, then the provider would be in a good position to estimate the odds and how much to charge for insurance.

[0048] FIG. 2 presents a block diagram illustrating an exemplary mode of operation of a receptive-opportunity-based advertising system, in accordance with an embodiment of the present invention. In this example, a customer 200 uses a mobile device 206, which can be a smart phone. Mobile device 206 is in communication with server 212 via a wireless tower 208, a wireless service provider's network 204 and the Internet 202. During operation, mobile device 206 collects a set of context data, such as customer 200's calendar content, the GPS trace of the places he has been to, the current time, etc., and communicates such information to server 212. For example, based on the context data, server 212 can learn that it is now 6 pm, customer 200 has just left the office, and that he is currently at a train station. From previously collected data, server 212 also learns that customer 200 typically visits a restaurant after the train ride. Based on this information, predicts that customer 200 is likely going to a restaurant after the train ride, and determines that the next 15 minutes would be a good receptive opportunity to present advertisements for restaurants and bars. Optionally, server 212 can communicate this opportunity description, which in one embodiment includes at least the topics and a time window, to an advertiser 214. In response to the opportunity description, or in advance of this communication, advertiser 214 submits one or more bids with advertisements to be presented during the opportunities. The winning bids are then stored in database 210 as pending presentations.

[0049] Subsequently, server 212 retrieves the advertisements stored in database 210, and selects the pending presentations that match the opportunity description. Server 212 then communicates the advertisements and instructions on how to present these advertisements to mobile device 206. In one embodiment, the advertisements can be streamed video, audio, graphics, text, or a combination of above. After receiving the advertisements, mobile device 206 presents these advertisements based on the instructions. Mobile device 206 then continues to monitor customer 200's locations and sends

this data back to server 212. Server 212 can then confirm whether customer 200 actually visits a restaurant after getting off the train. If so, the earlier prediction is confirmed, and advertiser 214 is charged a predetermined amount.

[0050] Note that other presentation mechanism can also be used. For example, the presentation mechanism can be a nearby LCD display installed in the train. The LCD display can be equipped with some communication mechanism, such as Bluetooth, to communicate with mobile device 206. During the presentation, mobile device 206 can stream the advertisements to the LCD display, so that customer 200 can view the advertisements more easily on a bigger screen.

[0051] FIG. 3 presents a flowchart illustrating an exemplary process of auctioning activity-based advertising opportunities and collecting advertiser payments based on confirmed prediction, in accordance with an embodiment of the present invention. During operation, the system receives contextual data of a customer (operation 302). The system then predicts the customer's next activity and identifies a corresponding advertising opportunity (operation 304). Optionally, the system can compute the estimated prediction accuracy (operation 306). Further, the system can optionally publish the prediction and estimated accuracy to advertisers (operation 308).

[0052] Prior to any earlier operations, or optionally subsequent to operation 308, the system receives a number of bids from the advertisers (operation 310). The system then selects the winning bids (operation 312). Next, the system presents the advertisements to the customer during the opportunity (operation 314). The system further observes the customer's subsequent activity (operation 316), and determines whether the earlier prediction is confirmed (operation 318). If the prediction is confirmed, the system charges the advertiser based on the confirmed prediction (operation 320). Otherwise, the advertiser is not charged.

[0053] FIG. 4 illustrates an exemplary computer system that facilitates an advertising system that facilitates confirmed-prediction-based payments, in accordance with an embodiment of the present invention. In this example, computer system 402 performs the functions for a provider. Via Internet 403, computer system 402 is in communication with a client 426, which in one embodiment can be a PDA or cell phone.

[0054] Computer system 402 can include a processor 404, a memory 406, and storage device 408. In one embodiment, computer system 402 is coupled to a display 413. Storage device 408 stores an advertiser-bidding application 416, an activity-analysis application 420, and a prediction and confirmation application 422. During operation, advertiser-bidding application 416, activity-analysis application 420, and prediction and confirmation application 422 are loaded from storage device 408 into memory 406, and executed by processor 404. Accordingly, processor 404 performs the aforementioned functions to facilitate a payment mechanism based on confirmed activity predictions.

[0055] The methods and processes described in the detailed description section can be embodied as code and/or data, which can be stored in a computer-readable storage medium as described above. When a computer system reads and executes the code and/or data stored on the computer-readable storage medium, the computer system perform the methods and processes embodied as data structures and code and stored within the computer-readable storage medium.

[0056] Furthermore, the methods and processes described below can be included in hardware modules. For example, the hardware modules can include, but are not limited to, application-specific integrated circuit (ASIC) chips, field-programmable gate arrays (FPGAs), and other programmable-logic devices now known or later developed. When the hardware modules are activated, the hardware modules perform the methods and processes included within the hardware modules.

[0057] The foregoing descriptions of embodiments described herein have been presented only for purposes of illustration and description. They are not intended to be exhaustive or to limit the embodiments to the forms disclosed. Accordingly, many modifications and variations will be apparent to practitioners skilled in the art. Additionally, the above disclosure is not intended to limit the present invention. The scope of the present invention is defined by the appended claims.

Claims

1. A computer implemented method for facilitating presentation of activity-based advertising, the method comprising:

   receiving a set of contextual data of a customer;
   making a prediction of the customer's future activity;
   receiving a number of advertisements from the advertisers;
   based on the prediction, choosing a received advertisement to present to the customer;
   determining the customer's subsequent activity;
   confirming the prediction of the customer's activity; and
   receiving payments from the advertisers whose advertisement is presented based on whether the prediction is confirmed.

2. The method of claim 1, further comprising:

   auctioning advertising opportunities to the advertisers based on the prediction; and
   receiving one or more bids from the advertisers.

3. The method of claim 2, further comprising computing an estimated accuracy of the prediction.

4. The method of claim 3, further comprising determining the winning bids based on the estimated accuracy.

5. The method of claim 3, further comprising communicating the estimated accuracy of the prediction to the advertisers, thereby allowing the advertisers to set their bids accordingly.

6. The method of claim 1, wherein payment is only received when the prediction is confirmed.

7. The method of claim 1, further comprising allowing an advertiser to set a portion of the payment that is contingent upon whether the prediction is confirmed.

8. The method of claim 1, further comprising allowing an advertiser to purchase an insurance under which the advertiser can receive a refund when the prediction is not confirmed by the customer's subsequent behavior.

9. The method of claim 1, further comprising receiving payments from the advertisers whose advertisements is presented based on the customer's subsequent purchase behavior as a result of the advertisement.

10. A computer-readable medium storing instructions which when executed by a computer cause the computer to perform a method for facilitating presentation of activity-based advertising according to any of claims 1 to 9

11. A computer system for facilitating presentation of activity-based advertising, the method comprising:

a processor;
a memory;
a receiving mechanism configured to receive a set of contextual data of a customer;
a prediction mechanism configured to make a prediction of the customer's future activity;
an advertisement-receiving mechanism configured to receive a number of advertisements from the advertisers;
a presentation mechanism configured to choose a received advertisement to present to the customer based on the prediction;
a determination mechanism configured to determine the customer's subsequent activity;
a confirmation mechanism configured to confirm the prediction of the customer's activity; and
a payment mechanism configured to receive payments from the advertisers whose advertisement is presented based on whether the prediction is confirmed.

12. The computer system of claim 11, further comprising an auction mechanism configured to:

auction advertising opportunities to the advertisers based on the prediction; and
receive one or more bids from the advertisers.

13. The computer system of claim 12, further comprising a computing mechanism configured to compute an estimated accuracy of the prediction.

14. The computer system of claim 13, wherein the auction mechanism is further configured to determine the winning bids based on the estimated accuracy.

15. The computer system of claim 14, wherein computing mechanism is further configured to communicate the estimated accuracy of the prediction to the advertisers, thereby allowing the advertisers to set their bids accordingly.

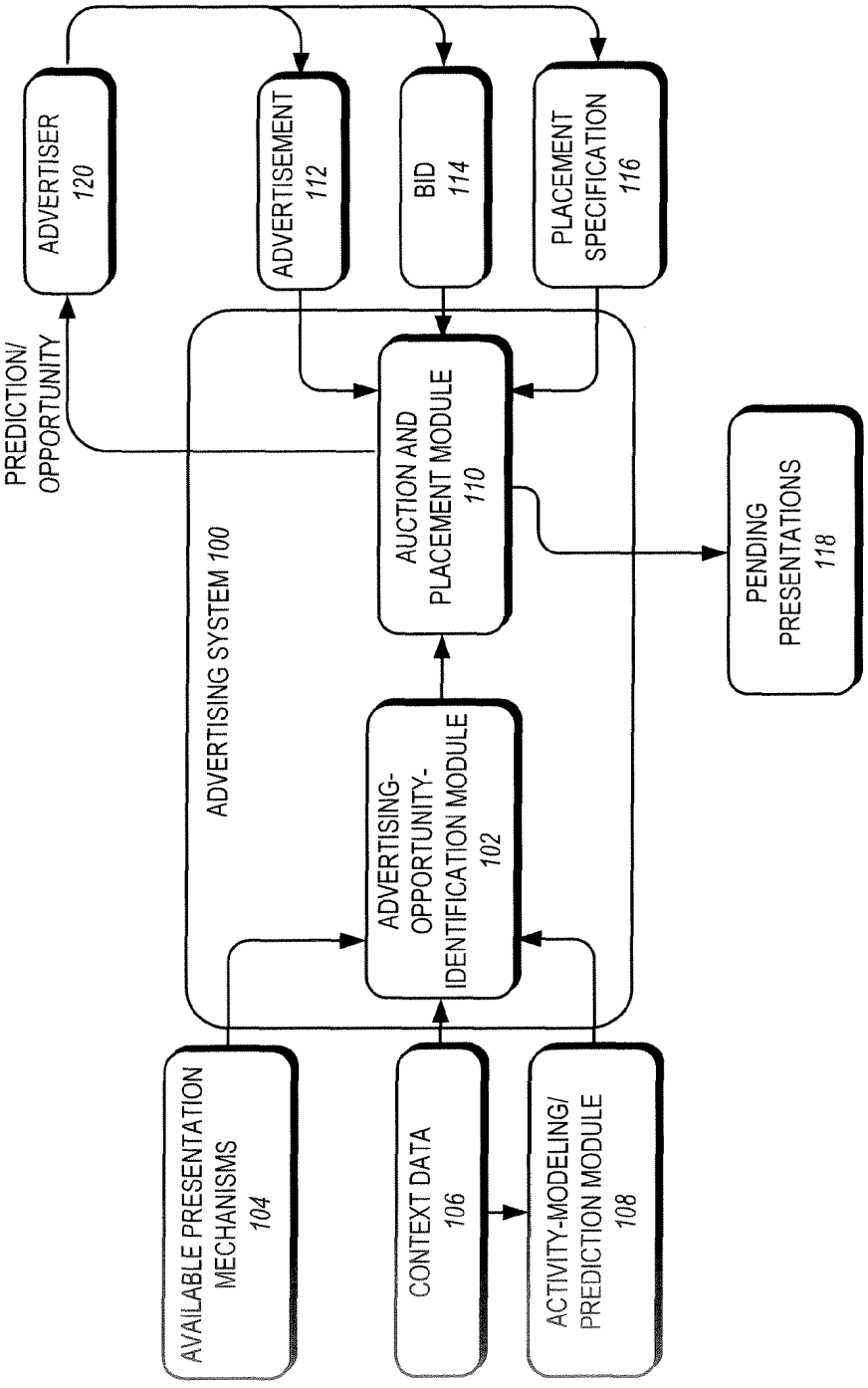
ADVERTISER 120
ADVERTISEMENT 112
BID 114
PLACEMENT SPECIFICATION 116
PREDICTION/ OPPORTUNITY
ADVERTISING SYSTEM 100
AUCTION AND PLACEMENT MODULE 110
PENDING PRESENTATIONS 118
ADVERTISING-OPPORTUNITY-IDENTIFICATION MODULE 102
AVAILABLE PRESENTATION MECHANISMS 104
CONTEXT DATA 106
ACTIVITY-MODELING/ PREDICTION MODULE 108

FIG. 1

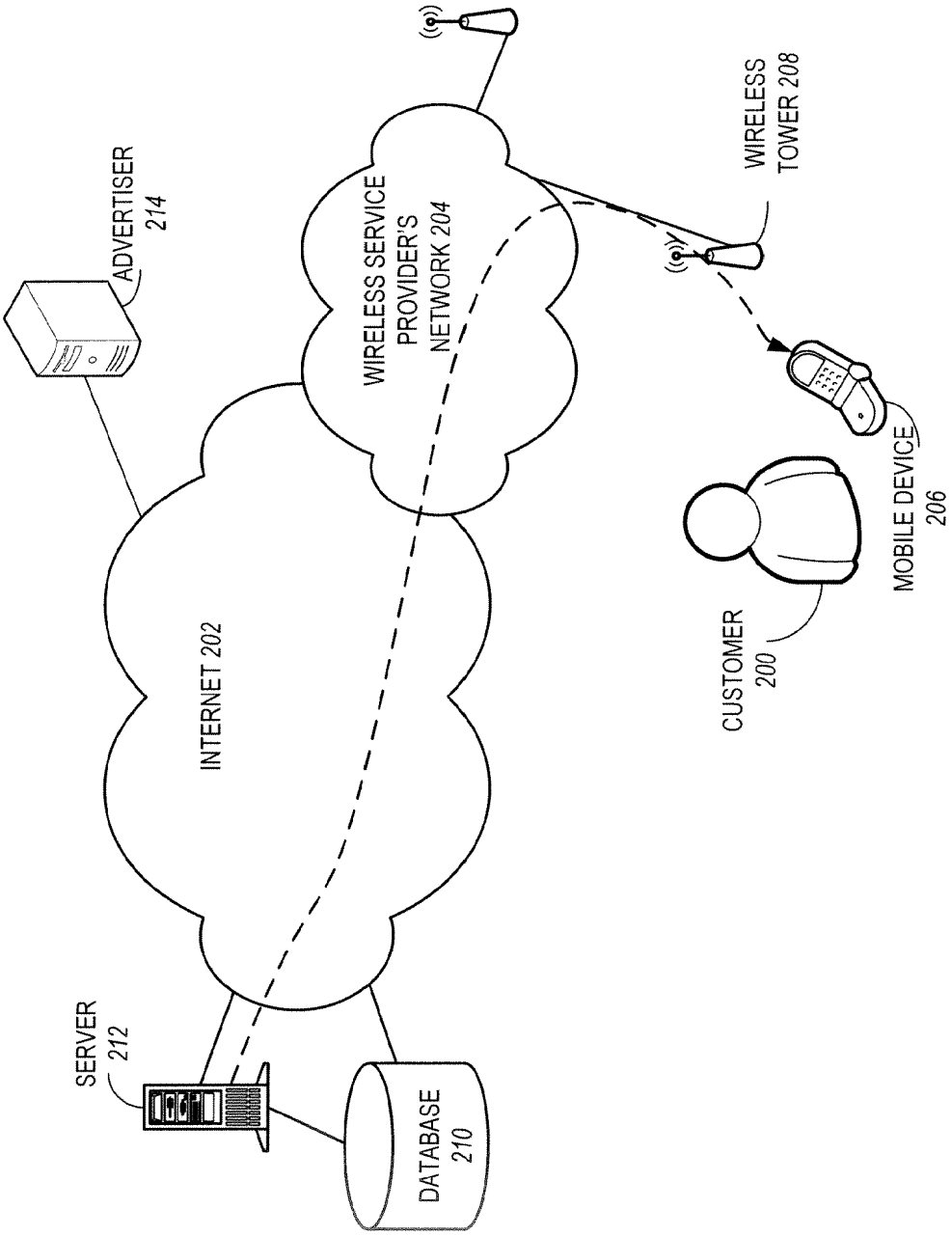
ADVERTISER
214
WIRELESS SERVICE
PROVIDER'S
NETWORK 204
WIRELESS
TOWER 208
INTERNET 202
MOBILE DEVICE
206
CUSTOMER
200
SERVER
212
DATABASE
210

FIG. 2

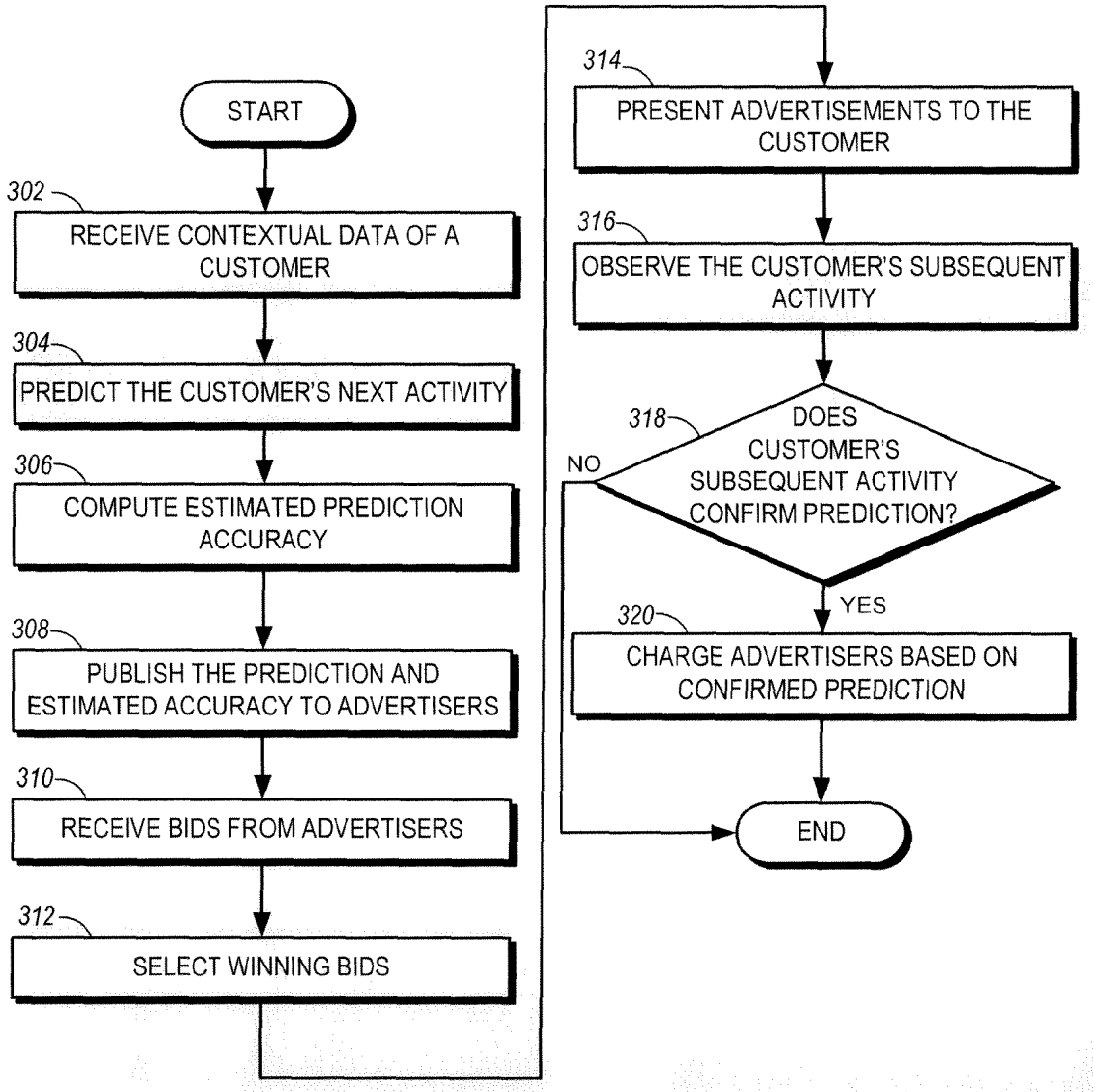

FIG. 3

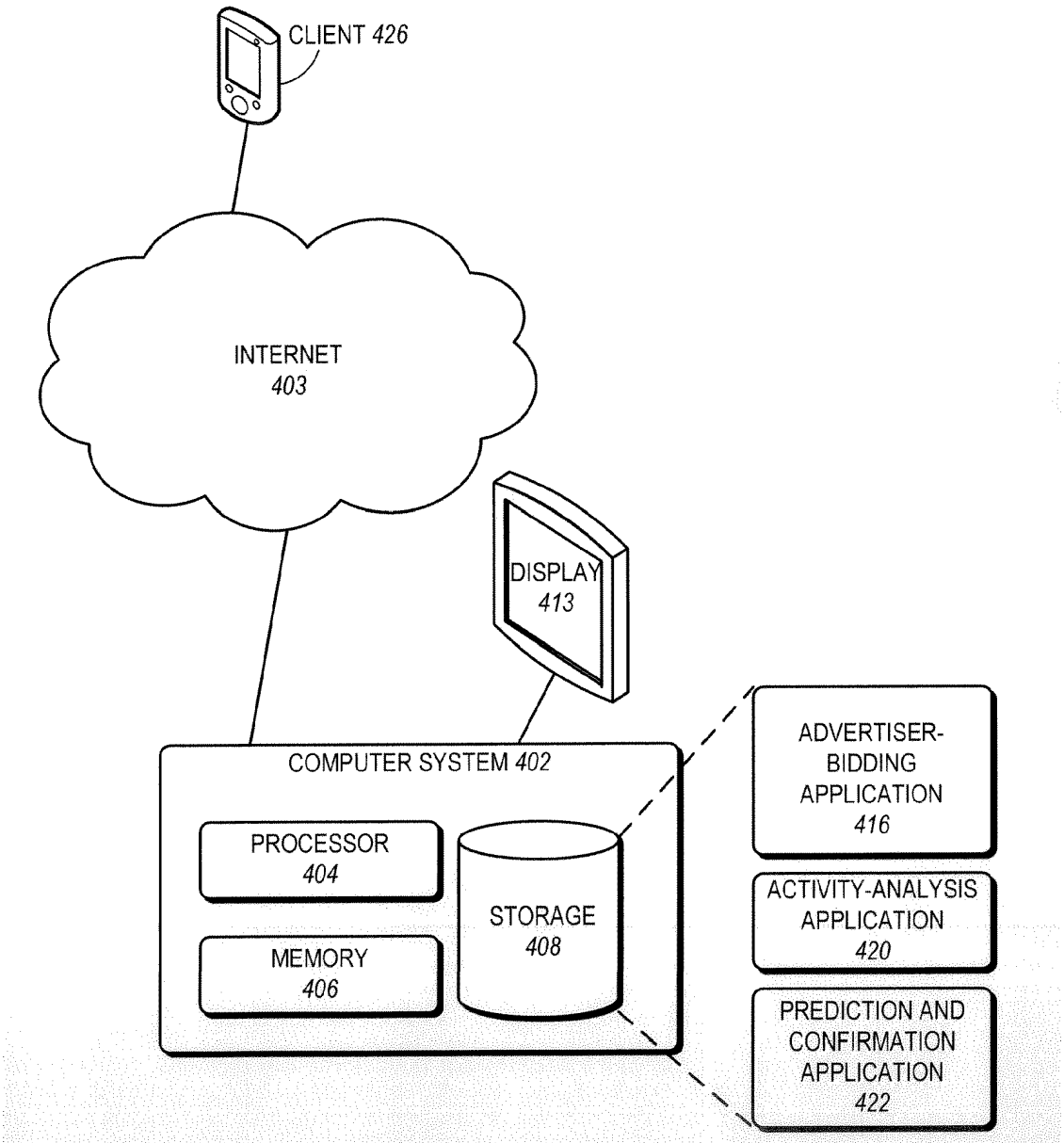

FIG. 4

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(54) System and method for automatically counting the number of people in an area

(57) Method and system for automatically counting the number of people in an area, assuming said people are carrying a functioning mobile phone. The method comprises broadcasting a location identifier (LAC) different from any other LAC of the radio cells of the mobile network in the surroundings from at least one local unit (1,1',1"), within a coverage area (4,4',4"); establishing a Location Update dialogue with any mobile phone (3,3', 3") answering to the LAC broadcast; obtaining from each answering mobile phone (3,3',3") its IMSI number; sending a Location Updating Reject message to each mobile phone (3,3',3") whose IMSI number has been obtained; counting the different IMSI numbers received; and calculating an estimated number of people in the coverage area (4,4',4") on the basis of this count and, optionally, the known prevalence of mobile telephone devices per person.

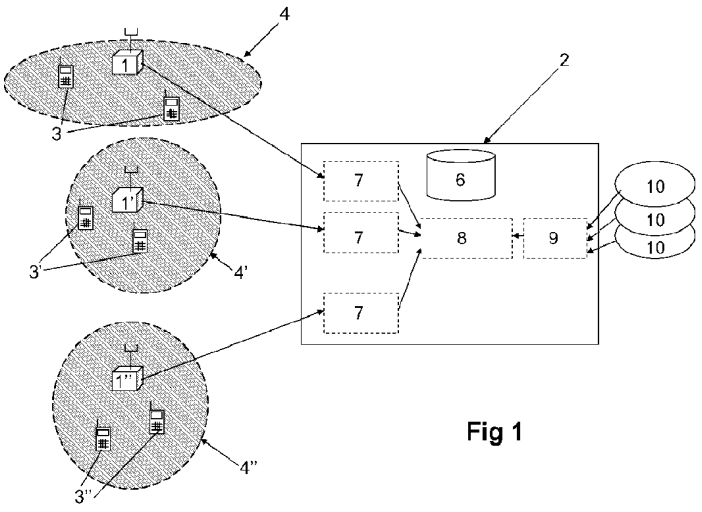

Fig 1

EP 2 182 752 A1

Description

Field of the invention

[0001] The present invention lies in the field of mobile communications, and more specifically in providing a set of techniques to manage automatically and accurately counting the number of people in an area by using mobile communications means, using information provided by the mobile telephones carried by the subscribers.

Background of the invention

[0002] In certain scenarios, knowing the number of people in a place (exact or estimated) can be very relevant. One example is train carriages, where the train authorities can use that number to better dimension the service. Other examples are street demonstrations, especially for protesting, where government, politicians and media discuss heavily, often providing very different numbers for a same event favourable to their position.

[0003] When the places are closed or controlled, i.e. access is restricted by tickets or through a few number of gates, people can be counted. However, in those scenarios with open places of uncontrolled access, such as the street or some trains, this is quite difficult. Even in controlled places of large size (e.g. underground network), there isn't an easy way to know the number of people in a certain small area once they passed through the entry gate.

[0004] Current solutions in those scenarios are not accurate and automatic at the same time. They can be accurate but requiring slow manual counting (e.g. train staff going carriage by carriage). They can be semi-automated but leading to non-guaranteed accuracy (e.g. helicopter taking photos of the street and then estimating a density of people per square meter to apply to the demonstration area).

[0005] Document US2003010822 discloses a method and system for electronic route planning and virtual queue handling, proposing a system for queues management in a theme park. Specially prepared handsets are issued to the users so that these handsets can be counted: the counting mechanism uses a short range wireless connection such as Bluetooth [RTM].

[0006] From document US2004158482 is known a method for managing the flow of persons in relation to centres of crowd concentration via wireless control. It is related to the control of crowds and queues at theme parks, where the mobile phone is used only as a tool to enter what attractions the user wants to visit.

[0007] Document US2002183069 discloses a method and system for mobile station positioning in cellular communication networks for detecting and counting mobile phones based on the existing base stations of the cellular network, e.g. ITS (Intelligent Transportation Systems).

[0008] From document EP1779133-A1, it is known to monitor the movement of mobile communication devices by using a plurality of receiver units (probes), distributed in the coverage area, that detect all the current transmissions from a mobile device to a base station.

[0009] It is well-known that abbreviations and acronyms are frequently used in the mobile telephony field. Below is a glossary of acronyms/terms used throughout the present specification:

3GPP	The 3rd Generation Partnership Project
BSC	Base Station Controller
BTS	Base Transceiver Station
GSM	Global System for Mobile Communications
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
ITS	Intelligent Transportation Systems
MSC	Mobile Switching Centre
LAC	Location Area Code
RNC	Radio Network Controller
SMS	Short Message Service
TIMSI	Temporary International Mobile Subscriber Identity
UMTS	Universal Mobile Telecommunications System

Summary of the invention

[0010] The invention relates to a method and system for automatically counting the number of people in an area according to claim 1 and claim 8, respectively. Preferred embodiments of the method are defined in the dependent claims.

[0011] In the present method for automatically counting people, said people are carrying a functioning mobile phone. A "functioning" mobile phone is a device that is "switched-on" and capable of connecting to at least one mobile telecommunications network over at least one radio access technology, typically in IDLE or ACTIVE mode. The method comprises:

- broadcasting, in the licensed spectrum of at least one mobile network operator and from at least one local unit, each one located at an area where people is to be counted, the coverage area, a LAC different from any other LAC of the radio cells of the mobile network in the surroundings;
- establishing each local unit a Location Update dialogue with any mobile phone answering to the LAC broadcast, obtaining from each answering mobile phone its IMSI number;
- sending each local unit a Location Updating Reject message to each mobile phone whose IMSI number has been obtained;
- counting the different IMSI numbers received (discarding or not the duplicated IMSI numbers received during a predetermined period of time before);
- calculating an estimated number of people in the coverage area using additional information, for instance stored in a database.

[0012] Each local unit can broadcast the same LAC continuously, leading to a continuous mode, or different LACs each time, leading to a pulse mode, where counting is done in pulses.

[0013] The coverage area each local unit can preferably be configurable through at least one of the following parameters: the transmission power to modify the reach and/or the radiation pattern of the antenna system to modify the shape of the coverage area.

[0014] In a preferred embodiment, where there is a plurality of local units, the method comprises receiving a processing unit the counting of the different IMSI numbers for each coverage area from the different local units, the calculation of the estimated number of people in each corresponding coverage area being carried out in said processing unit with access to the additional information.

[0015] The additional information can comprise at least one of the following information:

- the percentage of switched-on mobile phones versus people in the country, region, city or neighbourhood where the corresponding local unit is located;
- the market share of the selected mobile network operator in the country, region, city or neighbourhood where the corresponding local unit is located.

[0016] The present invention also comprises a system for automatically counting the number of people in an area, said people carrying a switched-on mobile phone. The system comprises:

- at least one local unit provided with cellular radio transceiver means for transmitting and receiving signals in the licensed spectrum of at least one mobile network operator, each local unit being located at an area where people is to be counted, the coverage area, and being configured for:
    - broadcasting a LAC different from any other LAC of the radio cells of the mobile network in the surroundings;
    - establishing a Location Update dialogue with any mobile phone answering to the LAC broadcast, obtaining from each answering mobile phone its IMSI number;
    - sending a Location Updating Reject message to each mobile phone whose IMSI number has been obtained;
    - counting the different IMSI numbers received;
    - sending said counting to a processing unit;
- a processing unit comprising calculating means configured for calculating an estimated number of people in each coverage area using additional information (for instance stored in a database).

[0017] Each local unit can be configured for broadcasting the same LAC continuously, broadcasting different LACs each time, or changing between broadcasting the same LAC continuously or broadcasting different LACs each time, according to the type of counting carried out (continuous mode or pulse mode).

[0018] Each local unit comprises preferably means for configuring at least one of the following parameters that determines its corresponding coverage area:

- the transmission power to modify the reach;
- the radiation pattern of the antenna system to modify the shape of the coverage area.

[0019] In a preferred embodiment, in which the processing unit is remote to the at least one local unit, the processing unit comprises management means configured for remotely managing the at least one local unit.

[0020] The processing unit can comprise interface means through which third parties externally retrieve the calculation of the estimated number of people in each coverage area.

[0021] Unlike the prior art discussed above, the claimed method and system are thus simultaneously automated and accurate. Both system and method make use of standard cellular mechanisms to count the number of functioning mobile phones in an area, irrespective of the mobile network to which they are connected. The inventive system may be considered as a "box" that captures mobile phone identities and counts their number.

[0022] In many cases, it is a fair assumption that nearly everybody carries at least one mobile phone or other cellular enabled device - as a result simply counting these devices provides an accurate estimate of the number of people. Where this assumption does not hold, the count may be treated as a representative sample, the true number of people present being estimated as the counted number divided by the percentage of people known to carry a mobile phone in the local population.

[0023] As noted previously, there are prior art disclosures of handset counting methods (see US2003010822): these require dedicated handsets. The inventive method, by contrast, makes use of standard mobile phones. Therefore, while it may be known to count people or assets using technologies, such as Bluetooth, the same mechanisms would not work with every standard mobile phone.

[0024] Other prior art (US2002183069) uses the functionalities of conventional base stations to count accessible mobile phones. The inventive solution describes a dedicated counting device that need not be associated with any one (or just one) network operator. Making a similar count using the prior art base station method would require access to each of the base stations of the respective network operators and (as these base stations would generally serve different coverage areas) even then the count would not be as accurate as with the inventive solution. Furthermore, the use of a local "box", compared to the cellular base stations, enables not only much smaller counting areas but also tuning and shaping

that area according to every particular case.

[0025] A further advantage of the present invention is that the method applies to all handsets functioning on a given radio access technology.

[0026] In prior art solutions such as EP1779133, standard mobile phones with active calls are counted by using special sensing boxes that are passive radio probes. These solutions only work for a subset of devices, since they only count devices having active communications (such as voice calls, SMS or Internet browsing) to determine the number of people in a specific location.

[0027] The inventive method counts people who are carrying a functioning mobile phone, but it is not necessary for the method to work that these subscribers are having an active communication in their mobile phones (making a call or sending SMS): nor is it necessary that the subscribers be subscribers to the same network operator. This is achieved by using special sensing boxes that are not base stations of any particular mobile network and are not passive radio probes either.

[0028] In summary then the method comprises broadcasting a location identifier (LAC) different from any other LAC of the radio cells of the mobile network in the surroundings from at least one local unit (1,1',1"), within a coverage area (4,4',4"); establishing a Location Update dialogue with any mobile phone (3,3',3") answering to the LAC broadcast; obtaining from each answering mobile phone (3,3',3") its IMSI number; sending a Location Updating Reject message to each mobile phone (3,3',3") whose IMSI number has been obtained; counting the different IMSI numbers received; and calculating an estimated number of people in the coverage area (4,4',4") on the basis of this count and, optionally, the known prevalence of mobile telephone devices per person.

Brief description of the drawings

[0029] To complete the description and, in order to provide for a better understanding of the invention, a set of drawings is provided. Said drawings form an integral part of the description and illustrate preferred embodiments of the invention, which should not be interpreted as restricting the scope of the invention, but just as examples of how the invention can be embodied. The drawings comprise the following figures:

Figure 1 shows a basic diagram of the system object of invention.

Detailed description of the preferred embodiments

[0030] The system, represented schematically in Figure 1, is composed of at least one local unit (1,1',1") and a processing unit 2, local or remote to the previous one.

[0031] The local unit (1,1',1") has the following functions:

- An identity capture function that uses standard cellular mechanisms (similar to the ones in existing BTS and BSC/RNC). It broadcasts system information with a certain LAC (Location Area Code), forcing the mobile phones (3,3',3") of the same network within its reach area, the coverage area (4,4',4"), to send a Location Update message. It captures then the identity (e.g. IMSI) of those phones (3,3',3") and sends back a Location Update reject message to avoid further disturbing the phones (during a certain period chosen by the operator or until they are switched off). The radiation pattern of the antenna system can be modified to shape the coverage area (4,4',4") convenient to the particular use case.

[0032] This identity capture function can have two modes of operation:

(a) continuous, where it is operating (i.e. transmitting, receiving and capturing) all the time, or
(b) pulse, where it is generally deactivated and it is activated only for short periods of time in order to capture identities during it.

[0033] The LAC broadcasted by the node can be replaced by another one in order to force again all handsets to send a Location Update message - this can be done in both modes of operation, although it fits especially the pulse mode.

- A counting function, which in coordination with the previous function, counts the accumulated number of different identities that have performed a Location Update process. After a change of LAC, depending on the particular use case, this function can discard the same identities captured before or on the contrary consider them as different for counting purposes (e.g. how many people are in a train carriage at 8:00, at 9:00, at 10:00, etc.). Then, the counting function converts cellular identities (IMSI) into numbers. It can be as simple as a mere counter, although it can include intelligence for detecting the duplication of identities (e.g. a user switches off and on his phone) and not counting it twice. It should work in coordination with the mode of operation (continuous or pulse) of the previous function.

[0034] On the other hand, the processing unit 2 has the following functions:

- A calculating function, carried out through calculating means 7, which receives the data from the counting function and calculates the number of people in the area, based on additional information in a database. This additional information can be, for instance, (a) the percentage of switched-on mobile phones versus people in that country, region, city or neighbourhood; (b) in case of a single-operator system, the market share of the selected mobile oper-

ator in that country, region, city or neighbourhood.

- Optionally, a concentrator function, carried out through management means 8, that manages the flows of information coming from the different locations. Every flow would be composed of the identity capture function (with includes a local unit for radio transmissions), the counting function and the calculating function. There could be many flows running in parallel, corresponding to multiple locations or sources (e.g. train stations, museums, streets). Besides, the concentrator would perform the remote management of local units (e.g. changing LAC value, adjusting transmission power). The alternative for not having this concentrator would be operating the previous functions in a standalone mode and then using the results off-line. For instance, storing the figures of museum visitors in a hard drive during a day and then loading them in a PC for their analysis by the museum's owners.
- Optionally, a gateway function, carried out through interface means 9, which provides the interface to third parties 10 that are going to use that information, enable the management of campaigns for counting people, etc. It should work together with the concentrator, e.g. to be able to order actions on the local units according to the requirements of the campaigns.

[0035] The function for capturing cellular identities (identity capture function) must always include a unit local to the venue (e.g. train carriage, train station, street) for radio transmissions and besides may have part of its functionality located remotely in the network. This function replicates a standard cellular mechanism for the dialogue with mobile phones within its reach. In particular, this local unit broadcasts specific system information as if it was a BTS (base station) and forces a Location Update message by all mobile phones within its reach belonging to its cellular network. Then, the function captures the identity of those phones, such as the IMSI, and rejects the Location Update attempts, hence not disturbing the mobile phones further. This behaviour is based on well-known standard cellular procedures for GSM and UMTS and the local unit 1 can be built based on existing picocell technology with a very low cost (e.g. below 200 euros). Location Update procedures are described in detail in ETSI 123 909 V4.0.0 (2001-03), a technical report from the European Telecommunications Standards Institute and 3GPP TS 23.012, from the 3rd Generation Partnership Project.

[0036] Additional details of this identity capture function are described here:

- The function (composed of the local unit plus optionally some intelligence in network systems) implements a small subset of the functionality of a BTS, BSC/RNC and MSC, in particular the one described below.
- The local unit 1 transmits and receives in the licensed spectrum of a mobile network operator. This local unit 1 broadcasts system information in the radio interface towards the mobile phones using the standard procedures and channels for that purpose. As part of its Cell Global identity, this unit broadcasts a LAC (Location Area Code) that is different from any LAC of the real cells of the mobile network in the surroundings (e.g. the operator can book special Location Area Codes for the road usage charging service).
- Due to the standard behaviour in any mobile phone, when a phone detects this Location Area Code because it enters under coverage of the unit, the mobile phone will initiate a Location Update dialogue with the unit.
- The function (local unit and/or network systems) will respond to that dialogue and, again following standard procedures, will force the phone to provide its IMSI number (note that even if the phone answers first with the TIMSI number, which is a temporal identity, the function can still request the phone to provide the IMSI number).
- Once obtained the IMSI number, the function will finish the dialogue sending a Location Updating Reject message to the phone with a rejection cause that will make the phone not trying again a Location Update dialogue with the function during a known timer (e.g. 2 hours) or as long as the phone keeps switched on (e.g. the latter is feasible in GSM with the rejection cause is "Roaming not allowed in this location area"). This means that the mobile phone will ignore the radio transmissions of the local unit from this moment on and will not try to connect with it even it is still under the coverage of the unit, unless the period expires or the phone is switched off and switched on again within that coverage.

[0037] The coverage area (4,4',4") of the local unit (1,1',1") can be configured based on two aspects: first, the transmission power, which determines the reach; second, the features of the antenna system (e.g. radiation pattern, gain, downtilt), which determine the shape of the coverage. Both aspects can be statically or dynamically modified to shape a particular area that is convenient to the counting scenario, e.g. a set of train carriages.

[0038] The operating parameters of the unit (e.g. Location Area Code, transmitting power, antenna system) could be configured locally or remotely via a typical remote Operation & Maintenance system (e.g. based on IP protocols).

[0039] As mentioned before, this function for capturing identities could be entirely local (i.e. all the procedure replicating BTS, BSC/RNC and MSC can be managed by the local unit, acting standalone) or can be a combination of local unit plus network equipment (some parts or the procedure done locally and others remotely). In any case, a local unit is always required for radio trans-

missions.

[0040] The features explained above enable interesting functions for the counting scenario. For instance, the function could work either in continuous mode or in pulse mode. The first one means that the LAC is maintained fixed and hence the function is continuously capturing the identities of the new mobile users that enters the area of coverage (e.g. accumulated visits of a museum during a day). The second one can be obtained by a change of LAC in the function, which will force again all the mobile phones around (old and new) to register again and hence be captured (e.g. snapshot of the number of visitors in a museum at 9:00, at 10:00, at 11:00, etc.).

[0041] The local unit can be fixed (e.g. installed in a train station) or mobile (e.g. installed in a train carriage or in a helicopter).

[0042] In case of a multi-operator scenario, some parts of the unit should be duplicated per operator whereas others can be shared (e.g. antenna system).

[0043] In terms of physical equipment, in a typical installation there would be local units located at the areas where people has to be counted and one or several network servers performing one of several functions (typically gateway and concentrator, but also can do calculating, counting and part of the identity capture). Figure 1 offers an illustrative view of how functions could be distributed in an architecture with gateway and concentrator.

Claims

1. Method for automatically counting the number of people in an area, said people carrying a switched-on mobile phone, **characterized in that** it comprises:

   - broadcasting, in the licensed spectrum of at least one mobile network operator and from at least one local unit (1,1',1"), each one located at an area where people is to be counted, the coverage area (4,4',4"), a LAC different from any other LAC of the radio cells of the mobile network in the surroundings;
   - establishing each local unit (1,1',1") a Location Update dialogue with any mobile phone (3,3',3") answering to the LAC broadcast, obtaining from each answering mobile phone (3,3',3") its IMSI number;
   - sending each local unit (1,1',1") a Location Updating Reject message to each mobile phone (3,3',3") whose IMSI number has been obtained;
   - counting the different IMSI numbers received; and
   - calculating an estimated number of people in the coverage area (4,4',4") using additional information.

2. Method for automatically counting the number of people in an area according to claim 1, **characterized in that** it additionally comprises, for the count carried out in the step of counting the different IMSI numbers received, discarding the duplicated IMSI numbers received during a predetermined period of time before.

3. Method for automatically counting the number of people in an area according to any of claims 1-2, **characterized in that** the at least one local unit (1,1', 1") broadcasts the same LAC continuously.

4. Method for automatically counting the number of people in an area according to any of claims 1-2, **characterized in that** the at least one local unit (1,1', 1") broadcasts different LACs each time.

5. Method for automatically counting the number of people in an area according to any of previous claims, **characterized in that** the coverage area (4,4',4") of the at least one local unit (1,1',1") is configurable through at least one of the following parameters:

   - the transmission power to modify the reach;
   - the radiation pattern of the antenna system to modify the shape of the coverage area (4).

6. Method for automatically counting the number of people in an area according to any of previous claims, in which there is a plurality of local units (1,1', 1"), **characterized in that** it comprises receiving a processing unit (2) the counting of the different IMSI numbers for each coverage area (4,4'4") from the different local units (1,1',1"), the calculation of the estimated number of people in each corresponding coverage area (4,4',4") being carried out in said processing unit (2) with access to the additional information.

7. Method for automatically counting the number of people in an area according to any of previous claims, **characterized in that** the additional information comprises at least one of the following:

   - the percentage of switched-on mobile phones versus people in the country, region, city or neighbourhood where the corresponding local unit (1,1',1") is located;
   - the market share of the selected mobile network operator in the country, region, city or neighbourhood where the corresponding local unit (1,1',1") is located.

8. System for automatically counting the number of people in an area, said people carrying a switched-on mobile phone, **characterized in that** it compris-

es:

- at least one local unit (1,1',1") provided with cellular radio transceiver means for transmitting and receiving signals in the licensed spectrum of at least one mobile network operator, each local unit (1,1',1") being located at an area where people is to be counted, the coverage area (4,4', 4"), and being configured for:

  • broadcasting a LAC different from any other LAC of the radio cells of the mobile network in the surroundings;
  • establishing a Location Update dialogue with any mobile phone (3,3',3") answering to the LAC broadcast, obtaining from each answering mobile phone (3,3',3") its IMSI number;
  • sending a Location Updating Reject message to each mobile phone (3,3',3") whose IMSI number has been obtained;
  • counting the different IMSI numbers received;
  • sending said counting to a processing unit (2);

- a processing unit (2) comprising calculating means (7) configured for calculating an estimated number of people in each coverage area (4,4',4") using additional information.

9. System for automatically counting the number of people in an area according to previous claim, **characterized in that** the at least one local unit (1,1',1") is additionally configured for, when counting the different IMSI numbers received, discarding the duplicated IMSI numbers received during a predetermined period of time before.

10. System for automatically counting the number of people in an area according to any of claims 8-9, **characterized in that** the at least one local unit (1,1', 1") is configured for broadcasting the same LAC continuously.

11. System for automatically counting the number of people in an area according to any of claims 8-9, **characterized in that** the at least one local unit (1,1', 1") is configured for broadcasting different LACs each time.

12. System for automatically counting the number of people in an area according to any of claims 8-9, **characterized in that** the at least one local unit (1,1', 1") is configured for changing between broadcasting the same LAC continuously or broadcasting different LACs each time, according to the type of counting carried out.

13. System for automatically counting the number of people in an area according to any of claims 8-12, **characterized in that** the at least one local unit (1,1', 1") comprises means for configuring at least one of the following parameters that determines its corresponding coverage area (4,4',4"):

- the transmission power to modify the reach;
- the radiation pattern of the antenna system to modify the shape of the coverage area (4).

14. System for automatically counting the number of people in an area according to any of claims 8-13, in which the processing unit (2) is remote to the at least one local unit (1,1',1"), **characterized in that** the processing unit (2) comprises management means (8) configured for remotely managing the at least one local unit (1,1',1").

15. System for automatically counting the number of people in an area according to any of claims 8-14, **characterized in that** the processing unit (2) comprises interface means (9) through which third parties (10) externally retrieve the calculation of the estimated number of people in each coverage area (4,4',4").

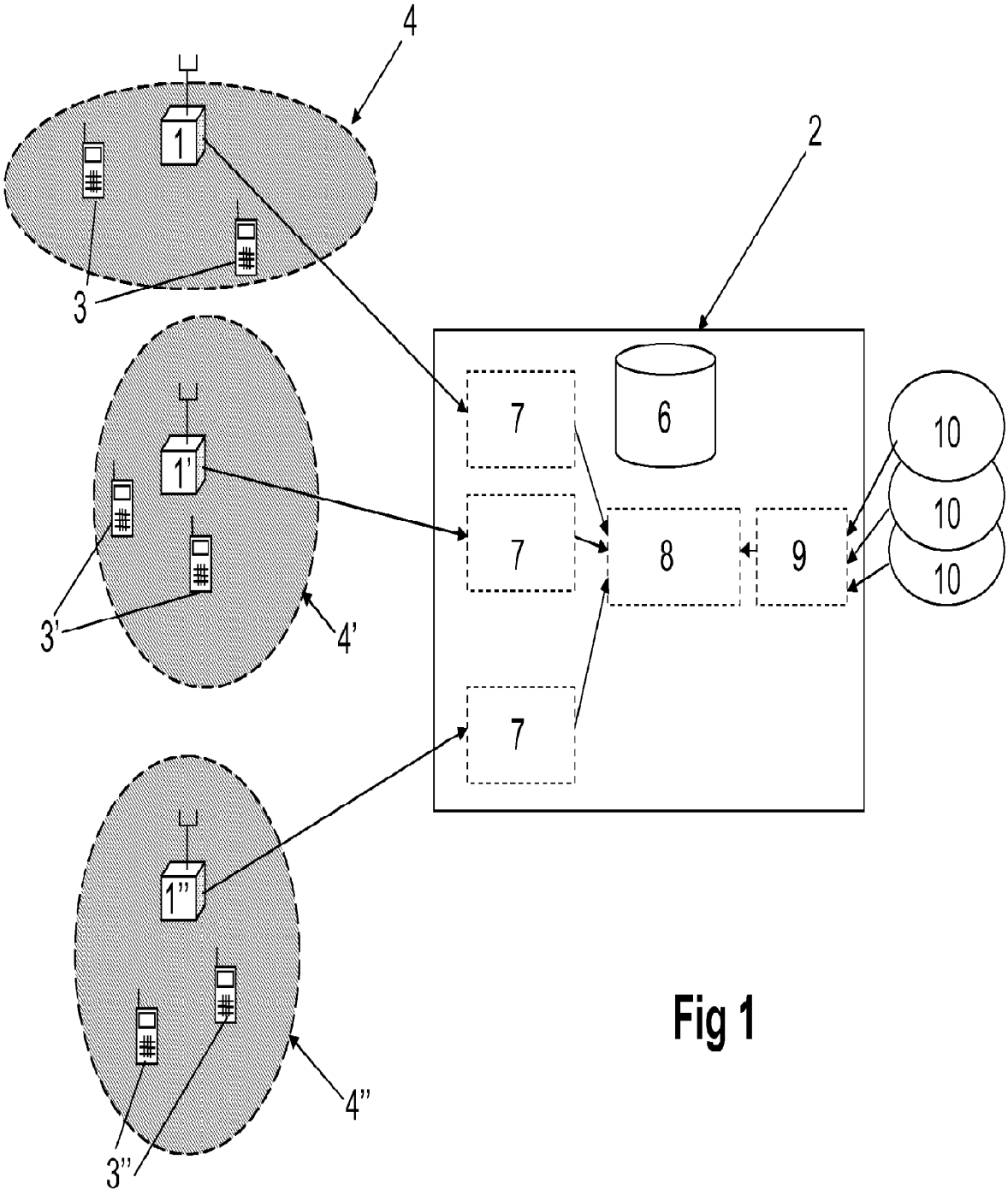

Fig 1

Europäisches Patentamt
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Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 09 17 4547

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	WO 98/15133 A2 (NOKIA TELECOMMUNICATIONS OY [FI]; SALMIVALLI MIKA [FI]) 9 April 1998 (1998-04-09) * page 2, line 10 - line 25; figures 2,4,5 * * page 7, line 8 - line 13 * * page 8 - page 9 *	1-2,5,9, 13-15 3-4,6-8, 10-12	INV. H04W24/00 ADD. H04W8/06 H04W60/04
Y	EP 1 482 759 A2 (RADIOLINJA AB [FI]) 1 December 2004 (2004-12-01) * paragraph [0036] - paragraph [0037]; figures 2,4 * * paragraph [0044] *	6-8	
Y,D	"Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Location management procedures (3GPP TS 23.012 version 7.3.0 Release 7); ETSI TS 123 012" ETSI STANDARDS, LIS, SOPHIA ANTIPOLIS CEDEX, FRANCE, vol. 3-CN2;3-CN4, no. V7.3.0, 1 June 2007 (2007-06-01), XP014037696 ISSN: 0000-0001 * page 10 *	3-4, 10-12	

TECHNICAL FIELDS SEARCHED (IPC)
H04W

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 February 2010	Tozlovanu, Ana-Delia

CATEGORY OF CITED DOCUMENTS
X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 09 17 4547

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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09-02-2010

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WO 9815133 A2	09-04-1998	AT 324756 T	15-05-2006
		AU 727610 B2	14-12-2000
		AU 4304897 A	24-04-1998
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EP 1482759 A2	01-12-2004	FI 20030086 A	22-07-2004

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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- US 2004158482 A **[0006]**
- US 2002183069 A **[0007] [0024]**
- EP 1779133 A1 **[0008]**
- EP 1779133 A **[0026]**

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WO 2008/055865 A2

(54) Title: METHOD AND SYSTEM FOR DETERMINING THE NUMBER OF CELL PHONES IN A CHOSEN AREA AND USE OF THE METHOD

(57) Abstract: A method for determining the number of cell phones in a chosen detection area, comprising: placing at least one device suitable for the detection of signals from cell phones in the chosen area, detecting said signals, counting of the number of different signals detected, optionally saving the information on the number of signals counted on a device for data storage, optionally transmitting the information on the number of signals counted to a computer or computer network.

Method and system for determining the number of cell phones in a chosen area and use of the method

Field

The invention concerns a method and system for determining the number of cell phones in a chosen area. By assuming that on average every person carries one cell phone that sends out a signal and is thus detectable, or by using another assumption on the number of people that carries a cell phone that may or may not be based on investigations thereof, the method allows the number of people in a chosen area to be counted. The invention also relates to the use of the number of cell phones counted in a chosen area.

Background

It is often desirable to know how many people are present in a certain area at a certain moment of time, for example on a day that there is a special event in a city, the police and emergency services would benefit greatly from knowing how many people there are in the city, and they would also benefit from having a better knowledge on where they are.

State of the art is to monitor the number of people entering a certain area by cameras. Modern cameras and image processing techniques allow the images of the camera to be translated into a number of people passing by the camera at a certain moment. By placing cameras on several locations and processing the data gathered by these cameras, the number of people present in a certain area can be determined.

However, cameras are expensive, and the use of cameras is undesirable from a privacy point of view because people can be recognized from camera images. Cameras are also often vandalized.

Description of the invention

The aim of the invention is to provide a method without the disadvantages mentioned above.

The invention relates to a method for determining the number of cell phones in a chosen detection area, comprising

- placing at least one device suitable for the detection of signals from cell phones in the chosen area
- detecting said signals
- counting of the number of different signals detected
- optionally saving the information on the number of signals counted on a device for data storage
- optionally transmitting the information on the number of signals counted to a computer or computer network.

Each cell phone sends out a signal that is unique for that cell phone and thus allows the counting of that cell phone only once, even though the cell phone sends out more than one signal over the time period that the method according to the invention is carried out for. Thus, in the method according to the invention a signal is only counted when it is different from a signal already counted.

It is an advantage of the method according to the invention that only the presence of cell phones is detected. The persons carrying the cell phones can remain anonymous.

It is also an advantage of the method according to the invention that cellular phones are easy to detect and the method according to the invention requires limited investments.

By assuming for example that on average every person carries one cell phone that sends out a signal, and thus is detectable, the method allows the number of people in a chosen detection area to be calculated.

For the purpose of this invention, the terms cell phones and mobile phones are used interchangeably. The term "cell phones" and "mobile phones" also cover all other devices with which phone calls can be made without using a land line , such as personal digital assistants (PDA's) and the like. Cordless phones that have a base station located in a fixed place and that are typically used indoors and making connection with other phones through a landline are not considered to be mobile or cell phones in the context of this invention.

Devices detecting the presence of a mobile phone are known. Providers of telecom services use so-called Base Transceiver Stations (BTS) to detect the presence of cell phones of their clients. A Base Tranceiver Station typically comprises three antenna's that each cover 120°. Thus, each BTS covers a circular area surrounding the BTS and can detect signals send by mobile phones in that area. However, for the method according to the invention, the detection area need not be circular, and hence, it can also be carried out using only one antenna.

In an embodiment of the method according to the invention, the device used for the detection of a cell phone is a Base Transceiver Station. Using Base Transceiver Stations has as advantage that they are present already on very many locations. However, each telecom service provider uses its own network of BTS's and thus, only the number of mobile phones using the providers whose BTS's are used will be detected.
If the market share of a certain provider is known, this still allows the number of phones and thereby the number of people to be estimated. However, the accuracy may be less than when each mobile phone is actually detected.

Other devices for detecting the presence of mobile phones are also known. For example, the CAA – Cellular activity analyzer is known. The CAA is a smart cellular detector, based on a modified Toshiba hand held computer. The CAA has been designed to detect active and dormant hidden cellular phones, including cellphone-based bugging devices, and measures all communication activity in a given area. By using pattern-matching technology, the CAA is able to differentiate between signaling activity such as SMS messages sent or periodic registration updates generated automatically by the GSM phone, and actual voice or data calls. Whenever cellular transmission is detected, the CAA provides the user with real time audio and visual alerts, as well as the following information:

- Exact time stamp
- Detected cellular system indication (GSM, TDMA, etc.)
- Duration of conversation
- Indication of cellular registration/ SM
- Display of detected cellular signal strength, enabling user to estimate the distance of the hidden mobile phone.

The CAA creates a report of cellular activity that took place during a certain period of time, as defined by user. This report can be easily synchronized to an MS Word document, providing the user with a professional report including precise data: were there any cellular-based eavesdropping attempts, when did each attempt take place, estimated location of the cellular-bugs, and more.
In all the known uses of the CAA and other devices detecting the presence of mobile phones, it is the actual detection of the mobile phones and their use patterns that are of interest. Devices detecting the presence of mobile phones are typically used to detect if a phone is present in an area where there should be no mobile phone present, such as in a prison or police investigation room, or in a class room where exams are being taken. So far, the use of this type of devices has not been applied for counting the number of mobile phones.

The known devices for detecting mobile phones use one or more ways of indicating the presence of a mobile phone, such as for example light signals, sound or text signals. Any of those signals can easily be counted, either by a person or by known devices. Preferably the method according to the invention allows the number of signals of mobile phones detected to be counted by a device.
If a device for data storage is used in the method according to the invention, it may be any device suitable for storing the data generated. Thus, the data storage device may be suitable for storage of text data, sound data, images, etc. Preferably all data are digital data that may be further processed by a computer.

The invention also relates to a system for determining the number of cell phones in a chosen detection area, comprising at least one device suitable for the detection of signals from cell phones in the chosen area, and means for counting the number of signals detected.

Means for counting the number of signals detected can be any means suitable for counting the type of signals generated by the detection device, preferably the means for counting are in communication with a computer or computer network, so that in the end the number of mobile phones can be read from a display or paper printout generated by the computer.

There are various types of mobile phones in use to date. All of these send out signals. Although for example GSM phones do not send out signals continuously, the signals are

being sent out with such a high frequency that the phones will be detected even when the detection area is relatively narrow and the mobile phone is carried by a person walking through the area. Moreover, in case mobile phones would not very frequently send out signals, all mobile phones can still be detected by making the detection area so large that in the time a phone is present in the area it will always at least once send out a signal.

Each mobile phone sends out a signal that is unique for that mobile phone. Known detection devices can distinguish signals that have been sent out by different mobile phones.

Thus, by carrying out the method according to the invention over a period of time longer than the longest interval known to be used by a mobile phone to send out a signal, all mobile phones in the detection range of the detection device can be identified and thus counted.

When the detection device used is limited to the detection of mobile phones using a certain provider, the number of phones can still be calculated by using information on the market shares of various telecom service providers.

Thus, the invention relates to a method for counting the number of people in a chosen detection area by determining the number of cell phones in a chosen detection area comprising the steps of

- placing at least one device suitable for the detection of a signal from a cell phone in the chosen area
- detecting said signals
- counting of the number of signals detected
- correlating the number of mobile phones to the number of people in a certain area by using information on the market share of the mobile phones detected by the device used or by using a calculation rule based on other information.

At the moment various types of networks for mobile phones are known, such as for example GSM (2 Giga hertz), GPRS(2.5 Giga hertz), UMTS(3 Giga hertz), HSDPA (3.5 Giga hertz). The method according to the invention can be used for any type of network, provided the detection device is suitable for detection of mobile phones operating at a certain frequency.

By choosing the location and number of devices, the area in which the number of cell phones is to be counted can be chosen to fit any desired shape. Thus, it is possible to place one device in an area, for example a street, and count the number of cell phones present in the detection range of the device. By using this set up the number of cell phones present in the detection area on a giving moment becomes known. By continuously carrying out the method over a certain period of time, the number of cell phones present in a certain area over that period of time becomes known.

It is also possible in the method of the invention to place two devices. Using one or two device's does not allow the exact localization of cell phones, but it does allow the counting of cell phones in a chosen detection area.

It is also possible in the method according to the invention to place three or more devices suitable for the detection of a signal sent out by a cell phone.

It is well known that by triangulation the exact position of a given cell phone may be determined. This is sometimes used by the police as evidence that a certain person was in a certain area at a certain time. Another known use of a triangulation system is the use of in a system that triangulates the location of each driver (assuming each driver carries a cell phone) by monitoring the signal that is handed of from one cell tower to the next. In that system each phone is uniquely identified and the information is compared with a highway map to record which road each driver is travelling at. Thus, the method is used to follow the flow of traffic, and it is not aimed at counting the number of people by counting the number of cell phones.

In a preferred embodiment a detection device is used which is direction sensitive, i.e. which does not have a circular detection range but a detection range that is more oblong in shape.

The invention preferably relates to uses of the method wherein only the number of cell phones that is present in a chosen detection area is used i.e. use wherein it is irrelevant who the persons are that carry cell phones that send out signals. Thus, it relates to the use of the method according to the invention to determine the effect on the number of people present of a certain event taking place in a town, village or other specific area, such as for example a shopping centre. By measuring the number of people present before the event, preferably by measuring this number on various occasions before the event, and by measuring the number of people present during the event, the number of people present because of the event may be estimated. The method

also allows the connection of various types of information to the numbers of people as represented by the number of cell phones, e.g. information on the weather or information on other event taking place, for example if an important football match is taking place during the time the number of cell phones in a certain area is monitored, etc. By combining these types of data the success and/or effectiveness of events can be monitored.

The method according to the invention may also be used to control the number of people present in a certain area, by using the information on the number of people present in the chosen detection area as input for a system controlling the entrance or additional entrance of a number of people to the area. For example, gates can be controlled to control the number of people entering and/or leaving a certain area.

The invention also relates to the use of the method according to the invention to determine the number of cell phones in an area and the number of cell phones in the same area during the time of road construction.

Such information is useful for example to calculate the turnover lost by enterprises located at or in the vicinity of road construction projects.

The invention also relates to the use of the method according to the invention for determining the number of people present over a certain time in an area where an advertisement is placed. This information may be used to determine the selling price of advertising space in public places or for taxing advertisements in public places. .

Using the detection of cell phones present in a certain area over time makes it possible to detect trends in time.

Claims

1. A method for determining the number of cell phones in a chosen detection area, comprising

- placing at least one device suitable for the detection of signals from cell phones in the chosen area
- detecting said signals
- counting of the number of different signals detected
- optionally saving the information on the number of signals counted on a device for data storage
- optionally transmitting the information on the number of signals counted to a computer or computer network.

2. A method for counting the number of people present in a chosen detection area, comprising carrying out the method according to claim 1 and calculating the number of people on the basis of the calculation rule that each cell phone counted represents one person present in the detection area or on the basis of any other calculation rule.

3. Method according to claim 1 or 2, wherein the device suitable for the detection of a signal from a cell phone is a Base Tranceiver Station.

4. A system for determining the number of cell phones in a chosen detection area, comprising at least one device suitable for the detection of a signal from a cell phone that sends out signals, and means for counting the number of different signals detected.

5. Use of a method for determining the number of cell phones in a chosen detection area to count the number of cell phones in the area for determining the effect of road works on the number of cell phones in that area.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/188,063	Filing Date 02/24/2014	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	03/10/2014	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 5	Minus	** 20	= 0	X $40 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

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PTO/AIA/14 (12-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	UN-PR-LO-133
	Application Number	
Title of Invention	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
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Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

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Postal Code	75024	**Country**	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

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Customer Number	96051		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY		
Attorney Docket Number	UN-PR-LO-133	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	6	**Suggested Figure for Publication (if any)**	2

Filing By Reference :

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	UN-PR-LO-133
	Application Number	
Title of Invention	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY	

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

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Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Claims benefit of provisional	61774305	2013-03-07

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	UN-PR-LO-133
	Application Number	
Title of Invention	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY	

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2013100804	AU	2013-06-07	

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PTO/AIA/14 (12-13)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	UN-PR-LO-133
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◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
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If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. ☒

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	UN-PR-LO-133
	Application Number	
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Organization Name	Uniloc Luxembourg S.A.

Mailing Address Information For Assignee including Non-Applicant Assignee:

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Phone Number		Fax Number	
Email Address			

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Signature	/Sean D. Burdick/			Date (YYYY-MM-DD)	2014-02-24
First Name	Sean	Last Name	Burdick	Registration Number	51513

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	UN-PR-LO-133
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PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

BACKGROUND OF THE INVENTION

[0001] This application claims priority to U.S. Provisional Application 61/774,305, filed March 7, 2013, which is fully incorporated herein by reference.

1. Field of the Invention

[0002] The present invention relates generally to computer data processing and, more particularly, methods of and systems for delivery of information to a device based on the location history of the device.

2. Description of the Related Art

[0003] Location-based services have been recognized as important and valuable for years. Typically, providers of location-based services arrange to have information regarding services delivered to device when the device is determined to be near a given location. However, the current location of a device provides very limited information about the device and therefore limits how relevant any location-based information sent to the device can be.

[0004] What is needed is a way to provide information to a device where the information is selected based on more than just the current location of the device.

SUMMARY OF THE INVENTION

[0005] In accordance with the present invention, a server sends information to user devices based on not only the current location of those devices but also predicted future locations of those devices. Over time, server gathers location information from the user devices to collect locations histories of the devices and uses the location histories to periodically predict future

locations of the devices.

[0006] A number of actions are associated with one or more predetermined locations, a predetermined maximum amount of time, and a predetermined minimum likelihood. When the server determines that a given user device is likely to be in one of the predetermined locations within the predetermined maximum amount of time with at least the predetermined minimum likelihood, the server performs the associated acts with respect to the user device. An example of such an action is sending a promotion or advertisement to the user device, e.g., as an SMS message.

[0007] To make a prediction regarding future locations of the user device, the server considers the user device's location history in a current context. One part of the current context is the current day and the current time. To appreciate this context, it is helpful to consider an example. Consider that a new sushi department store has opened at a given location. The manager of the department store can request that anyone that is at least 50% likely to visit a store considered to be in competition of the department store within one hour should be sent a promotional code entitling that person to a discount. To do so, the manager can specify locations of all competing stores within a five-mile radius of the given location as the one or more predetermined locations. In addition, the manager can specify 50% as the predetermined minimum likelihood and one hour as the predetermined maximum amount of time. The manager can also specify days and times at which the actions are applicable, e.g., only during hours at which the new department store is open.

[0008] Another part of the current context is the current location of the user device. Continuing in the example above, consider that a given user device has a history of shopping at the department store to get excellent customer service in learning about new products and then

immediately going to a discount store to buy the new products at a lower price – the classic free rider problem. The presence of the user device in the department store can indicate that the user device will soon be heading to a competitor of the department store. Recognizing this, the server can deliver a promotional code to the user device, encouraging the user of the user device to buy the product in the department store rather than at the competitor.

[0009] In addition, if the manager of the department store sets up different actions for locations of competitors of a given type of store, the promotional code can be for a particular type of goods. Consider that all competitors selling electronics products are the predetermined locations. The action can be sending a promotional code for a discount on electronic products to the user device.

[0010] The current context can also be a combination of the current day and time and the current location of the user device. Continuing in the above example, consider that the department store includes a restaurant that does brisk business in the evenings but is nearly empty at lunch time on weekdays despite a flourishing business neighborhood in which many workers typically eat lunch at restaurants. The same manager can specify other nearby restaurants as the predetermined locations but limit the applicability of those locations to week days from 11:30am to 2:00pm, for example.

[0011] Unlike conventional location-based services in which information is presented to a user device based on its current location only, the information presented to a user device in the manner described herein can actually influence the future location of the user device by offering an alternative trip the user can take rather than the trip typically taken in the current context.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Other systems, methods, features and advantages of the invention will be or will become apparent to one with skill in the art upon examination of the following figures and detailed description. It is intended that all such additional systems, methods, features and advantages be included within this description, be within the scope of the invention, and be protected by the accompanying claims. Component parts shown in the drawings are not necessarily to scale, and may be exaggerated to better illustrate the important features of the invention. In the drawings, like reference numerals may designate like parts throughout the different views, wherein:

[0013] FIG. 1 is a diagram showing a server computer that gathers and analyzes location data from a number of mobile devices through a computer network to send information to a user device based on predicted future locations in accordance with one embodiment of the present invention.

[0014] FIG. 2 is a transaction flow diagram showing reporting of current location by a mobile device of FIG. 1.

[0015] FIG. 3 is a block diagram of a location data record used by the server of FIG. 1 to represent a location report received from a mobile device.

[0016] FIG. 4 is a block diagram of a location-based action record used by the server of FIG. 1 to take actions based on predicted future locations of mobile devices.

[0017] FIG. 5 is a block diagram of a trigger event of the location-based action record of FIG. 4 in greater detail.

[0018] FIG. 6 is a block diagram of an action of the location-based action record of FIG. 4 in greater detail.

[0019] FIG. 7 is a logic flow diagram illustrating the manner in which the server of FIG. 1 processes location-based action records to take actions based on predicted future locations of mobile devices.

[0020] FIG. 8 is a block diagram showing a mobile device of FIG. 1 in greater detail.

[0021] FIG. 9 is a block diagram showing the server of FIG. 1 in greater detail.

DETAILED DESCRIPTION

[0022] In accordance with the present invention, a server 106 (FIG. 1) sends information to user devices 102A-D based on not only the current location of those devices but also predicted future locations of those devices. Over time, server 106 gathers location information from user devices 102A-D and uses the gathered location information to periodically predict future locations of the devices.

[0023] User devices 102A-D (FIG. 1) each can be any of a number of types of networked computing devices, including smartphones, tablets, netbooks, laptop computers, and desktops computers, though location information is expected to be more useful for devices that are portable. Each of user devices 102A-D serves as a location proxy for a single user. In other words, the location of each of user devices 102A-D is presumed to be the location of a single user. In addition, each of user devices 102A-D communicates with server 106 through a network 108, which is the Internet in this illustrative embodiment. Network 108 can also be a mobile telephony network. User devices 102A-D are analogous to one another and description of user device 102A is equally applicable to user devices 102B-D unless otherwise noted herein. It should also be noted that, while four (4) user devices are shown in this illustrative example, more or fewer than four (4) user devices can report locations for receiving future-location-based

information in the manner described herein.

[0024] Transaction flow diagram 200 (FIG. 2) illustrates the reporting by user device 102A of its location to server 106.

[0025] In step 202, user device 102A sends its globally unique device identifier to server 106 along with data indicating an intent to report the current location of user device 102A.

[0026] In step 204, server 106 sends a digital fingerprint challenge to user device 102A. Digital fingerprints and digital fingerprint challenges are known and described in U.S. Patent Application Publication 2011/0093503 for "Computer Hardware Identity Tracking Using Characteristic Parameter-Derived Data" by Craig S. Etchegoyen (filed April 21, 2011) and that description is incorporated herein in its entirety by reference.

[0027] Digital fingerprints offer the advantage of being more stable and less amenable to spoofing that are IP addresses and MAC addresses and, of particular significance here, require no user intervention. Accordingly, location reporting in transaction flow diagram 200 is secure, reliable (no device spoofing), and requires no action on the part of the user.

[0028] To avoid frequent communication of digital fingerprints through network 108, device identification and authentication uses only part of the digital fingerprints of user devices 102A-D. A digital fingerprint challenge specifies one or more parts of a digital fingerprint and a manner in which the parts are combined and cryptographically obscured. In addition, the digital fingerprint challenge can change each time device identification and authentication is needed. Accordingly, each time a given device sends its digital fingerprint in response to a different digital fingerprint challenge, the digital fingerprint sent is different. Any digital fingerprint intercepted within network 108 or any network will not authenticate properly if used in response

to a different digital fingerprint challenge.

[0029] In step 206, user device 102A determines its geographic location. The manner in which user device 102A determines its geographical location is described in U.S. Application 61/746,719, which was filed December 31, 2012, and which is fully incorporated herein by reference.

[0030] In step 208, user device 102A produces a responsive digital fingerprint data using the challenge received in step 204 and digital fingerprint 822 (FIG. 8).

[0031] In step 210 (FIG. 2), user device 102A cryptographically combines the responsive digital fingerprint data produced in step 208 with data representing the location of user device 102A determined in step 208. By cryptographically combining the responsive digital fingerprint data and the location data, user device 102A makes the data tamper-evident and obscured.

[0032] In step 212, user device 102A sends the combined data to server 106. In step 214, server 106 parses the responsive digital fingerprint data and location data and stores the location of user device 102A in location data 940 (FIG. 9).

[0033] Server 106 stores the location of user device 102A in a location data record 300 (FIG. 3). Device digital fingerprint 302 is the digital fingerprint by which user device 102A is identified and authenticated. A number of location reports 304 identify the location of user device 102A at a given date and time. Location 306 represents the location of user device 102A, and time stamp 308 represents the date and time.

[0034] In step 216 (FIG. 2), server 106 sends information specified in any location-based actions stored by server that are triggered by the location history of user device 102A. After step 216, processing according to transaction logic diagram 200 completes.

[0035] Location-based actions specify actions to be taken if user device 102A is predicted to be in any of a number of locations in the future within a predetermined amount of time by a predetermined threshold likelihood. An example of such a location-based action is represented by location-based action record 400 (FIG. 4). Location-based action record 400 includes a trigger event 402 that represents the conditions under which action is to take place and an action 404 that is to take place under the conditions represented by trigger event 402.

[0036] Trigger event 402 is shown in greater detail in FIG. 5. In essence, trigger event 402 asks whether user device 102A is likely to be in any of a number of locations within a predetermined amount of time in the future. Threshold likelihood 502 specifies a predetermined threshold likelihood. Threshold time 504 specifies a predetermined threshold amount of time into the future. Each of a number of application locations 506 specifies the locations. In this illustrative embodiment, each applicable location 506 is specified by a location 508 (such as latitude and longitude, for example) and a radius 510. Thus, trigger event 402 specifies, as a condition for performance of action 404 (FIG. 4), that user device 102A must be determined to be at least as likely as threshold likelihood 502 (FIG. 5) to be at any of applicable locations 506 within an amount of time represented by threshold time 504.

[0037] Action 404 (FIG. 4) is shown in greater detail in FIG. 6. Action logic 602 specifies the behavior of server 106 in performing action 404. For example, action logic 602 can cause server 106 to send an SMS or MMS message to user device 102A or to register user device 102A as one to receive a special discount if used to pay for a transaction at a merchant. Action content 604 specifies content to be used in performance of action logic 602, e.g., the content to send to user device 102A as a SMS or MMS message.

[0038] In some embodiments, location-based action record 400 can have multiple trigger

events 402 combined with "AND" and/or "OR" relationships and/or multiple actions 404.

[0039] The manner in which server 106 processes location-based action records such as location-based action record 400 is illustrated by logic flow diagram 700 (FIG. 7). In step 702, server 106 gathers the current location of user device 102A and the current date and time.

[0040] Loop step 704 and next step 712 define a loop in which server 106 processes each of a number of location-based action records according to steps 706-710. During each iteration of the loop of steps 704-712, the particular location-based action record processed by server 106 is sometimes referred to as "the subject location-based action record."

[0041] In step 706, server 106 determines whether the subject location-based action record is currently triggered. There are generally two (2) predictive patterns checked by server 106 in determining the likelihood of user device 102A to be in a particular place at a particular time. The first is by analyzing the location data record 300 (FIG. 3) for user device 102A for location patterns associated with times of day, days of the week, days of the month, and days of the year. For example, the user of user device 102A might have lunch at the same place at least three (3) days each work week – typically at about 12:30pm. If the current time is 12:00pm and it is currently a work week day, server 106 can determine that the likelihood of user device 102A going to that same place within the next hour to be three in five, or 60%. Server 106 can also take into account other information such as whether user device 102A has not gone to that same place in the previous two (2) days of the current work week.

[0042] The second is by analyzing the location data record 300 (FIG. 3) for user device 102A for location patterns associated with other locations of user device 102A. In other words, server 106 tries to answer the question, "Given that user device 102A is at its current location, what are the odds that user device 102A will be in another given location within the predetermined

amount of time according to the location history of user device 102A?" For example, a user may have the tendency to shop in a large department store to get help from sales clerks and then go around the corner to a discount shop to buy merchandise at a great discount. The presence of user device 102A in the large department store can indicate that user device 102A is likely to be in the discount shop in the near future.

[0043] Server 106 can identify such a tendency by identifying each location report 304 (FIG. 3) representing a location of user device 102A within a predetermined distance of its current location and determining how many of those location reports 304 are followed within the predetermined amount of time of threshold time 504 (FIG. 5) of a location report 304 (FIG. 3) of user device 102A at one or more of applicable locations 506 (FIG. 5).

[0044] Server 106 can also combine the current time and the current location of user device 102A in testing trigger event 402. For example, server 106 can consider only location reports 304 (FIG. 3) that are near the current location of user device 102A and that have time stamps 308 that are between the current time and the future time represented by threshold time 504 (FIG. 5) for relevant days of the week, month, year, etc. Considering only those location reports 304 (FIG. 3), server 106 can determine how frequently user device 102A visits an applicable location 506 after being at its current location.

[0045] It is helpful to consider the example of a trigger event 402 (FIG. 5) in which threshold likelihood 502 represents 70%, threshold time 504 represents one hour, and applicable locations 506 represent various locations of a retail business. This trigger can be satisfied (i) if user device 102A goes to the retail business in a predictable pattern, such as every Friday evening at around 6:30pm and it's currently 5:45pm, of (ii) if user device 102A typically visits a competitor retail business before visiting the subject retail business and user device 102A is currently at the

competitor retail business.

[0046] In test step 708 (FIG. 7), server 106 determines whether the trigger event of the subject location-based action record is satisfied. If so, processing transfers to step 710 in which server 106 performs the action of the subject location-based action record. If not, server 106 skips step 710.

[0047] After steps 708-710, processing by server 106 transfers through next step 712 to loop step 704 and server 106 processes the next location-based action record according to the loop of steps 704-712. When all location-based action records have been processed according to the loop of steps 704-712, processing according to logic flow diagram 700 completes.

[0048] In one embodiment, user device 102A is configured to report its location according to transaction logic diagram 200 at regular time intervals. In an alternative embodiment, user device 102A is configured to report its location according to transaction logic diagram 200 in response to a number of triggering events, including for example, determination of the location of user device 102A for reasons independent of reporting of the location to server 106 and connecting to a wireless networking access point. Thus, any time the user of user device 102A uses GPS circuitry of user device 102A resulting in determination of the location of user device 102A, user device 102A reports the location to server 106 in the manner described above.

[0049] User device 102A is a personal computing device and is shown in greater detail in FIG. 8. User device 102A includes one or more microprocessors 802 (collectively referred to as CPU 802) that retrieve data and/or instructions from memory 804 and execute retrieved instructions in a conventional manner. Memory 804 can include generally any computer-readable medium including, for example, persistent memory such as magnetic and/or optical disks, ROM, and PROM and volatile memory such as RAM.

[0050] CPU 802 and memory 804 are connected to one another through a conventional interconnect 806, which is a bus in this illustrative embodiment and which connects CPU 802 and memory 804 to one or more input devices 808, output devices 810, and network access circuitry 812. Input devices 808 can include, for example, a keyboard, a keypad, a touch-sensitive screen, a mouse, a microphone, and one or more cameras. Output devices 310 can include, for example, a display – such as a liquid crystal display (LCD) – and one or more loudspeakers. Network access circuitry 812 sends and receives data through computer networks such as network 108 (FIG. 1). GPS circuitry 814 determines the location of user device 102A in a conventional manner.

[0051] A number of components of user device 102A are stored in memory 804. In particular, device tracking logic 820 is all or part of one or more computer processes executing within CPU 802 from memory 804 in this illustrative embodiment but can also be implemented using digital logic circuitry. As used herein, "logic" refers to (i) logic implemented as computer instructions and/or data within one or more computer processes and/or (ii) logic implemented in electronic circuitry. Device tracking logic 820 causes user device 102A to report its location in the manner described above.

[0052] Digital fingerprint 822 is persistent data stored in memory 804.

[0053] Server 106 is a computing device and is shown in greater detail in FIG. 9. Server 106 includes one or more microprocessors 902 (collectively referred to as CPU 902), memory 904, an interconnect 906, and network access circuitry 912 that are analogous to CPU 802 (FIG. 8), memory 804, interconnect 806, and network access circuitry 812, respectively.

[0054] A number of components of server 106 are stored in memory 904. In particular, web server logic 920 and web application logic 922, including location analysis logic 924, are each

all or part of one or more computer processes executing within CPU 902 from memory 904 in this illustrative embodiment but can also be implemented using digital logic circuitry. Location monitoring logic 926 and location analysis logic 928 are also each all or part of one or more computer processes executing within CPU 902 from memory 904 in this illustrative embodiment but can also be implemented using digital logic circuitry.

[0055] Web server logic 920 is a conventional web server. Web application logic 922 is content that defines one or more pages of a web site and is served by web server logic 920 to user devices such as user device 102A. Location analysis logic 924 specifies the behavior of server 106 in providing location analysis services in the manner described above. For example, location analysis logic 924 determines the likelihood that user device 102A will be in a particular location within a predetermined amount of time. In addition, location analysis logic 924 analyzes location data 940, invoking location analysis logic 928 in some embodiments.

[0056] Location monitoring logic 926 specifies the behavior of server 106 in receiving location reports in the manner described above and in the UN-003 Application. Location analysis logic 928 specifies the behavior of server 106 in analyzing location data 940 in the manner described herein and in the UN-003 Application.

[0057] Location data 940 and action data 942 are each data persistently stored in memory 904 and are each organized as one or more databases in this illustrative embodiment. Location data 940 includes location data records such as location data record 300 (FIG. 3). Action data 942 includes location-based action records such as location-based action record 400 (FIG. 4).

[0058] The above description is illustrative only and is not limiting. The present invention is defined solely by the claims which follow and their full range of equivalents. It is intended that the following appended claims be interpreted as including all such alterations, modifications,

permutations, and substitute equivalents as fall within the true spirit and scope of the present invention.

CLAIMS

What is claimed is:

1. A method for delivering information to a user device, the method comprising:

predicting whether the user device will be at any of one or more predetermined locations within a predetermined maximum amount of time with at least a predetermined likelihood;

in response to the predicting, performing one or more predetermined actions that are associated with the predetermined locations, the predetermined maximum amount of time, and the predetermined likelihood;

wherein at least one of the actions includes delivering the information to the user device.

2. The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device.

3. The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device for day- and time-based patterns related to a current time and a current day.

4. The method of claim 1 wherein predicting comprises:

analyzing a location history of the user device for movement patterns related to a current location of the user device.

5. The method of claim 1 further comprising:

analyzing a location history of the user device for patterns that involve day- and time-based and movement related to a current time, a current day, and a current location of the user device.

6. A non-transitory computer readable medium useful in association with a computer that includes one or more processors and a memory, the computer readable medium including computer instructions that are configured to cause the computer, by execution of the computer instructions in the one or more processors from the memory, to deliver information to a user device by at least:

predicting whether the user device will be at any of one or more predetermined locations within a predetermined maximum amount of time with at least a predetermined likelihood;

in response to the predicting, performing one or more predetermined actions that are associated with the predetermined locations, the predetermined maximum amount of time, and the predetermined likelihood;

wherein at least one of the actions includes delivering the information to the user device.

7. The computer readable medium of claim 6 wherein predicting comprises:

analyzing a location history of the user device.

8. The computer readable medium of claim 6 wherein predicting comprises:

analyzing a location history of the user device for day- and time-based patterns related to a current time and a current day.

9. The computer readable medium of claim 6 wherein predicting comprises:

analyzing a location history of the user device for movement patterns related to a current location of the user device.

10. The computer readable medium of claim 6 further comprising:

analyzing a location history of the user device for patterns that involve day- and time-based and movement related to a current time, a current day, and a current location of the user

device.

11. A computer system comprising:

at least one processor;

a computer readable medium that is operatively coupled to the processor;

network access circuitry that is operatively coupled to the processor; and

location assessment logic (i) that executes at least in part in the processor from the computer readable medium and (ii) that, when executed, causes the processor to deliver information to a user device by at least:

predicting whether the user device will be at any of one or more predetermined locations within a predetermined maximum amount of time with at least a predetermined likelihood;

in response to the predicting, performing one or more predetermined actions that are associated with the predetermined locations, the predetermined maximum amount of time, and the predetermined likelihood;

wherein at least one of the actions includes delivering the information to the user device.

12. The computer system of claim 11 wherein predicting comprises:

analyzing a location history of the user device.

13. The computer system of claim 11 wherein predicting comprises:

analyzing a location history of the user device for day- and time-based patterns related to a current time and a current day.

14. The computer system of claim 11 wherein predicting comprises:

analyzing a location history of the user device for movement patterns related to a current location of the user device.

15. The computer system of claim 11 further comprising:

analyzing a location history of the user device for patterns that involve day- and time-based and movement related to a current time, a current day, and a current location of the user device.

ABSTRACT

A server sends information to user devices based on not only the current location of those devices but also predicted future locations of those devices. A number of actions are associated with one or more predetermined locations, a predetermined maximum amount of time, and a predetermined minimum likelihood. When the server determines that a given user device is likely to be in one of the predetermined locations within the predetermined maximum amount of time with at least the predetermined minimum likelihood, the server performs the associated acts with respect to the user device. An example of such an action is sending a promotion or advertisement to the user device, e.g., as an SMS message.

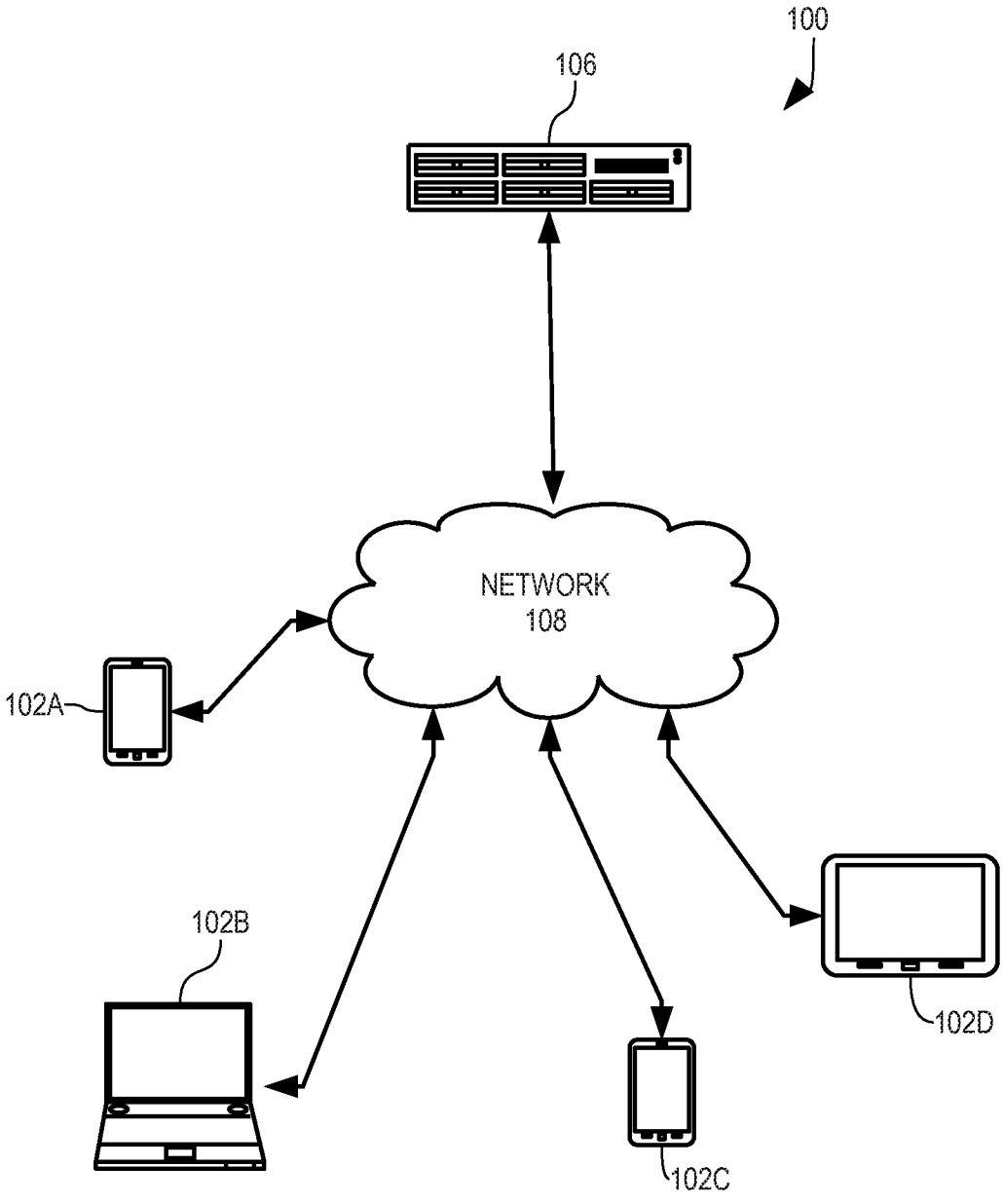

FIGURE 1

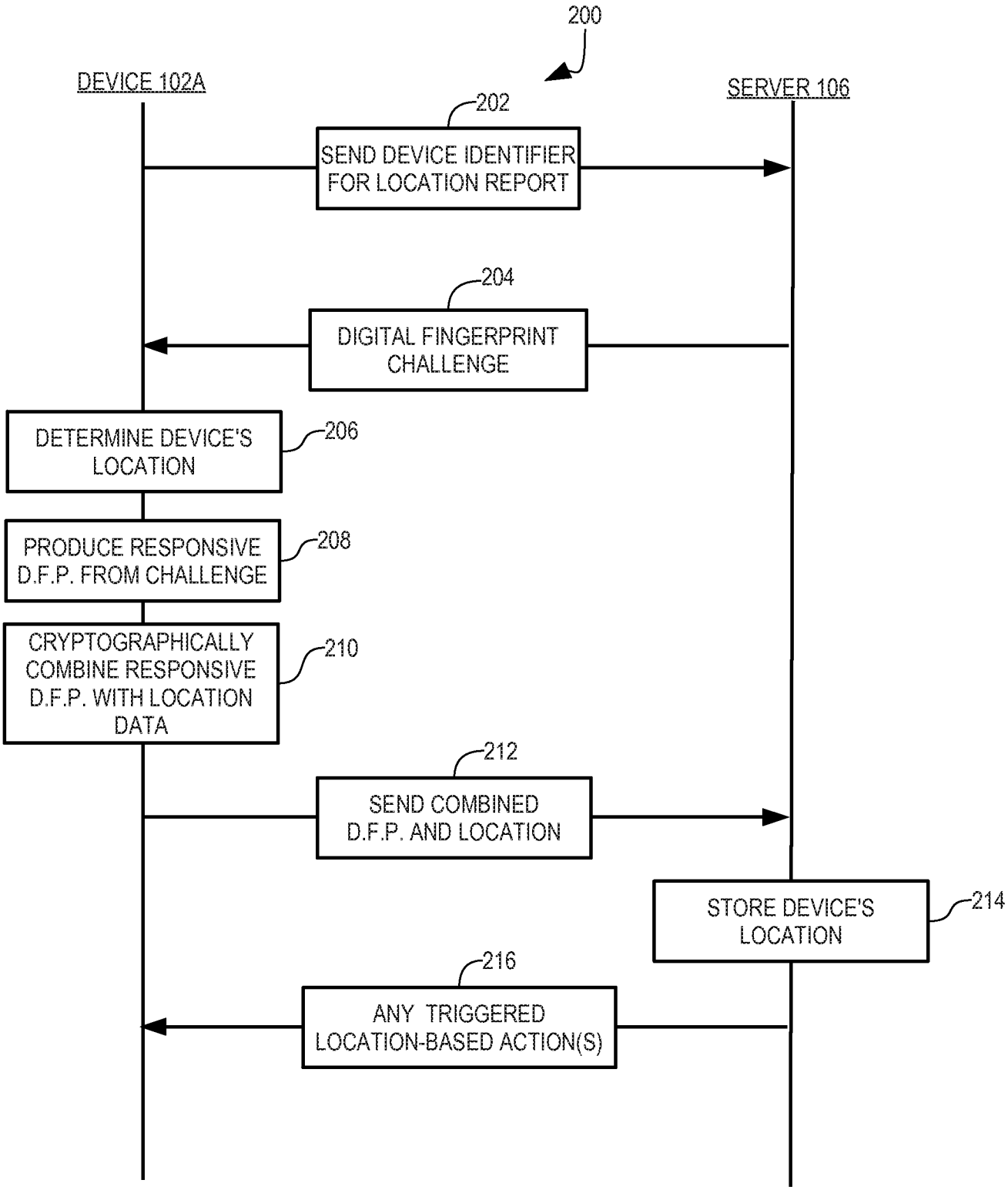
200
DEVICE 102A
SERVER 106
202
SEND DEVICE IDENTIFIER FOR LOCATION REPORT
204
DIGITAL FINGERPRINT CHALLENGE
DETERMINE DEVICE'S LOCATION
206
PRODUCE RESPONSIVE D.F.P. FROM CHALLENGE
208
CRYPTOGRAPHICALLY COMBINE RESPONSIVE D.F.P. WITH LOCATION DATA
210
212
SEND COMBINED D.F.P. AND LOCATION
STORE DEVICE'S LOCATION
214
216
ANY TRIGGERED LOCATION-BASED ACTION(S)

FIGURE 2

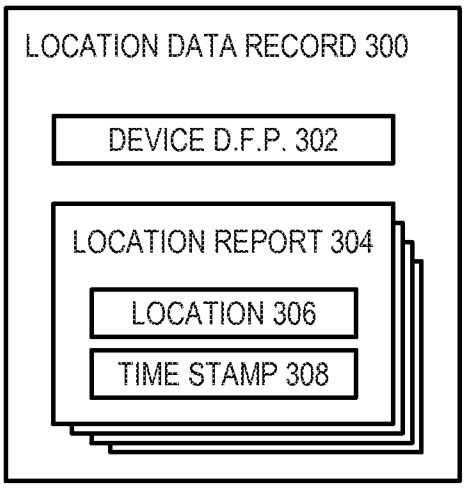

FIGURE 3

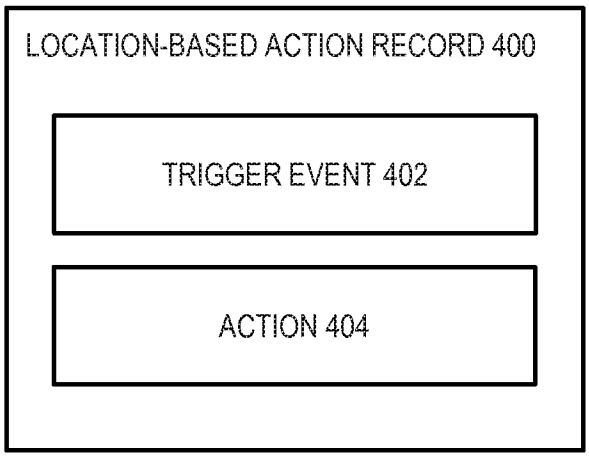

FIGURE 4

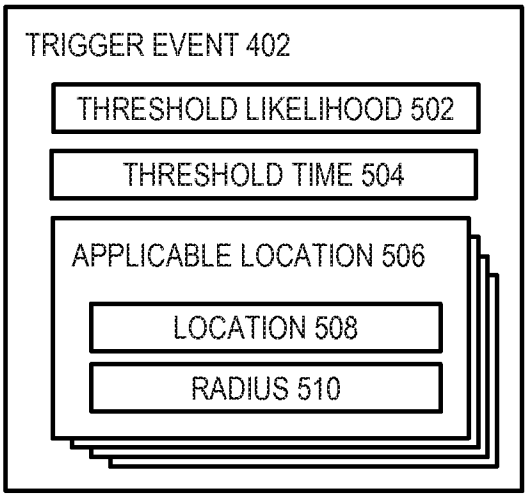

FIGURE 5

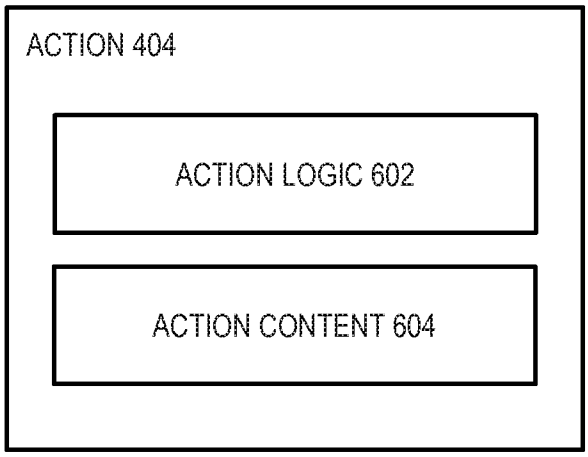

FIGURE 6

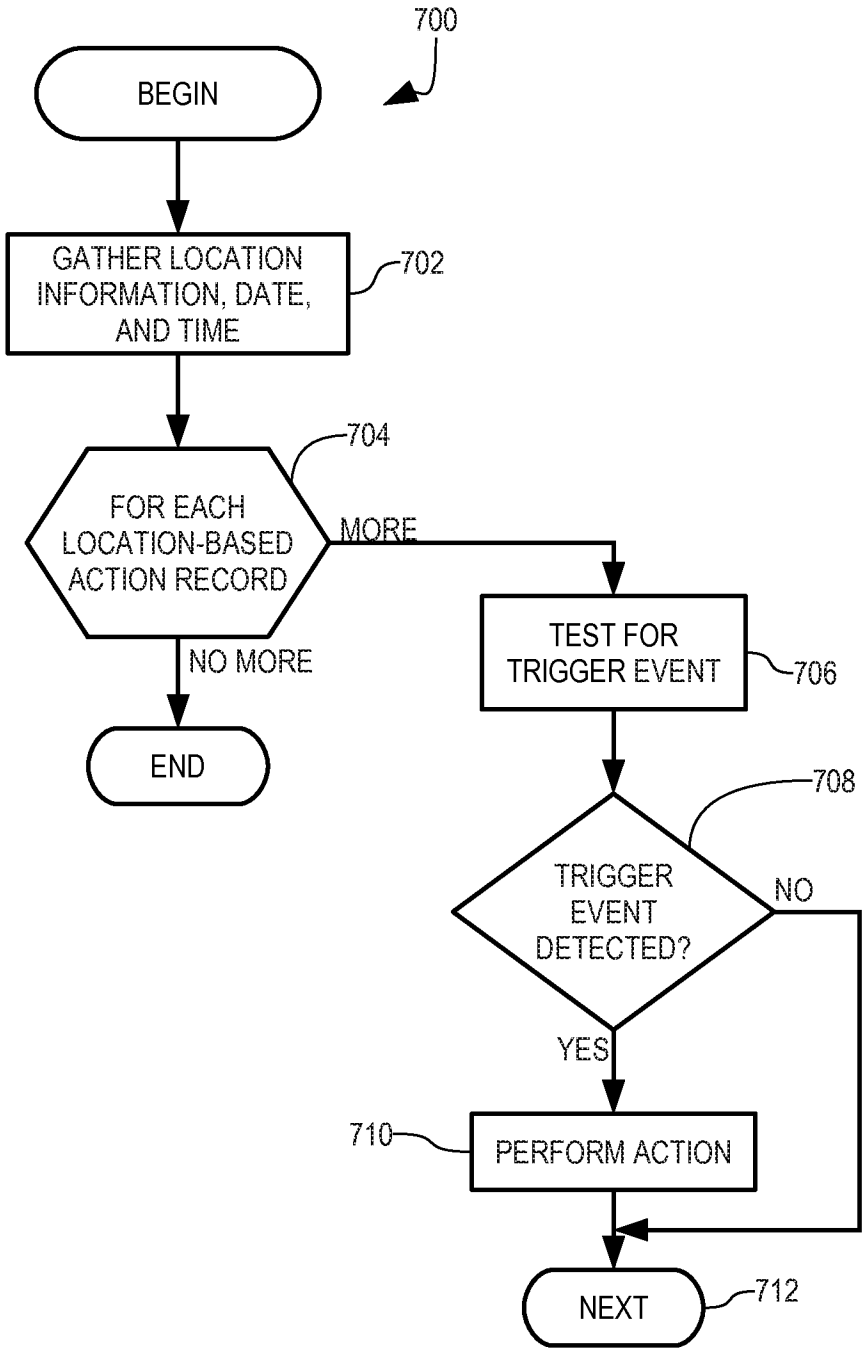
700
BEGIN
GATHER LOCATION INFORMATION, DATE, AND TIME
702
704
FOR EACH LOCATION-BASED ACTION RECORD
MORE
NO MORE
END
TEST FOR TRIGGER EVENT
706
708
TRIGGER EVENT DETECTED?
NO
YES
710
PERFORM ACTION
NEXT
712

FIGURE 7

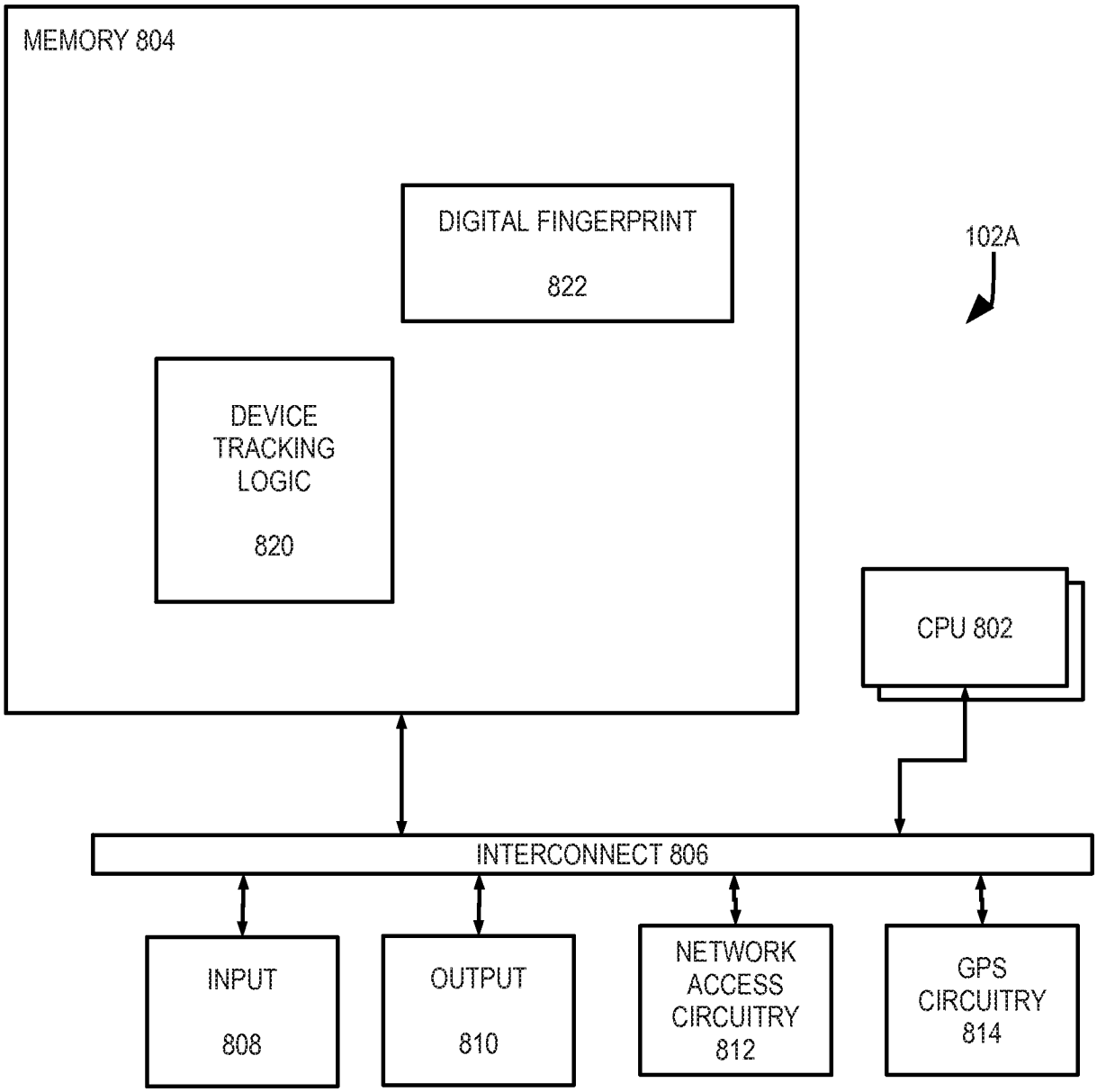
MEMORY 804
DIGITAL FINGERPRINT
822
102A
DEVICE
TRACKING
LOGIC
820
CPU 802
INTERCONNECT 806
INPUT
808
OUTPUT
810
NETWORK
ACCESS
CIRCUITRY
812
GPS
CIRCUITRY
814

FIGURE 8

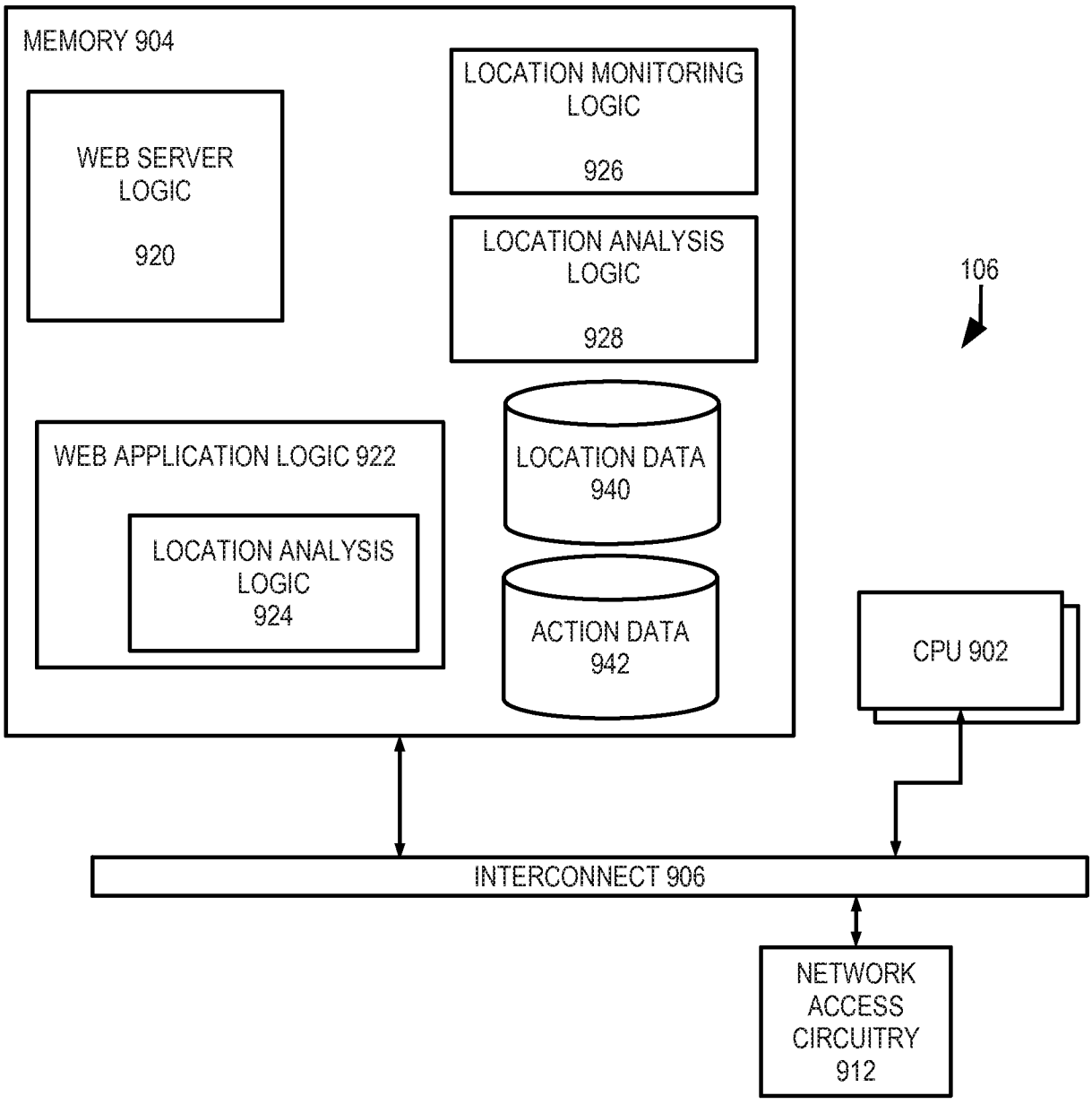
MEMORY 904
WEB SERVER LOGIC 920
LOCATION MONITORING LOGIC 926
LOCATION ANALYSIS LOGIC 928
106
WEB APPLICATION LOGIC 922
LOCATION ANALYSIS LOGIC 924
LOCATION DATA 940
ACTION DATA 942
CPU 902
INTERCONNECT 906
NETWORK ACCESS CIRCUITRY 912

FIGURE 9

PTO/AIA/01 (06-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [■] The attached application, or
- [ ] United States application or PCT international application number _____

  filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Craig S. Etchegoyen Date (Optional): January 17, 2014

Signature: _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY
First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Filer:	Sean Dylan Burdick/Tanya Kiatkulpiboone
Attorney Docket Number:	UN-NP-LO-133

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	70	70
Utility Search Fee	2111	1	300	300
Utility Examination Fee	2311	1	360	360
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**730**

Electronic Acknowledgement Receipt

EFS ID:	18277410
Application Number:	14188063
International Application Number:	
Confirmation Number:	5670
Title of Invention:	PREDICTIVE DELIVERY OF INFORMATION BASED ON DEVICE HISTORY
First Named Inventor/Applicant Name:	Craig S. Etchegoyen
Customer Number:	96051
Filer:	Sean Dylan Burdick
Filer Authorized By:	
Attorney Docket Number:	UN-NP-LO-133
Receipt Date:	24-FEB-2014
Filing Date:	
Time Stamp:	16:24:02
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$730
RAM confirmation Number	3501
Deposit Account	506053
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Application Data Sheet	UN-NP-LO-133_aia0014_ADS.pdf	146888 63478ce89192d61eeae61a304de1594689e28279	no	7
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
2		UN-NP-LO-133_Application.pdf	80050 0eb885db9db38fbda3e0dde0babaf31f47996674	yes	19
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Specification		1	14	
	Claims		15	18	
	Abstract		19	19	
Warnings:					
Information:					
3	Drawings-only black and white line drawings	UN-NP-LO-133_Figures.pdf	37192 56d8677b436ebb2536482c1df733959b2f7ae8c8	no	6
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Information:					
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Information:					
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Information:					
		Total Files Size (in bytes):	339010		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.