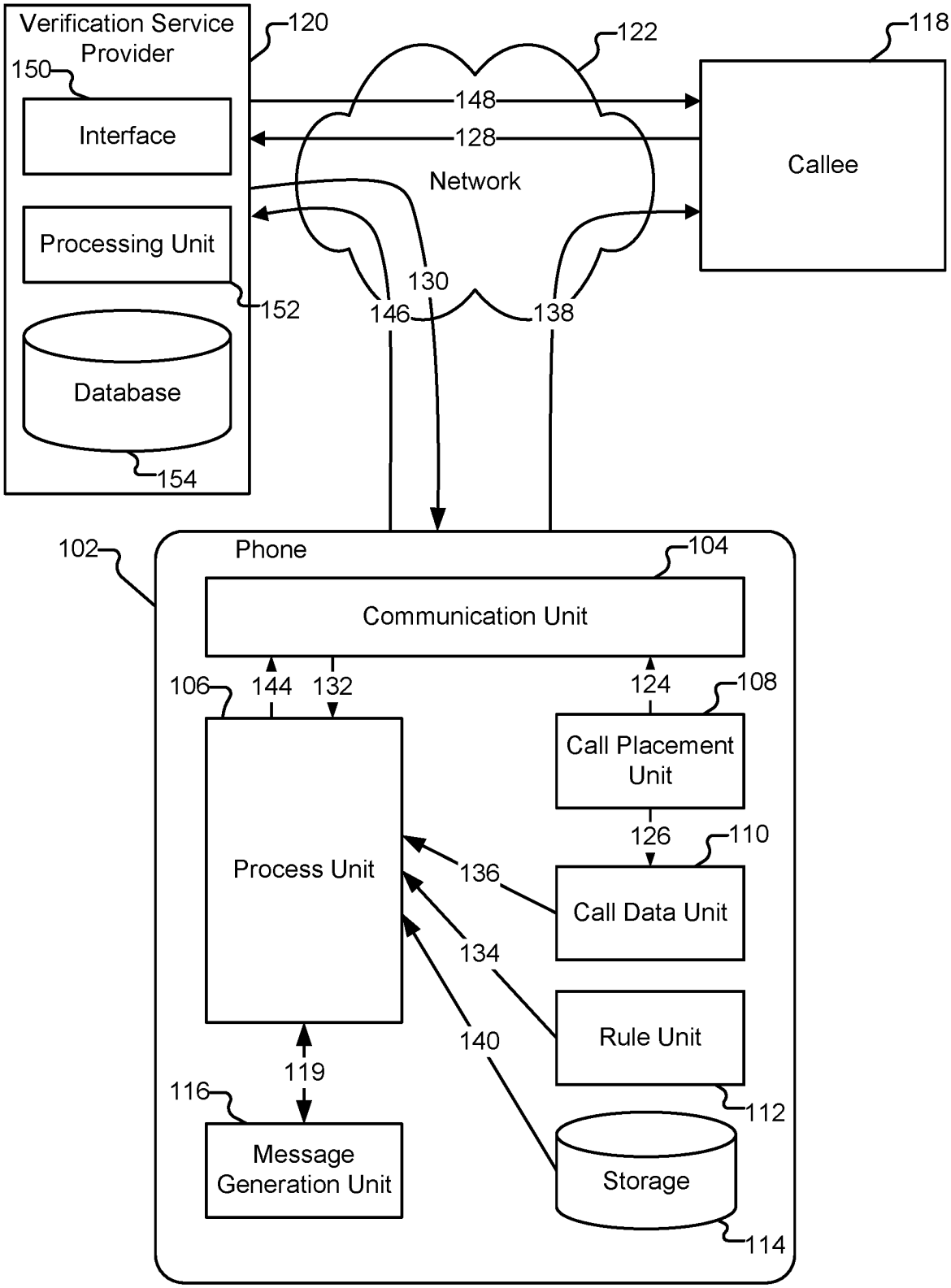
Verification Service Provider
120
150
Interface
Processing Unit
152
Database
154
122
148
128
Network
130
146
138
118
Callee
102
Phone
104
Communication Unit
106
144
132
124
108
Call Placement Unit
126
110
Process Unit
136
Call Data Unit
134
Rule Unit
140
112
119
116
Message Generation Unit
Storage
114

FIG. 1

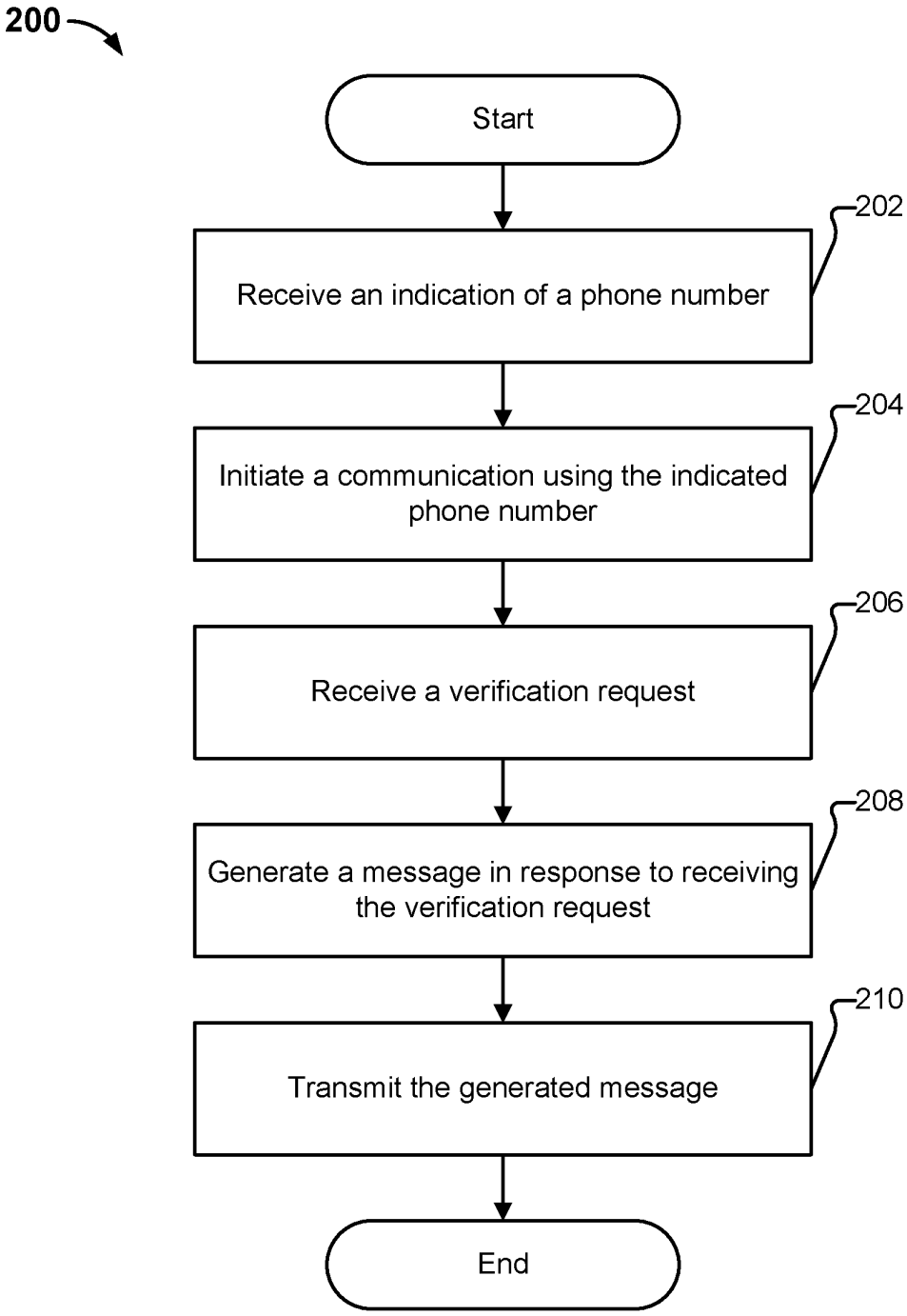
200
Start
202
Receive an indication of a phone number
204
Initiate a communication using the indicated phone number
206
Receive a verification request
208
Generate a message in response to receiving the verification request
210
Transmit the generated message
End

FIG. 2A

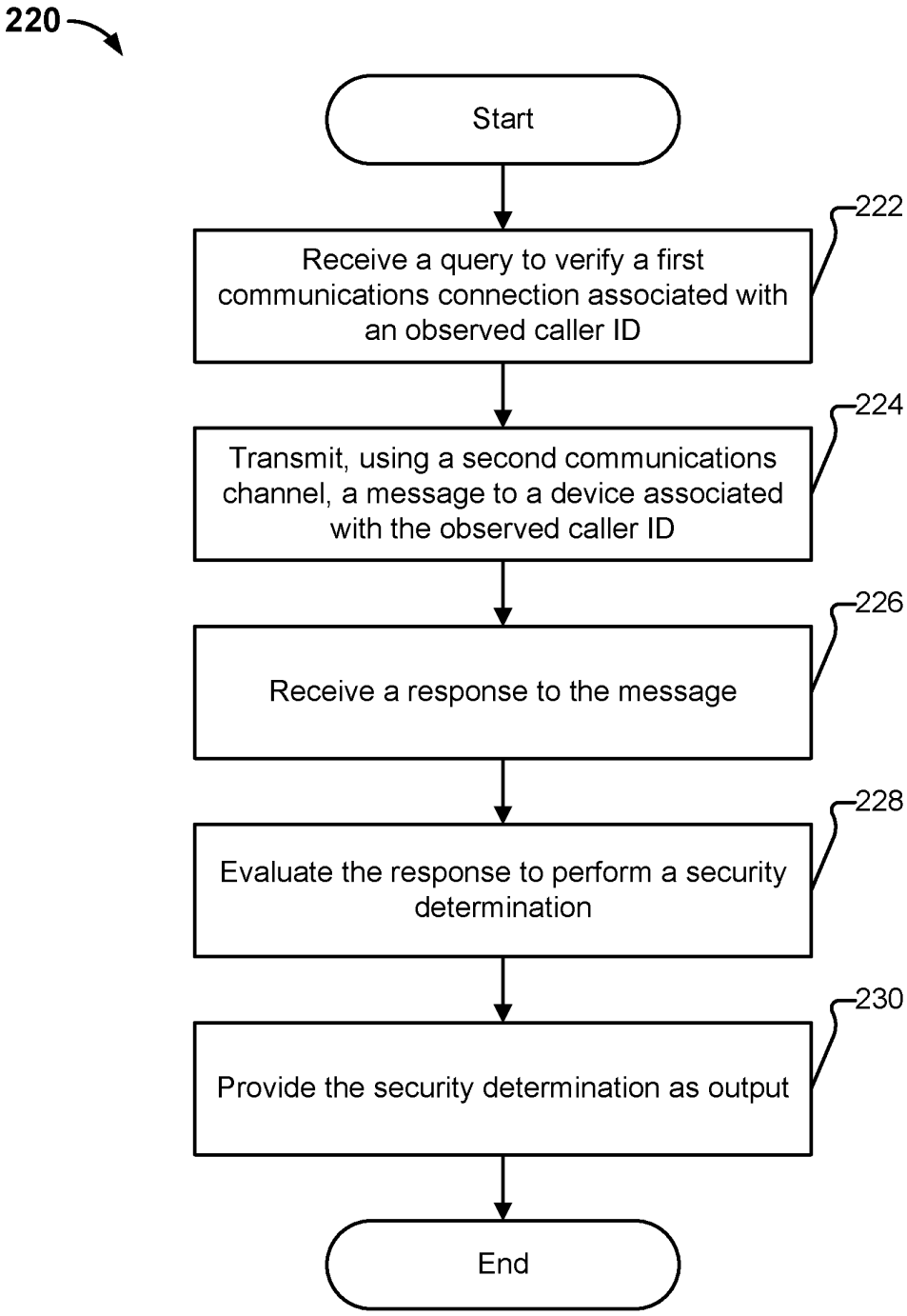
220
Start
222
Receive a query to verify a first communications connection associated with an observed caller ID
224
Transmit, using a second communications channel, a message to a device associated with the observed caller ID
226
Receive a response to the message
228
Evaluate the response to perform a security determination
230
Provide the security determination as output
End

FIG. 2B

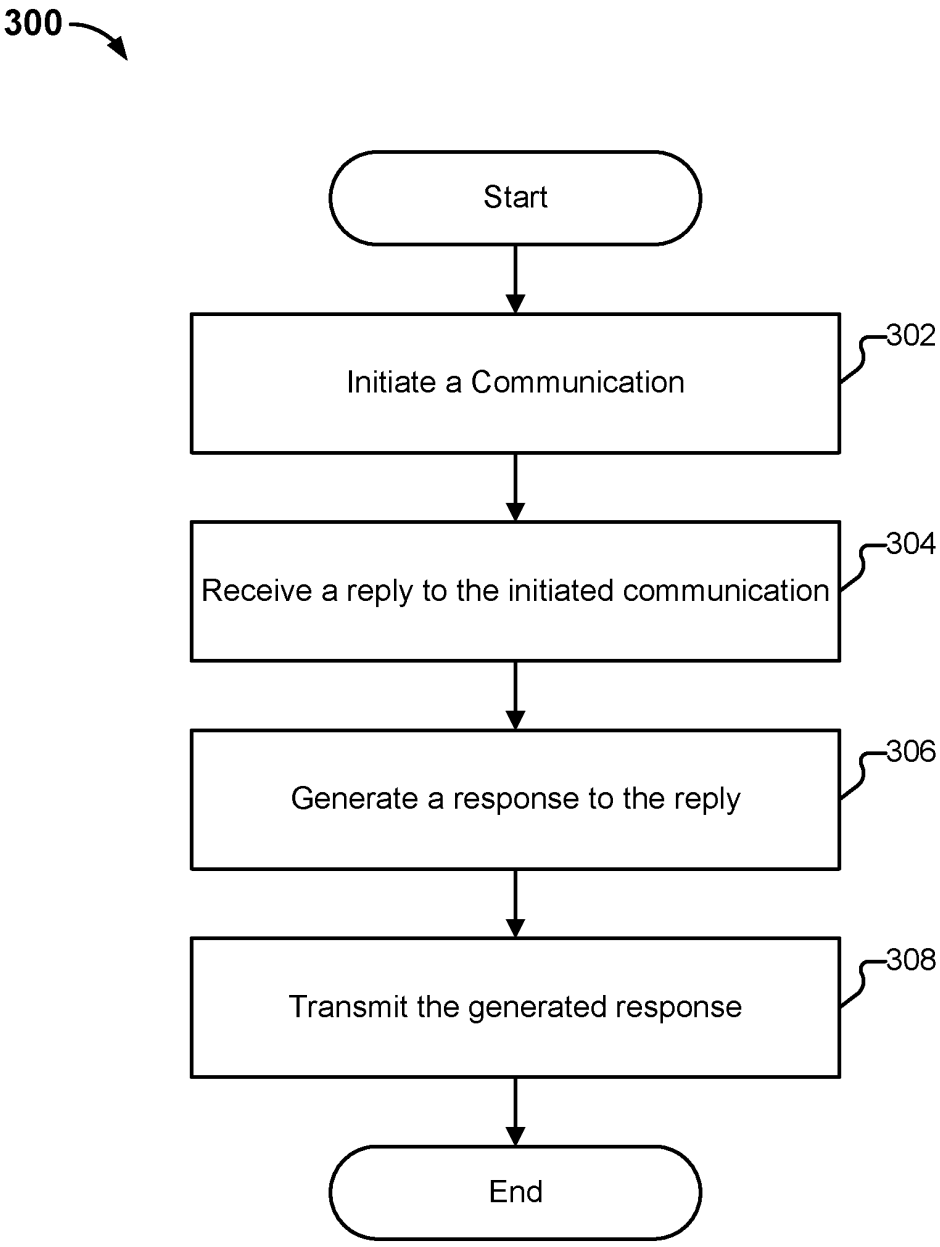
300
Start
Initiate a Communication
302
Receive a reply to the initiated communication
304
Generate a response to the reply
306
Transmit the generated response
308
End

FIG. 3A

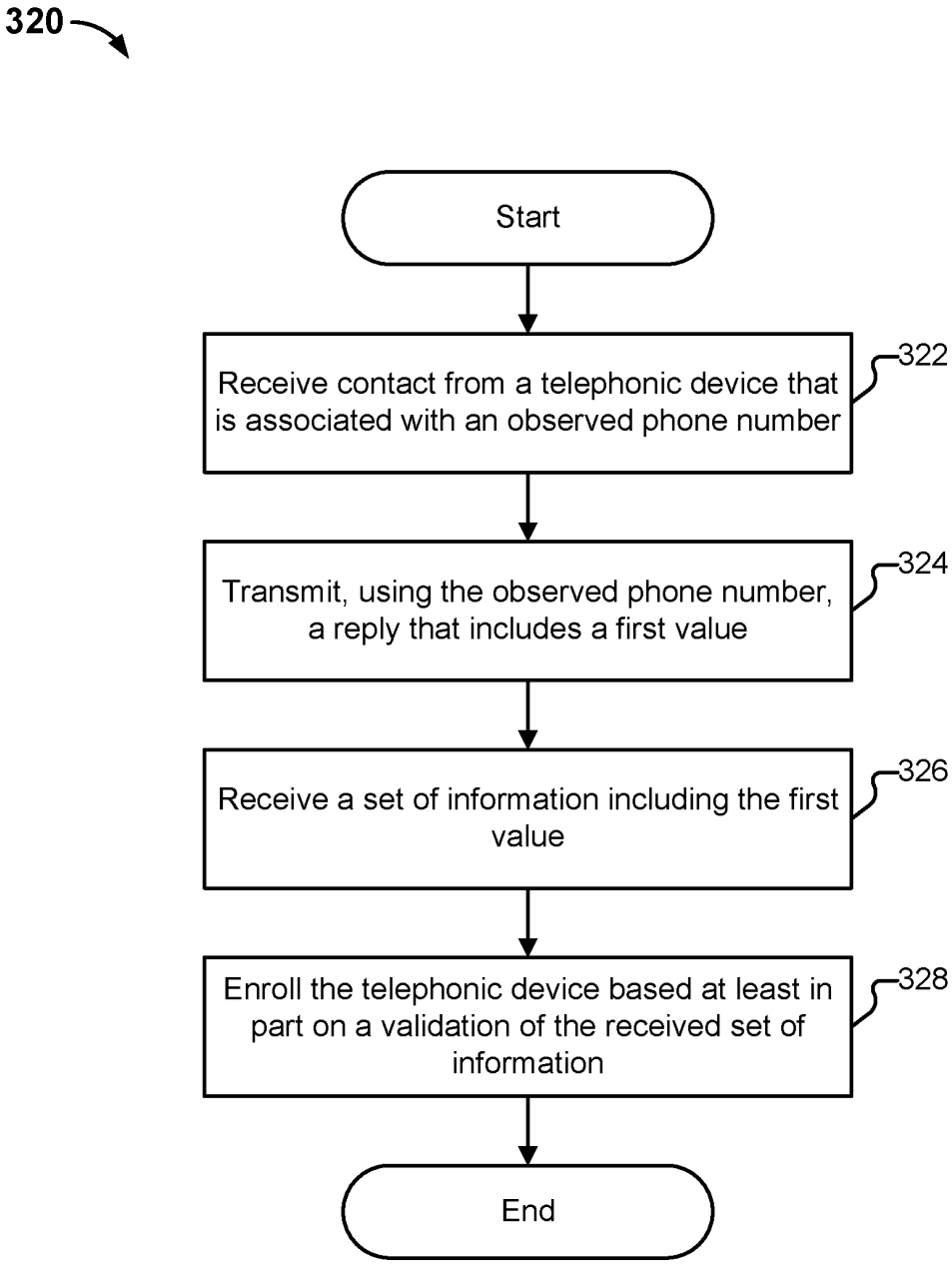
320
Start
Receive contact from a telephonic device that is associated with an observed phone number
322
Transmit, using the observed phone number, a reply that includes a first value
324
Receive a set of information including the first value
326
Enroll the telephonic device based at least in part on a validation of the received set of information
328
End

FIG. 3B

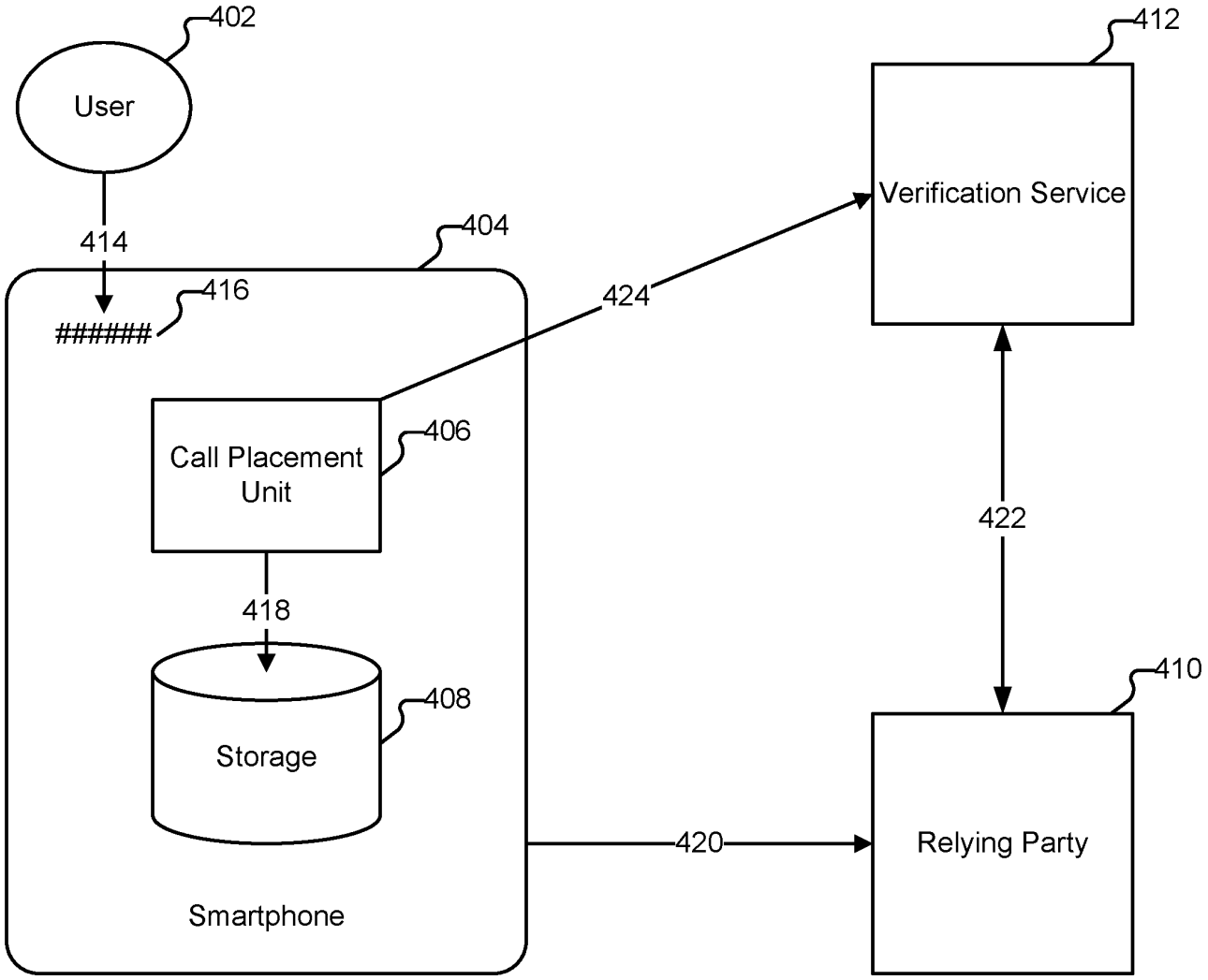

FIG. 4

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0006

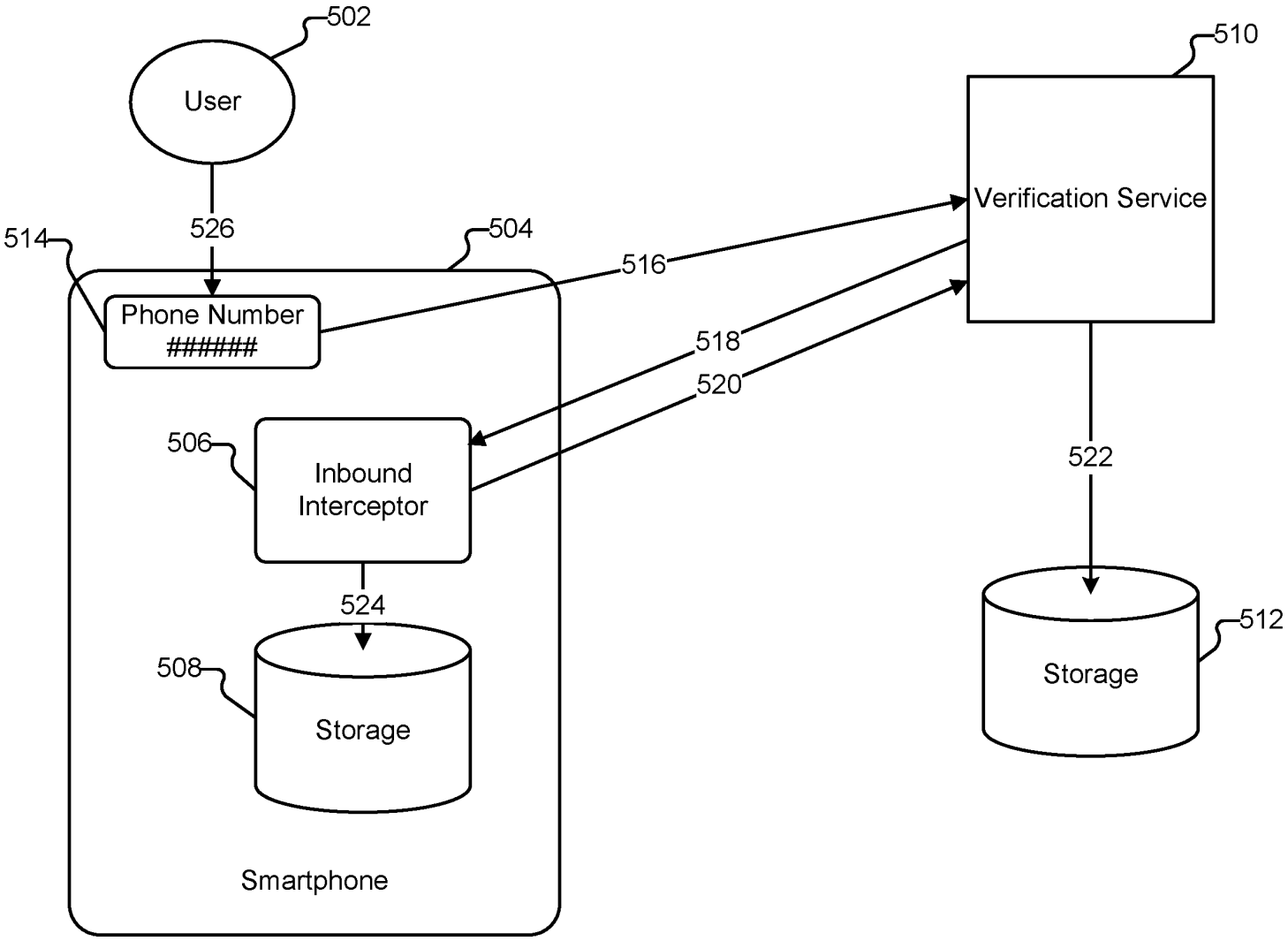

FIG. 5

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0007

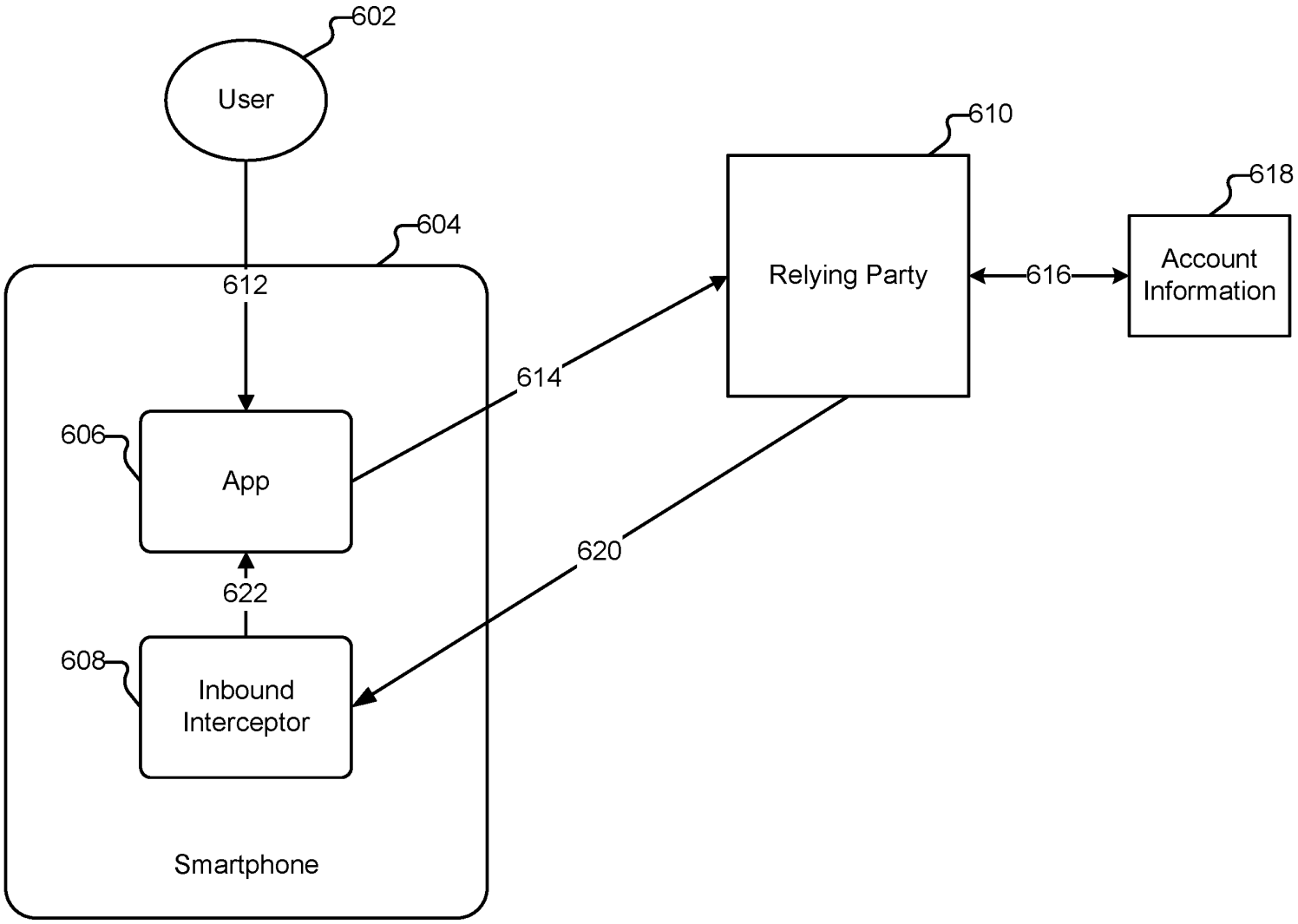

FIG. 6

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0008

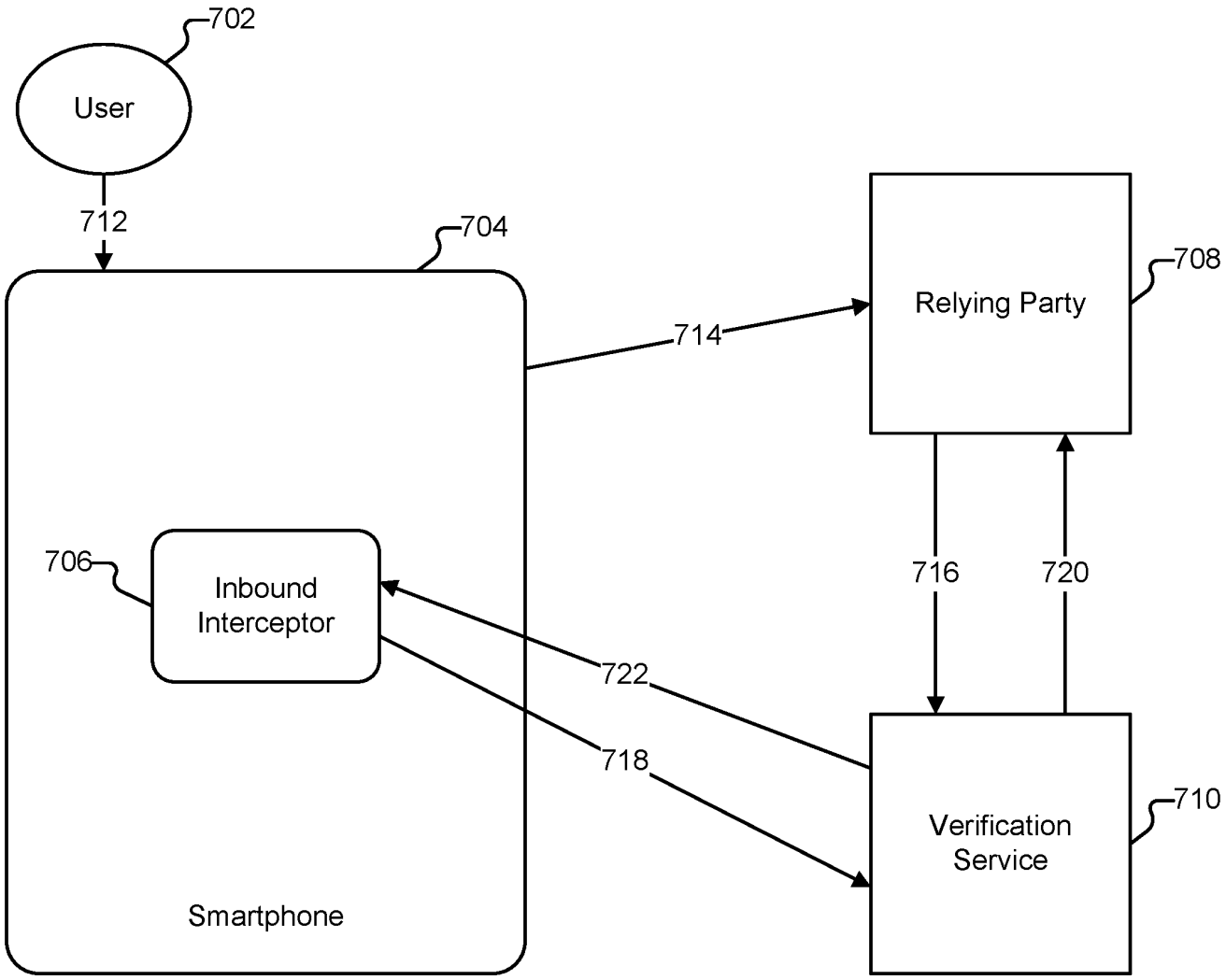

FIG. 7

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
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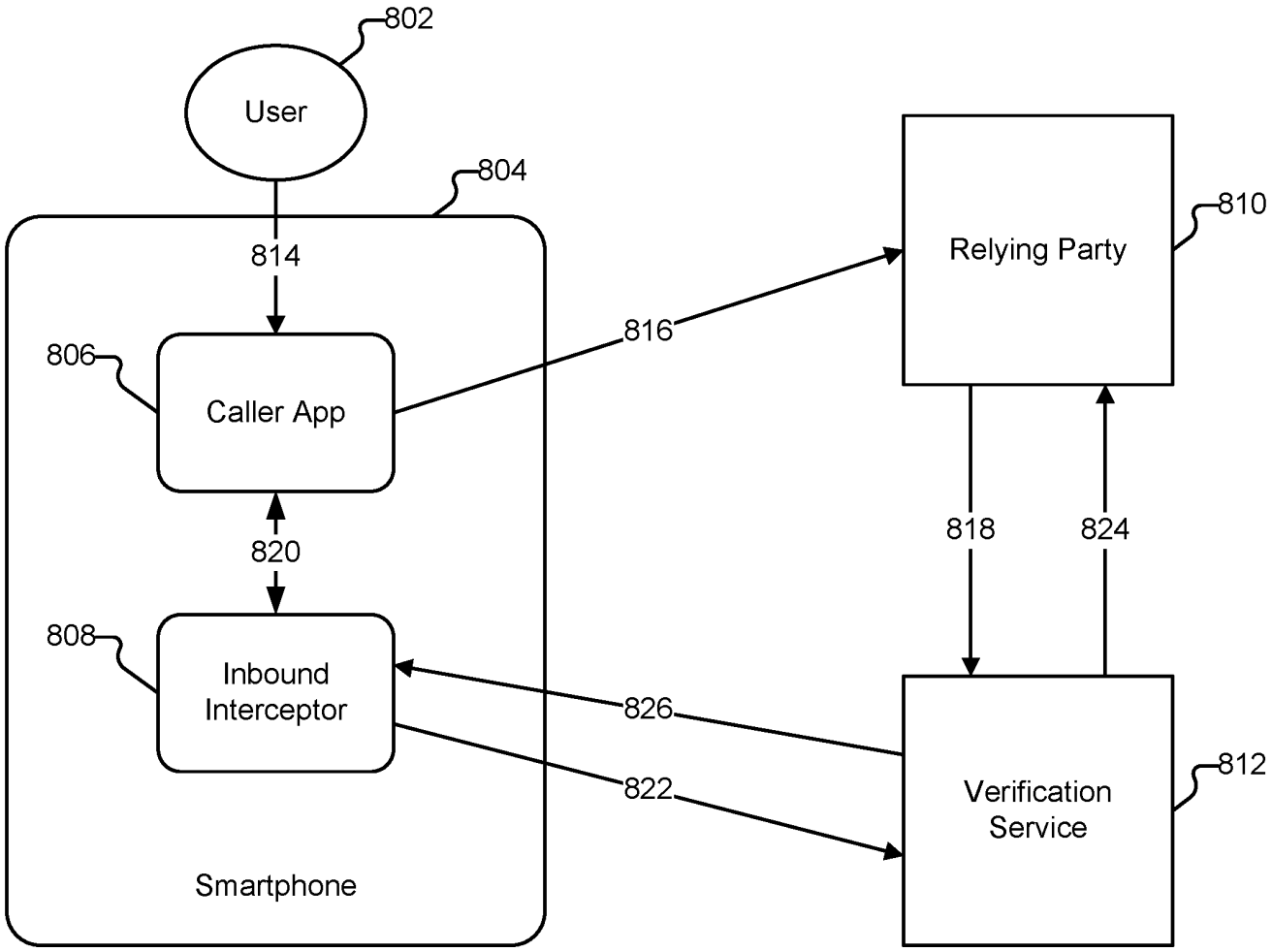

FIG. 8

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0010

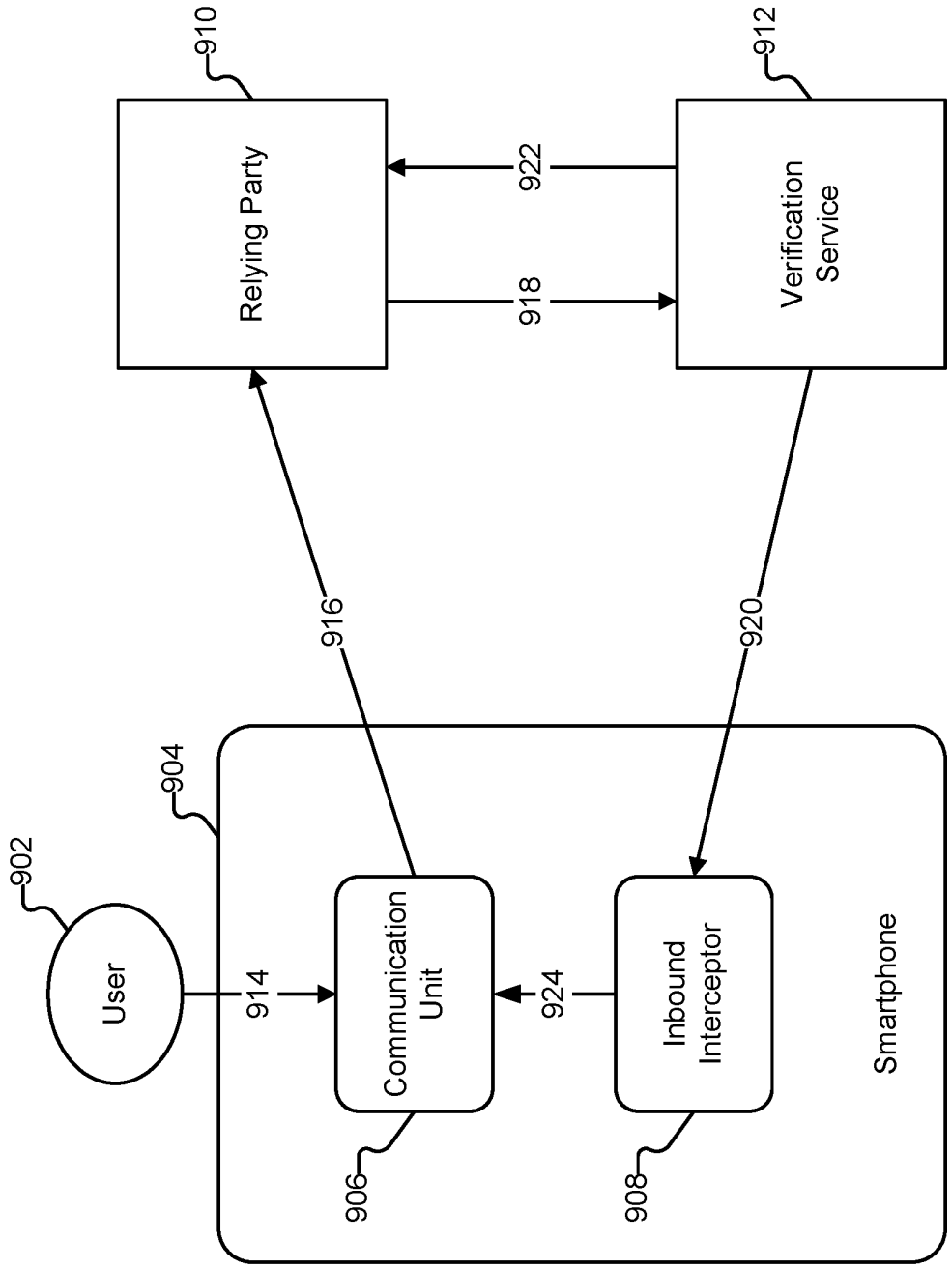
910
912
Relying Party
Verification Service
922
918
916
920
904
902
User
914
Communication Unit
924
Inbound Interceptor
Smartphone
906
908

FIG. 9

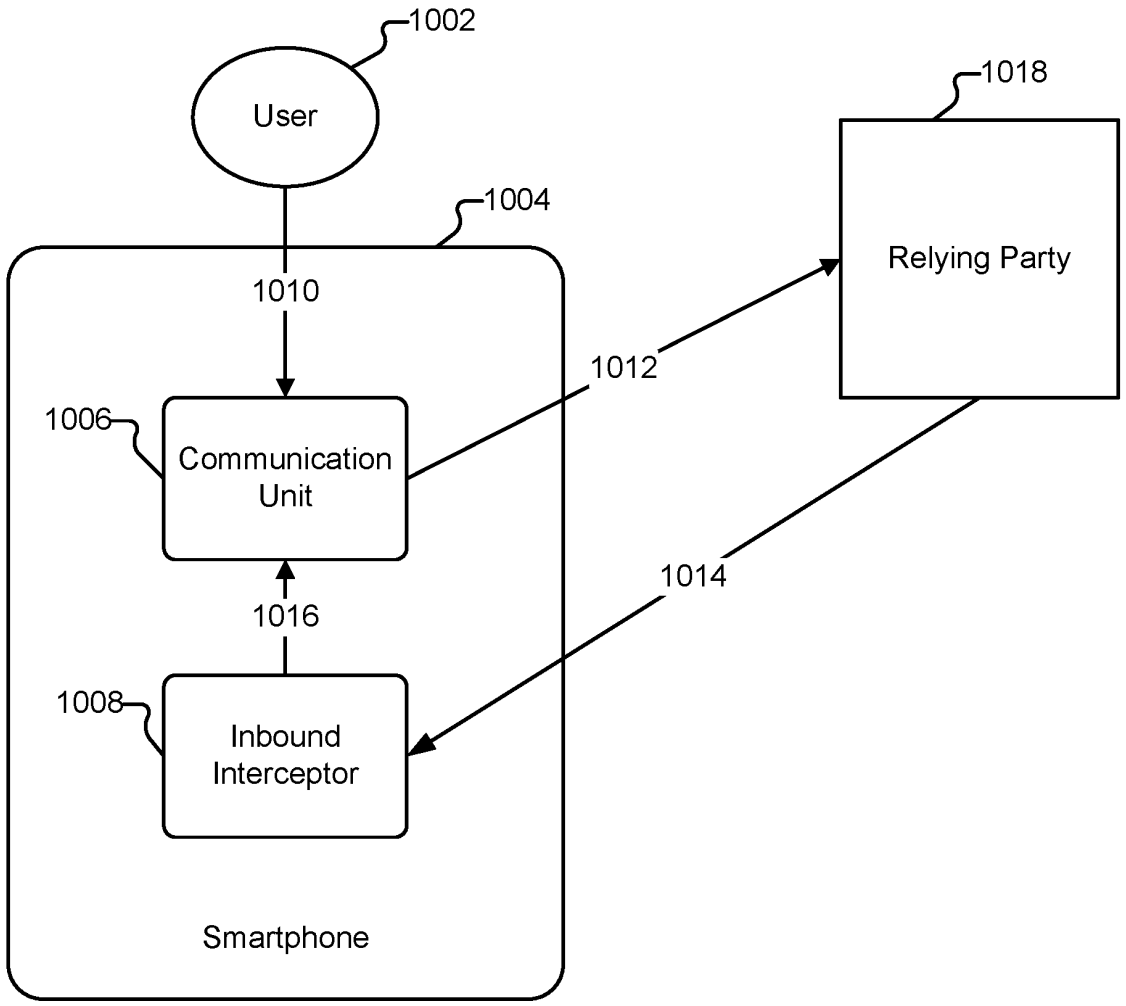

FIG. 10

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0012

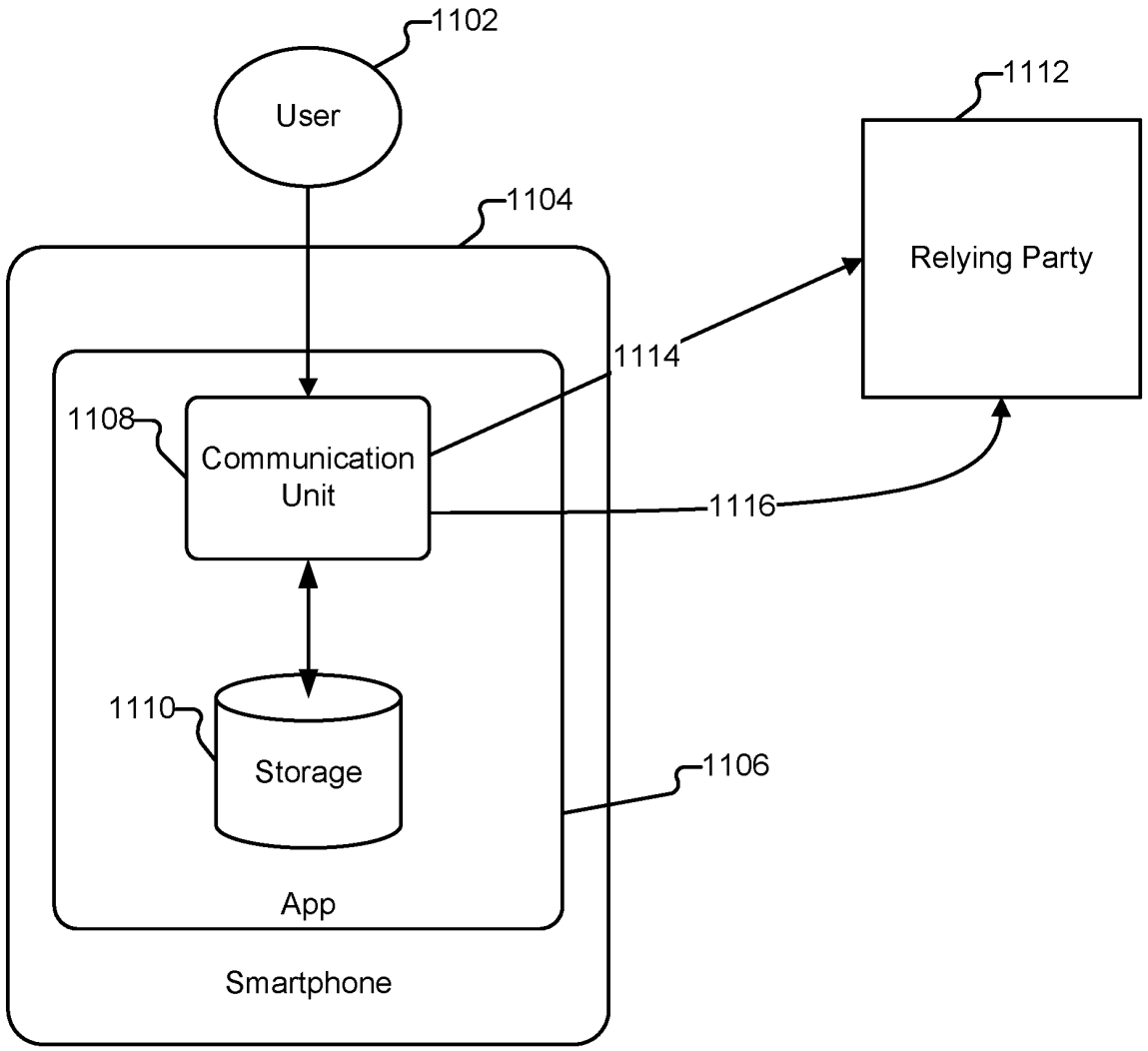

FIG. 11

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0013

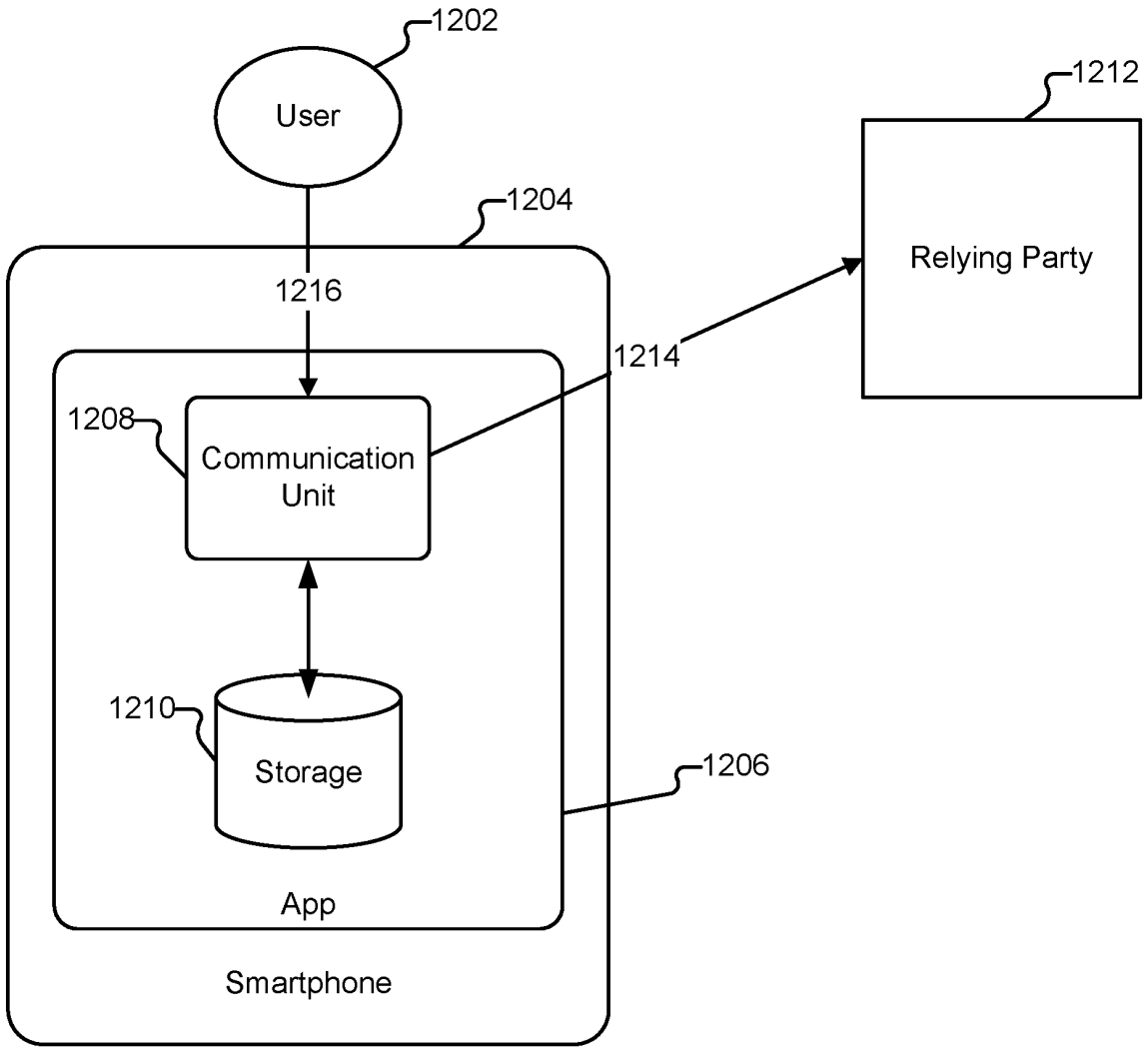

FIG. 12

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0014

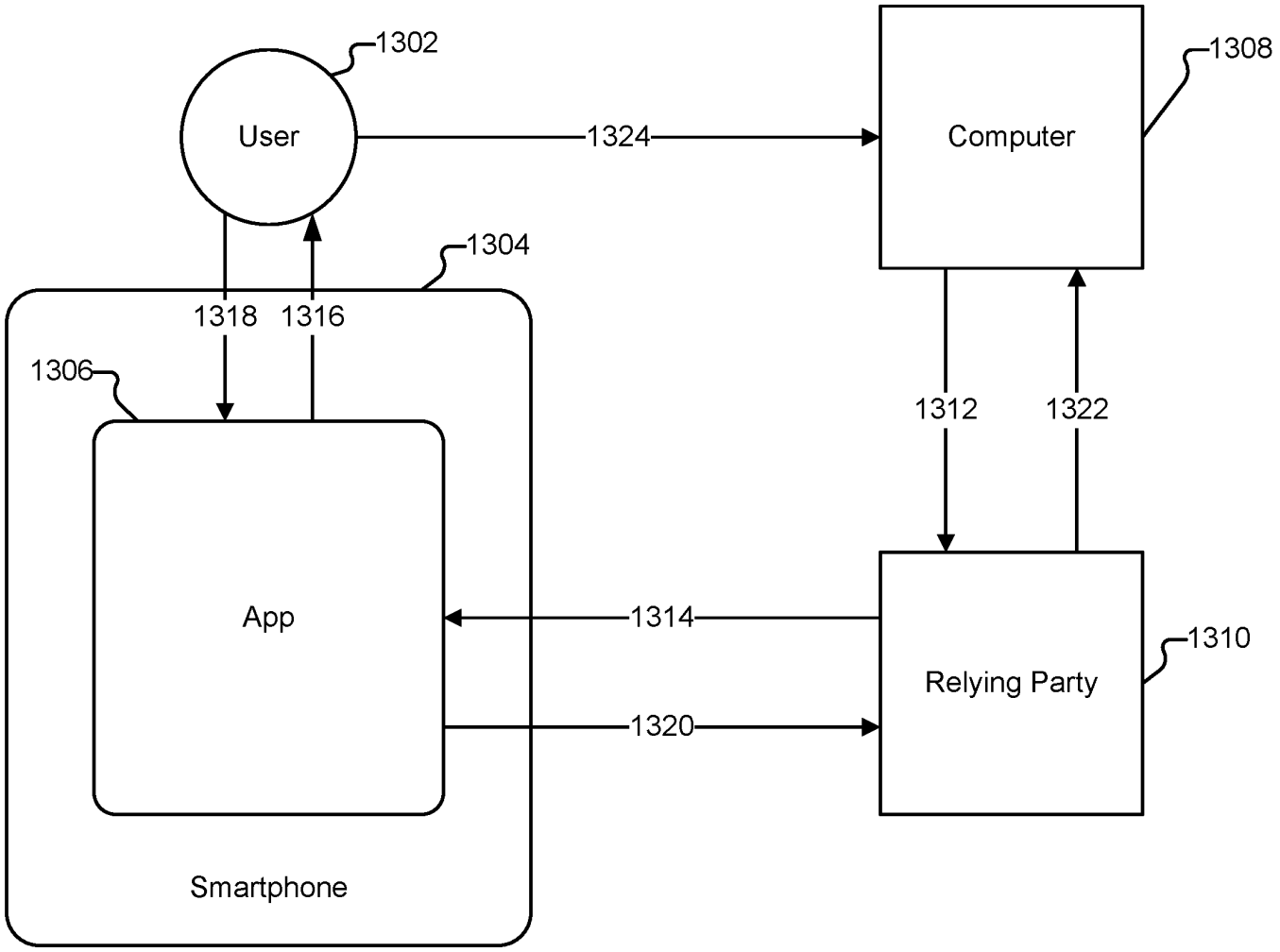

FIG. 13

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0015

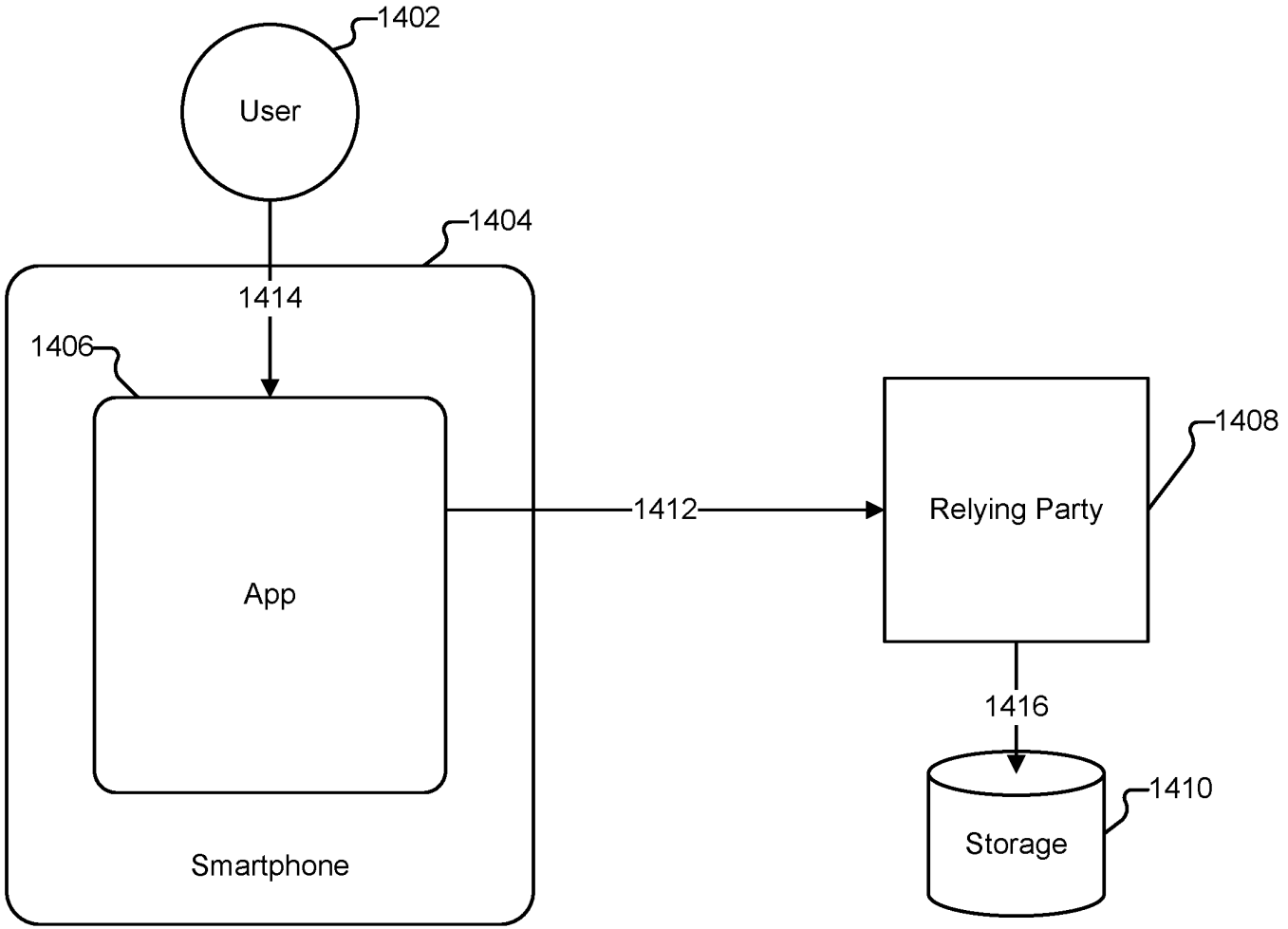

FIG. 14

EX-1002
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Electronic Acknowledgement Receipt

EFS ID:	34203679
Application Number:	16180373
International Application Number:	
Confirmation Number:	3758
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Customer Number:	21912
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Filer Authorized By:	Yeu-Ting George Cheng
Attorney Docket Number:	MJAKP016C1
Receipt Date:	05-NOV-2018
Filing Date:	
Time Stamp:	14:13:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1820
RAM confirmation Number	110618INTEFSW00000528500685
Deposit Account	500685
Authorized User	Elaine Nguyen

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Information:					
2	Oath or Declaration filed	MJAKP016C1_Executed_Dec.pdf	234781 e64be9fad857a64038c11e89545e181e7fa0d997	no	1
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3	Power of Attorney	MJAKP016C1_POA_AIA82A.pdf	169185 5fdd2d4526f624512caab09d0017e0d65666da7c	no	1
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4	Power of Attorney	MJAK_Executed_POA_AIA82B_RightQuestionLLC.pdf	387899 a756b6df61aa99188ddec71473eefbe19a844b6f	no	1
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DECLARATION
FOR ORIGINAL U.S. PATENT APPLICATION

Attorney's Docket No. MJAKP016

As a below-named inventor, I hereby declare that:

I believe that I am the original inventor (if only one name is listed below) or an original joint inventor (if plural names are listed below) of a claimed invention in the application entitled: **VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA**, the specification of which,

(check one) 1. ☐ is attached hereto.

2. ☒ was filed on November 6, 2014 as U.S. Application No. 14/535,064 and was amended on _____.

3. ☐ was filed on _____ as International PCT Application No. _____ and was amended on _____.

I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

The above-identified application was made or authorized to be made by me.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and I acknowledge that any willful false statement made in this declaration is punishable under 18 USC 1001 by fine or imprisonment of not more than five (5) years, or both.

Full name of sole or first inventor	Bjorn Markus Jakobsson	
Signature of sole or first inventor		Date: Dec 8'14

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0020

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
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	Application Number	
	Filing Date	
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	
	Examiner Name	
	Attorney Docket Number	MJAKP016C1

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	Application Number	
	Filing Date	
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	
	Examiner Name	
	Attorney Docket Number	MJAKP016C1

	1	AUTHOR UNKNOWN, SPAMjadoo: Ultimate Spam Protection, downloaded from "https://web.archive.org/web/20140512000636/http:/www.spamjadoo.com:80/esp-explained.htm" May 12, 2014.
	2	AUTHOR UNKNOWN, SpamKilling, "What is AntiSpam?", downloaded from "https://web.archive.org/web/20100411141933/http:/www.spamkilling.com:80/home_html.htm", April 11, 2010.
	3	AUTHOR UNKNOWN, SpamRestraint.com: How does it work?, downloaded from "https://web.archive.org/web/20050206071926/http://www.spamrestraint.com:80/moreinfo.html", February 6, 2005.
	4	AUTHOR UNKNOWN, Tagged Message Delivery Agent (TMDA), downloaded from "http://web.archive.org/web/20160122072207/http://www.tmda.net/", January 22, 2016.
	5	AUTHOR UNKNOWN, UseBestMail provides a mechanism for validating mail from non-UseBestMail correspondents., downloaded from "https://web.archive.org/web/20090106142235/http://www.usebestmail.com/UseBestMail/Challenge_Response.html", January 6, 2009.
	6	AUTHOR UNKNOWN, V@nquish Labs, "vqNow: How It Works", downloaded from "https://web.archive.org/web/20130215074205/http:/www.vanquish.com:80/products/products_how_it_works.php?product=vqnow", February 15, 2013.
	7	AUTHOR UNKNOWN, V@nquishLabs, How it Works: Features, downloaded from "https://web.archive.org/web/20081015072416/http://vanquish.com/features/features_how_it_works.shtml", October 15, 2008.
	8	AUTHOR UNKNOWN, What is Auto Spam Killer, downloaded from "https://web.archive.org./web/20090215025157/http://knockmail.com:80/support/descriptionask.html", February 15, 2009.
	9	AUTHOR UNKNOWN, White List Email (WLE), downloaded from "https://web.archive.org/web/20150912154811/http:/www.rfc1149.net/devel/wle.html", September 12, 2015.
	10	Bjorn Markus Jakobsson, U.S. Patent Application No. 14/487,989 entitled "DETECTING PHISHING ATTEMPTS" filed September 16, 2014.
	11	Brad Templeton, "Proper principles for Challenge/Response anti-spam systems", downloaded from "http://web.archive.org/web/2015090608593/http://www.templetons.com/brad/spam/challengeresponse.html", September 6, 2015.

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	Filing Date	
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	
	Examiner Name	
	Attorney Docket Number	MJAKP016C1

	12	Danny Sleator, "BLOWBACK: A Spam Blocking System", downlaoded from "https://web.archive.org/web/20150910031444/http://www.cs.cmu.edu/~sleator/blowback", September 10, 2015.	
	13	David A. Wheeler, "Countering Spam by Using Ham Passwords (Email Passwords), article last revised May 11, 2011; downloaded from https://web.archive.org/web/20150908003106/http:/www.dwheeler.com/essays/spam-email-password.html, captured on September 8, 2015.	
	14	David A. Wheeler, "Countering Spam with Ham-Authenticated Email and the Guarded Email Protocol", article last revised September 11, 2003; downloaded from "https://web.archive.org/web/20150915073232/http:/www.dwheeler.com/guarded-email/guarded-email.html", captured September 15, 2015.	
	15	E. Zwicky, F. Martin, E. Lear, T. Draegen, and K. Andersen. Interoper-ability Issues Between DMARC and Indirect Email Flows. Internet-Draft draft-ietf-dmarc-interoperability-18, Internet Engineering Task Force, Sept. 2016. Work in Progress.	
	16	FLEIZACH et al., "Slicing Spam with Occam's Razor", published June 10, 2007, downloaded from "https://web.archive.org/web/20140214225525/http://csetechrep.ucsd.edu/Dienst/UI/2.0/Describe/ncstrl.ucsd_cse/C2007-0893", captured February 14, 2014.	
	17	James Thornton, "Challenge/Response at the SMTP Level", downloaded from "https://web.archive.org/web/20140215111642/http://original.jamesthornton.com/writing/challenge-response-at-smtp-level.html", February 15, 2014.	
	18	Karsten M. Self, "Challenge-Response Anti-Spam Systems Considered Harmful", downloaded from "ftp://linuxmafia.com/faq/Mail/challenge-response.html", last updated December 29, 2003.	
	19	M. Jakobsson and H. Siadati. SpoofKiller: You Can Teach People How to Pay, but Not How to Pay Attention. In Proceedings of the 2012 Workshop on Socio-Technical Aspects in Security and Trust (STAST), STAST '12, pages 3-10, Washington, DC, USA, 2012. IEEE Computer Society.	
	20	Marco Paganini, Active Spam Killer, "How It Works", downloaded from "https://web.archive.org/web/20150616133020/http:/a-s-k.sourceforge.net:80/howitworks.html", June 16, 2015.	
	21	NIST. Usability of Security. http://csrc.nist.gov/security-usability/HTML/research.html.	
	22	Peter Simons, "mapSoN 3.x User's Manual", downloaded from "https://web.archive.org/web/20140626054320/http:/mapson.sourceforge.net/", June 26, 2014.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	
	Examiner Name	
	Attorney Docket Number	MJAKP016C1

	23	R. Dhamija and J. D. Tygar. The Battle Against Phishing: Dynamic Security Skins. In Proceedings of the 2005 Symposium on Usable Privacy and Security, SOUPS '05, New York, NY, USA, 2005. ACM.
	24	Ronald L. Rivest, "RSF Quickstart Guide", September 1, 2004.
	25	S. L. Garfinkel and R. C. Miller. Johnny 2: A User Test of Key Continuity Management with S/MIME and Outlook Express. In Proceedings of the 2005 Symposium on Usable Privacy and Security, SOUPS '05, New York, NY, USA, 2005. ACM.

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	Application Number	
	Filing Date	
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	
	Examiner Name	
	Attorney Docket Number	MJAKP016C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☒ See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2018-11-02
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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 the Freedom of Information Act requires disclosure of these record s.

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 inspections 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.

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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MJAKP016C1
	Application Number	
Title of Invention	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA	

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
	Bjorn	Markus	Jakobsson	

Residence Information (Select One) ● US Residency Non US Residency Active US Military Service

City	Portola Valley	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	118 Ramona Rd		
Address 2			
City	Portola Valley	State/Province	CA
Postal Code	94028	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).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	21912		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA		
Attorney Docket Number	MJAKP016C1	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	16	Suggested Figure for Publication (if any)	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MJAKP016C1
	Application Number	
Title of Invention	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA	

Filing By Reference:

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)

☒ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	21912		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	14535064	2014-11-06

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MJAKP016C1
	Application Number	
Title of Invention	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA	

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
14535064	Claims benefit of provisional	61901322	2013-11-07

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MJAKP016C1
	Application Number	
Title of Invention	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MJAKP016C1
	Application Number	
Title of Invention	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 — Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

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. ☒

Organization Name	RightQuestion, LLC		
Mailing Address Information For Applicant:			
Address 1	118 Ramona Rd		
Address 2			
City	Portola Valley	**State/Province**	CA
Country	US	Postal Code	94028
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MJAKP016C1
	Application Number	
Title of Invention	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Yeu-Ting George Cheng/			Date (YYYY-MM-DD)	2018-11-02
First Name	Yeu-Ting George	Last Name	Cheng	Registration Number	69408

Additional Signature may be generated within this form by selecting the Add button. Add

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MJAKP016C1
	Application Number	
Title of Invention	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA	

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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 the Freedom of Information Act requires disclosure of these records.

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 CooperationTreaty.

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 inspections 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.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Attorney Docket Number:	MJAKP016C1

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPLICATION FILING	1011	1	300	300
UTILITY SEARCH FEE	1111	1	660	660
UTILITY EXAMINATION FEE	1311	1	760	760
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	1202	1	100	100
Miscellaneous-Filing:				
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1820**

CLAIMS

1. A system, comprising:

a verification service provider, configured to, using one or more processors:

enroll a first device with the verification service provider, wherein enrolling the first device includes associating, by the verification service provider, the first device with device information comprising at least one of a software identifier, an embedded hardware identifier, and a device fingerprint, wherein the device fingerprint is generated based at least in part on a set of configuration information associated with the first device;

store, at the verification service provider, the device information associated with the first device;

obtain, at the verification service provider, information transmitted by a second device associated with a communications connection;

perform, at the verification service provider, a security determination at least in part by determining whether the obtained information transmitted by the second device matches at least a portion of the stored device information associated with the enrolled first device; and

based at least in part on the security determination, select an action comprising at least one of blocking the communication, requesting additional authentication, and permitting the communication.

2. The system of claim 1, wherein the information transmitted by the second device is obtained via a backchannel that is different from the communications connection.

3. The system of claim 1, wherein based at least in part on the security determination, the verification service provider is further configured to convey an assurance to a recipient associated with the communications connection.

4. The system of claim 1, wherein the communications connection is associated with at least one of email, SMS, instant message, and a phone call.

5. The system of claim 1, wherein the first device comprises at least one of a smartphone, a tablet, a PC, a phablet, and a wearable device.

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AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0037

6. The system of claim 1, wherein enrolling the first device is based at least in part on at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number.

7. The system of claim 1, wherein the additional authentication comprises at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number.

8. A method, comprising:

enrolling a first device with a verification service provider, wherein enrolling the first device includes associating, by the verification service provider, the first device with device information comprising at least one of a software identifier, an embedded hardware identifier, and a device fingerprint, wherein the device fingerprint is generated based at least in part on a set of configuration information associated with the first device;

storing, at the verification service provider, the device information associated with the first device;

obtaining, at the verification service provider, information transmitted by a second device associated with a communications connection;

performing, at the verification service provider, a security determination at least in part by determining whether the obtained information transmitted by the second device matches at least a portion of the stored device information associated with the enrolled first device; and

based at least in part on the security determination, selecting, at the verification service provider, an action comprising at least one of blocking the communication, requesting additional authentication, and permitting the communication.

9. The method of claim 8, wherein the information transmitted by the second device is obtained via a backchannel that is different from the communications connection.

10. The method of claim 8, wherein based at least in part on the security determination, the verification service provider is further configured to convey an assurance to a recipient associated with the communications connection.

11. The method of claim 8, wherein the communications connection is associated with at

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0038

least one of email, SMS, instant message, and a phone call.

12. The method of claim 8, wherein the first device comprises at least one of a smartphone, a tablet, a PC, a phablet, and a wearable device.

13. The method of claim 8, wherein enrolling the first device is based at least in part on at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number.

14. The method of claim 8, wherein the additional authentication comprises at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number.

15. A computer program product embodied in a tangible and non-transitory computer readable storage medium and comprising computer instructions for:

enrolling a first device with a verification service provider, wherein enrolling the first device includes associating, by the verification service provider, the first device with device information comprising at least one of a software identifier, an embedded hardware identifier, and a device fingerprint, wherein the device fingerprint is generated based at least in part on a set of configuration information associated with the first device;

storing, at the verification service provider, the device information associated with the first device;

obtaining, at the verification service provider, information transmitted by a second device associated with a communications connection;

performing, at the verification service provider, a security determination at least in part by determining whether the obtained information transmitted by the second device matches at least a portion of the stored device information associated with the enrolled first device; and

based at least in part on the security determination, selecting, at the verification service provider, an action comprising at least one of blocking the communication, requesting additional authentication, and permitting the communication.

16. The computer program product of claim 15, wherein the information transmitted by the second device is obtained via a backchannel that is different from the communications

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connection.

17. The computer program product of claim 15, wherein based at least in part on the security determination, the verification service provider is further configured to convey an assurance to a recipient associated with the communications connection.

18. The computer program product of claim 15, wherein the communications connection is associated with at least one of email, SMS, instant message, and a phone call.

19. The computer program product of claim 15, wherein the first device comprises at least one of a smartphone, a tablet, a PC, a phablet, and a wearable device.

20. The computer program product of claim 15, wherein enrolling the first device is based at least in part on at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number.

21. The computer program product of claim 15, wherein the additional authentication comprises at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number.

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ABSTRACT OF THE DISCLOSURE

Verifying caller identification information is described. A query to verify a first communications connection associated with an observed caller ID is received. Using a second communications channel, a message to a device associated with the observed caller ID is transmitted. A response to the message is received. The message is evaluated to perform a security determination. The security determination is provided as output.

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APPLICATION FOR UNITED STATES PATENT

VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA

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VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA

CROSS REFERENCE TO OTHER APPLICATIONS

[0001] This application is a continuation of co-pending U.S. Patent Application No. 14/535,064, entitled VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA filed November 06, 2014 which is incorporated herein by reference for all purposes, which claims priority to U.S. Provisional Application No. 61/901,322, entitled VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA filed November 07, 2013 which is incorporated herein by reference for all purposes.

BACKGROUND OF THE INVENTION

[0002] Determining the trustworthiness of information used to identify entities involved in communications such as text messages (e.g., SMS), email, calls, and instant messaging can be challenging. For example, information such as Automated Number Identification (ANI) information can be spoofed by unscrupulous entities, making it difficult for caller identity information to be trusted by customer support centers. As a result, organizations face high fraud risks, or employ resource-intensive measures in order to identify callers and senders of messages.

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BRIEF DESCRIPTION OF THE DRAWINGS

[0003] Various embodiments of the invention are disclosed in the following detailed description and the accompanying drawings.

[0004] Figure 1 illustrates an embodiment of an environment in which verification of caller identification information is performed.

[0005] Figure 2A illustrates an embodiment of a process for verifying caller identification information.

[0006] Figure 2B illustrates an embodiment of a process for verification of caller identification information.

[0007] Figure 3A illustrates an embodiment of a process for enrolling a device.

[0008] Figure 3B illustrates an embodiment of a process for enrolling a device.

[0009] Figure 4 illustrates an example of an environment in which verification of caller identification information is performed.

[0010] Figure 5 illustrates an example of an environment in which enrollment of a device is performed.

[0011] Figure 6 illustrates an example of an environment in which verification of caller identification information is performed.

[0012] Figure 7 illustrates an example of an environment in which verification of caller identification information is performed.

[0013] Figure 8 illustrates an example of an environment in which verification of caller identification information is performed.

[0014] Figure 9 illustrates an example of an environment in which verification of caller identification information is performed.

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[0015] Figure 10 illustrates an example of an environment in which verification of caller identification information is performed.

[0016] Figure 11 illustrates an example of an environment in which verification of caller identification information is performed.

[0017] Figure 12 illustrates an example of an environment in which verification of caller identification information is performed.

[0018] Figure 13 illustrates an example of an environment in which verification of caller identification information is performed.

[0019] Figure 14 illustrates an example of an environment in which verification of caller identification information is performed.

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DETAILED DESCRIPTION

[0020] The invention can be implemented in numerous ways, including as a process; an apparatus; a system; a composition of matter; a computer program product embodied on a computer readable storage medium; and/or a processor, such as a processor configured to execute instructions stored on and/or provided by a memory coupled to the processor. In this specification, these implementations, or any other form that the invention may take, may be referred to as techniques. In general, the order of the steps of disclosed processes may be altered within the scope of the invention. Unless stated otherwise, a component such as a processor or a memory described as being configured to perform a task may be implemented as a general component that is temporarily configured to perform the task at a given time or a specific component that is manufactured to perform the task. As used herein, the term 'processor' refers to one or more devices, circuits, and/or processing cores configured to process data, such as computer program instructions.

[0021] A detailed description of one or more embodiments of the invention is provided below along with accompanying figures that illustrate the principles of the invention. The invention is described in connection with such embodiments, but the invention is not limited to any embodiment. The scope of the invention is limited only by the claims and the invention encompasses numerous alternatives, modifications and equivalents. Numerous specific details are set forth in the following description in order to provide a thorough understanding of the invention. These details are provided for the purpose of example and the invention may be practiced according to the claims without some or all of these specific details. For the purpose of clarity, technical material that is known in the technical fields related to the invention has not been described in detail so that the invention is not unnecessarily obscured.

[0022] Described herein are techniques for ascertaining the identity of a device initiating a communication. Using the techniques described herein, potential attempts at spoofing of caller ID or automatic number identification (ANI) data (or any other type of caller identification) can be detected. As will be described in more detail below, example techniques disclosed herein include a client-side (e.g., end-user phone-side) agent that sends confirmation information to verification entities as a result of detecting outgoing communication or being prompted to

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validate communication session information. The transmitted information is validated by a verifying entity using information relating to the session and to the client device, and a security determination is made. Based on the security determination, a relying party, such as a callee or a vendor associated with the callee, makes a policy-based decision to determine the most favorable action, for example, using a risk based assessment.

[0023] ENVIRONMENT

[0024] Figure 1 illustrates an embodiment of an environment in which verification of caller identification information is performed. In the example shown, client device 102 is a device with telephonic capabilities that is used, by a user, to contact callee 118 (e.g., a bank). When contacting callee 118, automatic number identification (ANI) data, such as caller id, for the calling device 102 is presented to the callee. In this example, verification service provider 120 is requested by the callee to verify the automatic number identification data of device 102, for example, to make a security determination as to whether the ANI data is being spoofed.

[0025] Device 102 includes a call placement unit 108 that is used to initiate, at 124, a phone call or an SMS over network 122 to callee 118. Call placement unit 108 is configured to store, at 126, call data in call data unit 110.

[0026] In response to being contacted by device 102, callee 118 sends a request (128) for verification of the call (e.g., verification of ANI data indicated by the call) to verification service provider 120. Verification service provider 120 is configured to determine whether callee 118 is permitted to make this request. In this example, verification service provider 120 determines that callee 118 is permitted to make the request for verification, and in response, verification service provider 120 transmits a request 130 to telephonic device 102.

[0027] The request 130 made by the verification service provider to device 102 is received by communication unit 104 of device 102. In the example shown, an associated request is sent at 132 to process unit 106, which is configured to determine whether verification service provider 120 is permitted to make request 130. In this example, it is determined whether the verification service provider is permitted to make request 130 by using a rule obtained, at 134, from rule unit 112. If verification service provider 120 is determined to be permitted to make the

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request 130 to device 102, then process unit 106 obtains, at 136, call data related to the associated call 138. Process unit 106 can also optionally retrieve at 140 a secret key from storage 114.

[0028] In the example shown, process unit 106 interacts at 119 with message generation unit 116, which is configured to generate a message that is sent at 144 to communication unit 104, and then sent at 146 to verification service provider 120.

[0029] In this example, verification service provider 120 is configured to evaluate the message received from device 102. Based on the evaluation, the verification service provider is configured to make a security determination, which is then communicated, at 148, to callee 118, or any other appropriate entity associated with callee 118. Based on the security determination received from the verification service provider at 148, callee 118 makes a security decision.

[0030] In various embodiments, the calling device, callee, and verification service provider communicate with each other over one or more communications channels (represented herein as a single network cloud 122), such as a telephonic network, cellular network, cellular data network (e.g., 3G/4G), the Internet, Wi-Fi, Bluetooth, audio, SMS, phone call, RDMA, interprocess communication within the same system, or any other appropriate communication channel/network.

[0031] In the example shown, verification service provider 120 includes interface 150, processing unit 152, and database 154. In some embodiments, interface 150 is used to communicate information (e.g., over network 122) with various entities, such as callee 118 and telephonic device 102. For example, the communications can include transmitting requests for verification, receiving responses to verification messages, or any other appropriate communications via the interface. In some embodiments, processing unit 152 is configured to perform verification processing. For example, verification processing can include generating messages, processing responses, performing security determinations, etc. In some embodiments, database 154 is a data store configured to store information associated with performing verification. For example, as will be described in more detail below, in some embodiments, the verification service provider uses the data store to store such information as user records, device records, enrollment information, or any other appropriate information.

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[0032] Verification service provider 120 is illustrated as a single logical device in Figure 1. In some embodiments, verification service provider 120 comprises standard commercially available server hardware (e.g., a multi-core processor, 4+ Gigabytes of RAM, and one or more Gigabit network interface adapters) and runs typical server-class operating systems (e.g., Linux), and also runs Apache HTTP Server software. Verification service provider 120 can also be implemented using a scalable, elastic architecture and may comprise several distributed components, including components provided by one or more third parties. Further, when verification service provider 120 is referred to herein as performing a task, such as storing data or processing data, it is to be understood that a sub-component or multiple sub-components of verification service provider 120 (whether individually or in cooperation with third party components) may cooperate to perform that task.

[0033] In some embodiments, the callee incorporates at least some of the features described herein as being provided by verification service provider 120, and a separate verification service provider 120 (or at least a portion thereof) is omitted, as applicable.

[0034] VALIDATING CALLER IDENTIFICATION INFORMATION

[0035] Described below are further details regarding validation of caller ID or ANI data.

[0036] In the above example of Figure 1, performing validation of caller ID or ANI data includes a verification service provider sending a message to the phone number that is observed from the caller ID or ANI data. In some embodiments, a backchannel is used for communication of a message between a verification service provider and a phone or other end-user device. The verification service provider is prompted to initiate communication with the phone at the request of the callee entity contacted by the phone (e.g., a service provider such as a bank or other entity) that the user of the phone is calling using the phone. In response to the request by the callee (also referred to herein as a "relying party" that relies on the verification services of the verification service provider), the verification service provider then transmits the message. In some embodiments, the message includes a component that is difficult (if not impossible) to predict by a potential attacker, such as a serial number, a counter, a pseudo-random or random number, a number specific to the session or the phone, or any other appropriate component value. In various embodiments, the back channel uses one or more communication technologies,

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such as an Internet data channel, a proprietary network with a WiFi or Bluetooth endpoint communicating with the phone, short message service (SMS), or any other appropriate back channel. A component on the phone is configured to intercept or receive the message and initiate a response to the verification service provider, the callee, or a party associated with one of these entities. In some embodiments, the response makes reference to at least one part of the message. Further, in some embodiments, the message contains indications dictating the manner of responding, including to what entity, what communication channel, and what the formatting of the response should be. The verification service provider transmits at least one message over at least one communication channel to the phone as a result of the request from the service provider. In one embodiment, multiple effectively simultaneous messages are transmitted, for example, using a data channel over the Internet as well as using SMS.

[0037] In some embodiments, the message is different for different channels. For example, the messages sent over the different channels can have different non-predictable components. The verification service provider stores a state associated with each session, where this state is associated with the messages that are generated and sent. This allows later verification of the responses. In other embodiments, the verification service provider stores a secret value that allows verification of responses without having to access a session-specific state. Depending on the connectivity of the phone at the time of the transmission of the message, one of the messages may arrive before another. The different messages may correspond to different modes of creating the response, which, in some embodiments, is either indicated as part of the message or is implicitly conveyed to the phone. In one example embodiment, a message that is received using one channel, such as SMS, is always responded to using the same channel, since there is evidence that this channel is available. Alternatively, in other embodiments, the phone generates multiple responses utilizing different communication channels, using each one of these channels to transmit a response, where each such response corresponds to the message. In one embodiment, the response on the second channel will contain information about the call on the first channel, including one or more of the phone number, call start time, and call end time.

[0038] In one embodiment, the verification service provider is the recipient of the response. As the response is received, it is verified whether the response corresponds to the

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message. If it is verified that the response corresponds to the message, then a positive security determination is made. If an invalid response is received, or no response at all is received within some threshold amount of time, then a negative security determination is made. The verification service provider generates a variety of different positive security determinations based at least in part on the channels used for transmitting the message from the verification service provider to the phone. If SMS is used, for example, then the generation and transmission of an associated response is evidence of the phone having received the message, which in turn is evidence of the phone being associated with the phone number used for the transmission of the SMS. In some embodiments, the verification service provider also generates a variety of positive security determinations based on a state associated with the phone that is used to generate the response. For example, if the process running on the phone that generates the response uses a number that is effectively unique to the phone and stored in memory accessible by the phone, in order to create the response, then the response is an indication of the message having reached the phone and the response being generated by the phone. In some embodiments, the effectively unique number is also stored by the recipient of the response or a unit associated with the recipient, and is used to validate the response to verify that it corresponds to at least one of the message and the state associated with the phone.

[0039] In one embodiment, portions of the verification process are performed as part of an application (also referred to herein as an "app") that is installed on an end-user phone device. In some embodiments, the app receives notifications from the operating system of the phone when a message is received, for example, by subscribing to SMS events. In some embodiments, the processing performed by the app includes removing the message (e.g., received from the verification service provider) so that the message is not seen by the end-user, for example, in order to improve the user experience. For example, in the event that SMS is used, the SMS message can be removed such that the message is not presented, for example, automatically, by an operating system of the phone. In some embodiments, suppressing the communication of the message by the telephonic device to the user can also be beneficial if the channel that is used to communicate the message is a regular phone call from a number associated with the verification service provider, in order for that phone call to not be noticeable by the end user of the telephone device. In various embodiments, the portion of the verification processing performed on the

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device is associated with a software, firmware or hardware component associated with the phone, and is able to access incoming messages.

[0040] In some embodiments, the message includes conveyance of information associated with receiving a phone call, for example, where the phone call does not have to be conveyed to the user in any manner, and where the message is implicit in the information associated with the call. For example, the verification service provider can place a call or SMS to the phone from a number associated with the verification process. When the phone is notified of this phone call, it suppresses the conveyance of it to the end user. In some embodiments the phone call is terminated as soon as the device has observed the caller id information, without receiving the call. This can also lower the costs of operating the service. In this example, the message is the fact that the number associated with verification was observed, or a number out of a collection of available numbers associated with the verification service provider was used. In other embodiments, a message is implicitly communicated over a communication channel by the selection of a phone number used to place a call, or the forging of caller id information to convey a message.

[0041] In another embodiment, the backchannel is not a separate channel, but is encoded in the primary communication channel. In some embodiments, the encoding of the backchannel in the primary communication channel is performed in a manner that does not degrade the quality of the session in a noticeable manner. For example, suppose that a verification server entity is a component of the callee entity or uses the callee as a proxy for the backchannel communication. The verification server entity creates a signal that encodes a request that is sent to the calling device using the first communication channel. This signal is created in a manner such that it is unlikely to be noticeable to the human caller, but is detectable by an agent residing on the caller phone. The agent on the phone extracts the signal and decodes it, after which the agent generates a response message. The response message is sent to the verifying service, either using a separate communication channel or using the first communication channel. In the latter case, the message is again encoded and transmitted in a manner that is unlikely to be noticeable to human users, but which is extracted and decoded by a corresponding agent associated with the caller. Examples of techniques for creating signals in a manner such that they are not noticeable include techniques used within the field of steganography, as applied to

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the audio signal; and to use short bursts of signals in frequency bands that do not interfere with a communication, such as static signals that will be barely audible. The decoded signal is then evaluated as described above. In some embodiments, the request and the message in response to the request are both communicated in a manner that would be audible under normal circumstances, but which is suppressed from the end user, and removed from the received signal after it has been extracted.

[0042] In one embodiment, portions of the above-mentioned verification process are performed as part of an application (also referred to herein as an "app") that is downloaded by an end user and installed on the end-user device (e.g., smartphone, tablet, etc.). For example, the app can be an app that is specifically intended to address the caller id validation, and which may do this for one or more relying parties that would like to know that the caller id information they obtain when receiving a phone call is valid. As another example, portions of the above-mentioned verification process may be part of an app that has another primary purpose, such as a bank app that allows users to access their bank account from their handset. In this case, the process for validating caller id may interact with only the bank associated with the app, or with a collection of entities that are approved by the bank or a party producing the app. In another embodiment, the verification processing performed by the device is pre-installed on the device by a chip manufacturer, such as the original equipment manufacturer (OEM), or a carrier associated with the device. For example, the verification processing configured to be performed by the device may be part of the operating system routines or apps that are preloaded on the device at the time of purchase.

[0043] In one embodiment, data stored along with the process indicates what phone number(s) are associated with the verification service provider. In various embodiments, this data is stored on the device at the time of installation, at the time of configuration, or as the process is first used. In some embodiments, data stored along with the verification process contains certificates used to verify such phone numbers. In other embodiments, instructions are used to validate updates of such data, whether received as part of patches or associated with communication with the verification service provider (or an entity associated with the service provider). In some embodiments, verification data and verification instructions are used to verify numbers associated with the verification service provider, which may be a distributed

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service run by one or more independent organizations. In other embodiments, instead of associating one or more phone numbers with the verification service provider, other information is associated with the verification service provider, such as one or more public keys, one or more secret keys, one or more IP addresses, one or more elements of device information, one or more instant message addresses, or any other appropriate information. In some embodiments, this information is secured and/or verified in a manner similar to how information related to phone numbers is secured and/or verified.

[0044] As the second communications connection is established between a verification service provider and a potential calling device, the device determines whether the connection is associated with a phone number associated with the verification service provider, for example, using automatic number identification techniques and performing a comparison to a list (e.g., whitelist) of phone numbers or using an execution of a rule. If a match is determined, then the above-described verification process optionally suppresses the conveyance to the device end user of the second communications connection and associated data. Additionally, in some embodiments, if a match is determined, then a message is computed based on at least one of the ANI information associated with the second communications connection, data associated with the initiator of the second communications connection, data communicated using the second communications connection, and data associated with the communication (e.g., channel data, start time of the communication, a value stored in a memory associated with the device, etc.). In some embodiments, a connection is established to a phone number associated with the verification service provider and the message is communicated over the established connection. In other embodiments, a phone number or an address is computed or selected based on at least one of the ANI information associated with the second communications connection, data associated with the initiator of the second communications connection, data communicated using the second communications connection, and a value stored in a memory associated with the first device. A message associated with the second communications connection is then transmitted to the computed or selected destination. In another embodiment, the message is communicated over the first communications connection (primary communication channel used to contact a callee), where the message is computed based on at least one of the ANI information associated with the second communications connection, data associated with the initiator of the second

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communications connection, data communicated using the second communications connection, and a value stored in a memory that was previously associated with the device.

[0045] In some embodiments, where multiple communication channels are available for the telephonic device to send a response, the phone can dynamically select between available options. In various embodiments, the channel selection is based on a variety of factors including cost, availability, reliability, and latency.

[0046] In some embodiments, the verification processing resident on the device determines that a phone call is placed, generates a message based on a value stored in a memory associated with the device, and transmits the generated message to a verification service provider at the time that the phone call is made. In some embodiments, the determination is performed, for example, by subscribing to relevant events, or by modifying the interrupt or event handlers, the phone number selection, the phone number entry, the operating system, or one or more drivers. In some embodiments, the message includes a timestamp of the call, such that the message cannot be replayed later. In some embodiments, the message includes or is associated with the number to which the phone call is placed. One example implementation is for the message to be a message authentication code on the phone number called, where the message authentication code is at least one of a counter value and an additional value that may be pseudo-randomly generated, for example, using a key that is stored on the device and also stored in a memory associated with the verification service provider (where the key is associated with the device in the memory associated with the verification service provider). The generated message is then communicated over a communication channel to the verification service provider.

[0047] As described above, in some embodiments, the message sent to the verification service includes a timestamp, which can be used to prevent a replay attack. For example, the timestamp can be used by the verification service to score the validity of the communication, where an old or aged timestamp may be indicative of an attack.

[0048] In some embodiments, the verification service automatically forwards call information to the relying party (or, in some embodiments, the relying party polls the verification service as needed). In various embodiments, the call information includes one or more of: invalid number, unknown number, no call in progress, the call start time (if there is a call in

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progress), the phone number for the current call, and a score indicating the validity of the number. The relying party evaluates this information using, for example, custom verification processing and policies, including the use of information about the user account or user access, in addition to the verification processing performed by the verification service provider. If the call information is automatically forwarded, the information from the verification service provider may arrive before the call is answered by the relying party, which allows the relying party to automatically determine how the call should be handled. In one embodiment, the call information (which can include one or more of device id, symmetric key, call start time, and number called) is sent through the same channel as audible sounds or as sounds that are not noticeable to the user, as described above, which the relying party matches against the ANI for the incoming call.

[0049] In some embodiments, the calling device is enrolled with the verification service provider, and the message communicated from a previously enrolled device to the verification service depends on at least one of a timestamp, a unique identifier, a symmetric key, and device information, which is passed to the Verification Service to prevent, for example, attempts to spoof the legitimate device. In some embodiments, the verification service evaluates the device information and unique identifier to determine a match against previous usage of the device that is recorded and stored at the verification service. Examples of device information include one or more unique or semi-unique software identifiers; one or more embedded hardware identifiers; a user-added hardware identifier like an SD Card or geolocation information; and a device "fingerprint" created from a combination of device settings, installed applications, system or application software versions, or contact list stored on the phone. In some embodiments, the device information is combined with other information, such as the time on file for the device, to create a single validity score that is available to the relying party for the current call. In some embodiments, the verification service creates a verification score for a device when a call is initiated. In various embodiments, the verification score is created using a variety of approaches that include one or more of combining the available factors to create a score by applying relative weighting to each of the available factors (e.g., based on historical and ongoing evaluation of the factors' effectiveness), combinatorial logic, a neural net or fuzzy logic, etc. In some embodiments, the relying party incorporates the score into a risk-based decision system to be used in conjunction with other variables that, in various embodiments, include account history,

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user security preferences, other available factors such as device information or challenges, the monetary (e.g., dollar) value of a transaction, service policies, etc. The decision system then selects from a range of appropriate responses, which include at least one of blocking access, requesting additional authentication factors, permitting access, etc.

[0050] In some embodiments, if the user's device cannot be verified by the verification service, or if the verification score is insufficient, the verification service contacts the user's device via an SMS or other communication channel, as described above with respect to device enrollment. For example, if a user's phone characteristics change, then the verification service can validate the phone again by sending an SMS to the phone that is captured by the verification client (residing on the device) and returned via a network connection. The changes could include one or more of an operating system upgrade, a spoof attempt, an application update, a device fingerprint based on device configuration information, a hardware change, the expiration of a symmetric key (which may have a forced expiration date), etc. The changes to the characteristics of the device may be sufficiently different so as to trigger a re-enrollment of the phone. In some embodiments, the re-enrollment is triggered by the verification service.

[0051] In some embodiments, the relying party specifies, to the verification service, the score that is required to complete a verification. If the user's device verification score on a call is too low, in some embodiments, the verification service reconfirms the (observed) ANI by sending an SMS or other communication to the phone number that is intercepted, processed, and responded to via a second channel. In some embodiments, this process is used to reconfirm the ANI and is used to raise the verification score. By automatically responding to the SMS (that originated from the verification service) with information about the call that is currently in progress, the verification service verifies that the ANI is not being spoofed, as it is unlikely that a spoofer is able to fake the routing of calls to the true number. This verification can be used to raise the verification score.

[0052] In some embodiments, a process that runs at least some of the time on a phone or other communications device is used to confirm a phone call to a third party, such as the callee or a verification service provider, the latter of which is then configured to convey an assurance to the callee. In one embodiment, the process running on the device determines that an outgoing

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phone call is being placed or in progress. As one example, the call is initiated from the app by a user either selecting a phone number from a stored list or entering a number. As another example, the app captures the start of a phone call by at least one of subscribing to system events such as the start of a new phone call or the entry of a number, modifying or inserting code related to the placing of calls, reading the contents of buffers or registers, identifying the context by reviewing instructions in the instruction pipeline, and observing side-effects of a phone call being placed, such as the display of information relating to a phone call on the screen of the device.

[0053] In some embodiments, an entity (e.g., verification service) that is associated with a communications infrastructure or the callee, initiates a communication to the portion of the verification process running on the device, requesting a verification of the phone call. In this case, the processing includes using, for example, one of an app, a portion of the operating system of the device or a device driver, a library that is part of an app, part of firmware (e.g., in the modem processor), etc.

[0054] In some embodiments, when the verification process confirms that the phone is used to call the callee device that received the caller id associated with the caller, the verification process communicates and conveys information related to at least one of a request for the confirmation; data associated with the phone call being placed; and data stored on the phone, such as a symmetric key, which is also stored by an entity associated with the recipient of the confirmation communication.

[0055] As the confirmation data is received (e.g., by the verification service), it is verified against the information that was previously stored for the user's device at the verification service using, for example, the scoring described above. If the confirmation data is deemed correct (e.g., properly formatted, associated with the expected data, and received within the expected time frame, which is an example of a system parameter), then an assurance is produced and conveyed to the callee or a party associated with the callee.

[0056] If the confirmation data is not correct or cannot be verified (e.g., the user's phone number was never registered, the user purchased a new phone with the old number, or a fraudster is attempting to trick the system), the failure to confirm is then conveyed to the callee or a party

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associated with the callee. The caller is then provided a confirmation that the call has either been verified or not been verified by the verification service.

[0057] In some embodiments, verification success or verification failure is then conveyed in-band through at least one of the same channel (e.g., primary communication channel) or via another channel. For example, the verification result can be conveyed as an audio signal in a voice channel, as an additional SMS message inserted into the SMS stream, a visual indication on a user's smartphone, or as messages presented through a secure display on the user's smartphone. In one embodiment, synchronous communication such as a phone call is automatically disconnected, with, in some embodiments, an audio or visual termination indication presented if the information cannot be correctly verified. In some embodiments, the callee is informed of whether the verification failed because the call was either confirmed to be spoofed or confirmed not to be spoofed, and if the latter, the reason why, if available. For example, a call will be confirmed to be spoofed if the caller device responds to the verification service provider that there is no such call, or no ongoing call, in response to receiving a request to send the response. If the caller device does not support the verification service (e.g., because the device does not have installed the verification mechanism), then it is inconclusive as to whether the call is spoofed or not. Other indications can also be generated. For example, if the caller device does not respond, the reason may include one or more of the device being off the network (which is an indication that the call is spoofed), that there is a temporary device or software failure, or that there is a temporary network failure. In some embodiments, the verification service provider, in such a situation, attempts to make a connection for some number of times that is a system parameter, after which it outputs a notification to the callee indicating what took place, including what types of responses the device normally sends and what types of responses were received during a recent session.

[0058] In some embodiments, the software installed on a calling device conveys call information to an intermediary verification service through a separate channel (e.g., that is different from the primary channel used to make the call being verified). In this example, the service acts as a trusted third party to verify the validity of the call (e.g., based on data associated with the phone call being placed, data stored on the phone such as a symmetric key, device information, etc.) and to provide the verification information to the called party. In some

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embodiments, a verification result is sent to the called party through another channel or retrieved by the called party as needed. In some embodiments, the verification service provides only the results of the verification to the called party without exposing any device information, such as a symmetric key, to the called party. In some embodiments, a caller device is registered a single time with a verification service and is then able to use the verification service with many called parties.

[0059] In some embodiments, the caller device registers with multiple verification services, as different relying parties may use different instances of verification services. In some embodiments, in order to increase availability, the verification service is also replicated for high availability and high volume of calls.

[0060] In some embodiments, a called party or callee queries the verification service to verify the validity of a caller's device through a second communication channel when the called party or callee recognizes the incoming call identifier (e.g., caller ID or ANI). In response to the query, the verification service then sends the verification result to the callee before the call is even initiated, which allows the callee to perform operations before the call is received, such as looking up the user's account information, deciding how to route the incoming call, or deciding what authentication, if any, should be used to further verify the validity of the caller.

[0061] In some embodiments, a verification service evaluates the quality of the data provided by the callee's device to create a score. In one example embodiment, the data score is combined with the age of the data to provide an overall quality score to the callee. In some embodiments, the verification service provides the call start time and/or device information for the relying party to evaluate.

[0062] In some embodiments, input from a relying party provides feedback on a particular phone call that indicates a problem with the user's device, such as a stolen device, possible spoof attempt, fraud related to a device, or a verification that subsequently proved to be errant. This information can then be incorporated into an overall reputation score of a caller's device.

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[0063] In some embodiments, the relying party provides its own verification service rather than using a third party service.

[0064] In some embodiments, the device is a smartphone with both a phone channel and a 3G/4G network channel. Other examples of devices include a smartphone, tablet, PC, phablet, or wearable computer with a processor and multiple communication channels or a single channel that is multiplexed across two different endpoints.

[0065] In some embodiments, the app installed on a device is enrolled when the user starts the app for the first time. When the app is started, the app automatically places a phone call to a phone number (e.g., that is embedded in the app) that is used for enrollment by the verification service. The corresponding verification service that is contacted captures the incoming ANI or caller ID of the phone and sends an SMS back to the phone containing a unique temporary identifier. The identifier is used as a secret key or is used to compute a secret key. For example, a method such as Diffie-Hellman key exchange or RSA key transport can be used, where a public key associated with the verification service is embedded in the app, and is used to compute the encrypted key that is generated by the device and communicated (e.g., in an encrypted manner) to the verification service. This communication can, for example, be sent using SMS or a regular Internet connection. In some embodiments, the user device stores the derived or generated secret key, and a storage associated with the verification service also stores the secret key. In some embodiments, the secret identifier or symmetric key is used to validate the device in future communications in some embodiments.

[0066] In some embodiments, once the phone is enrolled with a secret unique identifier, a call to a relying party is initiated in response, for example, to a user selecting a number from a pre-populated list or entering a new number from within the app. The app places the call to the relying party and securely conveys information about the call to a verification service via a message encrypted with the symmetric key, as discussed above, on a communication channel that includes one or more of 3G/4G networks, WiFi, Bluetooth, or any other appropriate channel/network. The relying party then captures the ANI data from the inbound call and queries the verification service about the call. The verification service then compares the information from the app with the request from the relying party and returns a verification result.

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[0067] In one embodiment of the enrollment process, the initial communication path used by the device to contact a verification service includes channels such email and SMS, instead of a phone call. In such a scenario, the verification service does not verify the ANI of the device, and instead verifies the corresponding communication identifiers associated with the initial communication path.

[0068] In another embodiment, the initial enrollment of a device by a relying party or the verification service, as well as occasional re-enrollments sessions, are combined with one or more additional authentication tools including PIN verification, password verification, Knowledge Based Authentication, geolocation information, or verification tools such as Name+Address+Phone checks or credit card information validation. Such additional authentication can also be combined with an ANI verification session, as described herein. Additional authentication and verification can also be used for additional user validation. This provides additional assurance features not only for the sessions where the additional authentication is used, but for other sessions as well. This is because the combined use, in a single session, of the extra authentication and the verification of the device specific identifier (e.g., such as that associated with caller id) allows the mechanisms to become associated with each other. Thus, a verification service can determine, with reasonable assurance/certainty that each session in which a given ANI is verified corresponds to a user with certain knowledge, access rights, or other authenticator.

[0069] In some embodiments, a security verification token received on the second channel is then returned via the first channel. For example, if a call is placed to the verification service, the service can contact the user's phone via another channel and provide a unique value. The unique value is then inserted into the phone call, for example, as a barely audible audio tone or an explicit voice to text reading out a number. The verification service can then decode the audio to match against the unique value.

[0070] In some embodiments, a relying party generates the unique value and sends it directly to the caller's phone on a second channel, where it is intercepted and then inserted into the phone call on the first channel (e.g., as a barely audible audio tone or an explicit voice to text reading out a number). In one example implementation, the relying party software detects the

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unique value through an automated system such as tone detection. The unique value is then compared with the ANI information from the phone call. If there is not a match, then it is determined that the ANI information is spoofed or is not representative of the caller device.

[0071] In some embodiments, when phone calls are directed to another number using call forwarding, the verification service determines, by sending an SMS or push notification, that the user's calls are not being received at the ANI that originated the call. In such a scenario, the result will be determined to be one or more of no response, correct device information but no call information from the forwarded phone, or incorrect device information from the forwarded phone. The verification service then provides the resulting status to the relying party, which determines how to interpret the result based on its policies.

[0072] In some embodiments, the verification functionality discussed above is implemented at the operating system level (e.g., of the phone), but the implementation may alternatively be at one or more of the application level, as a library that multiple applications can use, or a combination of operating system, application level, and libraries.

[0073] In some embodiments the ANI verification is used to enable automated password reset through an interactive voice response (IVR) system for users that forget their password. For example, when the IVR system is called by the user, the ANI is recognized and validated by the verification system. The IVR system can then, for example, create a new temporary password, send an email with half of the password, e.g., the word "brave," and indicate to the user, via audio or SMS, the other half of the password, e.g., "8317." The user would then combine the parts for the full temporary password, "brave8317," that can be used to log into the user's account instead of the password that the user forgot.

[0074] In some embodiments, if the user's phone is not previously enrolled with the verification service, the verification service can call the user's phone to verify that a call is in progress. As one example, when the user's phone is not previously enrolled with the verification service, the verification service can send an SMS with a unique identifier to the phone and request the user of the phone to respond via SMS. For example an SMS is sent to a user's device with the phrase "purple cow." The user can then manually return the same phrase in a reply SMS on the second channel, or "purple cow" can be inserted into the audio stream on the first

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channel. The verification service recognizes that the correct phrase has returned through a round trip, which confirms that the ANI is valid (as it may be difficult to spoof a phone network to receive the SMS message at a different phone number). In one example implementation, a verification process running on a phone that has not been enrolled with a verification service intercepts an incoming SMS or push notification, captures the phrase, and inserts it into the first channel as audio using text to speech. In another example implementation, a verification process running on the phone is configured to intercept the incoming SMS or push notification, capture the phrase, and automatically respond on another channel such as a 3G/4G network.

[0075] In various embodiments, typically unconventional channels can be used to communicate messages and responses to messages. For example, a user device can send such information by spoofing ANI data, where, instead of using the regular ANI of the device, the spoofed ANI is used to convey/encode the messages/responses to the messages without the use of a separate physical channel. Similarly, error messages, communication protocol messages, and other low-level messages can be used to convey information between the user device, the verifying party, the relying party, and the callee device.

[0076] In some embodiments, once the app on the user's phone is enrolled with the verification service and connected to an account at the relying party, the app can modify one or more of the caller ID or ANI to encode information about the incoming call. For example, the user's phone number can be combined with a one time code that is generated by the app based, for example, on the symmetric key and the current time. When the relying party observes the incoming ANI and Caller ID, it decodes the one time code based on the symmetric key for the account associated with the user and validates the timestamp. In one example implementation, the app can be populated with a list of "one time pad" codes for the account that are known only to the app and the relying party; or a function to compute the codes from a shared secret. When the one time code is received (e.g., encoded in the Caller ID or ANI and extracted by the relying party), the relying party can uniquely identify the account associated with the user/device and mark the code as used, for example, by comparing the observed ANI to one or more potential onetime codes associated with one or more accounts. A match that is made is used as evidence of the identity of the device. Using such functionality also serves to hide the ANI to callers who

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do not have the shared secret, thereby providing user privacy at the same time as providing assurance of the identity of the calling device.

[0077] In some embodiments, once the user's phone is enrolled with the verification service and connected to an account at a relying party, the user's phone can be used to authenticate the user when accessing the account from a different device. For example, suppose that the user enters an account identifier into a web browser on a PC. The relying party can contact the verification service, which in turn contacts the user's phone via SMS or a push notification, for example, to ask the user to confirm the account access. In some embodiments, the confirmation is one or more of a confirmation of a financial transaction or an agreement.

[0078] Figure 2A illustrates an embodiment of a process for verifying caller identification information. In some embodiments, process 200 is executed using telephonic device 102 of Figure 1. The process begins at 202 when an indication of a phone number to be called is received. As one example, the phone number is entered by a user of the phone. As another example, the phone is selected from a list of phone numbers.

[0079] At 204, contact with the callee is initiated using the indicated phone number. As one example, either a call or SMS is initiated to a callee/relying party. In some embodiments, the callee, while receiving the call, observes the ANI or caller ID information on the call, and makes a request to the verification service provider to verify the call (e.g., to determine whether the observed ANI data is spoofed).

[0080] At 206, a verification request is received. For example, in some embodiments, in response to receiving a request from the callee entity to verify the call that is in progress, the verification service provider sends, to the device, a verification request. For example, in order to verify the ANI data or caller ID observed by the callee, the verification service provider sends a message using the observed ANI data or caller ID. If the observed phone number (indicated by ANI data or caller ID) has not been spoofed, then the device used to initiate the call to the callee will also receive the verification request.

[0081] In some embodiments, as described above, the channel that is used for the verification service request to the calling device is different from the initial, primary

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communication channel used by the calling device to make the call (e.g., a separate, different backchannel is used to make the verification service request). For example, while the phone call is made using an audio channel, the verification request may be made using SMS.

[0082] In other embodiments, the same channel as the primary communications channel is used to make the verification request. In some embodiments, if the same channel is used, then the verification request is encoded in the channel in a manner that is not noticeable to an end-user of the calling device. For example, if an audio call has been initiated, the verification request can be encoded as barely audible signals that are decoded by the device.

[0083] At 208, a response message is generated. For example, suppose that an SMS is received from the verification service provider. In response to the verification request, a message is generated that includes information used to verify the call made to the callee. For example, the response to the verification service provider can include information about the phone call being made, such as the start time of the call, device information, or a secret value or unique identifier that is known only by the device and the verification service provider. As another example, the information includes computed values that are computed, for example, using keys or codes that are known only to the device and verification provider. In some embodiments, the device hides the verification messages such that these are not displayed or otherwise made presentable to the user of the calling device.

[0084] At 210, the generated message is transmitted, for example, to the verification service provider. In some embodiments, the verification service provider validates the information and makes a security determination based on the validation. The security determination is then passed to the relying party. Upon receiving the security determination, the relying party makes a security decision as to whether the observed phone number (ANI data or Caller ID) is verified to be correct. If the number is verified, then the relying party determines that the authentication is successful, otherwise the authentication is rejected. The relying party can take various actions based on the verification result, as described above.

[0085] Various channels can be used to transmit the generated message. For example, in some embodiments, the generated message is transmitted using the second communication channel that was initiated by the verification service provider. As another example, the

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generated message is transmitted using the primary communication channel initiated between the caller device and the callee.

[0086] In some embodiments, the security determination (or any other appropriate information) is passed to the relying party automatically. In some embodiments, the security determination is provided in response to a query by the relying party. For example, because different channels may be used for the initial call, the verification request, and the response message, delays may occur in the verification service provider being able to provide security determination information to the relying party. In such a scenario, in some embodiments, the relying party is configured to query or poll the verification service provider for security determination information (e.g., periodically until the information is available, after a delay, etc.).

[0087] In some embodiments, the information is sent to the verification service provider at the time that the call is initiated, without being prompted by the verification service provider (e.g., the calling device initiates contact with the verification service provider). For example, the calling device includes an app that is configured to recognize that a call has been initiated, and automatically sends information about the call (e.g., start time, enrolled key, etc.) to the verification service provider. The verification service provider can then, for example, provide a security determination to a relying party (either by proactively sending the security determination to the relying party, or providing the security determination when it is requested by the relying party).

[0088] Figure 2B illustrates an embodiment of a process for verification of caller identification information. In some embodiments, process 220 is executed by verification service provider 120 and/or relying party 118 of Figure 1. The process begins at 222 when a query to verify a first communications connection involving a first entity is received, the first communications connection/channel associated with an observed caller ID of a contacting entity. For example, suppose that a callee receives a phone call purporting to be from an observed caller ID/ANI. In order to determine whether the number has been spoofed, the callee contacts the verification service provider to validate the ANI/caller ID.

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[0089] At 224, a message is transmitted to a device associated with the observed ANI using a second communications channel. For example, in some embodiments, as described above, a back channel is initiated by the verification service provider to communicate with a device associated with the observed ANI. In some embodiments, the message includes information that is difficult for a spoofing attacker to predict, such as a serial number, a counter, a pseudo-random or random number, a number specific to a particular session or device, etc. In some embodiments, the second communications channel is a backchannel that is different from the first communications connection/channel. In other embodiments, the second communications channel is a backchannel that is encoded in the first communications channel.

[0090] At 226, a response to the message is received. For example, a device such as phone 102 of Figure 1 captures the message and in reply, sends a message that makes a reference to at least a portion of the message sent by the verification services provider. In some embodiments, the response is received by the verification service provider directly from the device. In other embodiments, the response is received via another entity (e.g., the entity that was called and that requested the verification, as described above).

[0091] At 228, the response is evaluated to perform a security determination. For example, in some embodiments, it is verified whether the response corresponds to the transmitted message. If so, as described above, then a positive security determination is made. If an invalid response is received, or no response at all is received, for example, within a threshold amount of time, then a negative security determination is made. At 230, the security determination is provided to the first entity, which performs a decision based on the security determination (e.g., whether to authenticate the first communications connection).

[0092] Figure 3A illustrates an embodiment of a process for enrolling a device. In some embodiments, process 300 is executed by phone 102 of Figure 1. The process begins at 302, when an application, such as an "app" described above, installed on the device communicates with a verification service provider. For example, the application either initiates a call or sends an SMS to the phone number for the verification service provider. As described above, in some embodiments, the number is known to the application installed on the device.

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[0093] At 304, a response to the initial communication is received. For example, in some embodiments, the verification service provider returns the call or SMS with a call or SMS using, for example, a one-time passcode (OTP) as the verification service provider's caller ID, as described above. In some embodiments, the device processes the response, for example, capturing the caller ID that includes the OTP sent by the verification service provider.

At 306, a response is generated. For example, in response to the verification service provider's reply, the device is configured to generate and send back a set of information to the verification service provider. One example of information included in the set is device information. Another example of information included in the set is a unique ID. In some embodiments, the unique ID is computed dynamically and the device stores it locally for future communications with the verification service provider. Another example of information included in the set is the OTP value previously sent by the verification service provider. In some embodiments, sending back the previously transmitted OTP value allows the verification service provider to verify the phone number of the device (i.e., because the enrolling app sends back the OTP that was sent by the verification service provider to a particular phone number, proof is established that the app being enrolled is installed at a device with that particular phone number to which the OTP was sent). The verification service provider validates the OTP value and stores any device information and/or unique identifiers sent by the device. At 308, the generated response is transmitted, for example, to the verification service provider via a network connection.

[0094] Figure 3B illustrates an embodiment of a process for enrolling a device. In some embodiments, process 320 is executed by verification service provider 120 and/or relying party 118 of Figure 1. The process begins at 322, when contact is received from a telephonic device associated with an observed phone number. For example, when a user uses a banking app installed on their smartphone for the first time, the app automatically calls a known verification service provider. At 324, a reply to the contact that includes a first value is transmitted using the observed phone number. For example, in response to receiving the call from the app on the smartphone, the verification service provider sends an SMS reply including a one-time passcode (OTP). At 326, a set of information is received. For example, the verification service provider receives, from a device associated with the observed phone number/caller ID/ANI, a response

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that includes a set of information. For example, the app installed on the phone, in response to receiving the message from the verification service provider, sends back the OTP value that was sent, as well as device information and a unique identifier. At 328, the received set of information is validated. For example, if the received information includes the previously sent OTP value, then the verification service provider verifies that the app is installed on a device that has the phone number that was observed in the original contact. If the information is validated, the device/app is then enrolled. For example, any device information or unique identifiers sent by the device/app are stored (e.g., in a user record of the bank with which the app is associated).

[0095] ADDITIONAL EXAMPLES

[0096] Figures 4-14 illustrate example environments in which enrollment of a device and verification of automatic number information data (e.g., caller id) is performed.

[0097] Figure 4 illustrates an example of an environment in which verification of caller identification information is performed. In this example, a user 402 enters, at 414, a phone number (416) into a smartphone device 404 or selects a number 416 that is already stored on the smartphone to place a call or send an SMS to a relying party 410 (i.e., callee). In some embodiments, relying party 410 is an example of callee 118 of Figure 1. In this example, call placement unit 406, which, in some embodiments, is an example of call placement unit 108 of Figure 1, captures the entry or selection of the phone number 416. In some embodiments, call placement unit 406 checks, at 418, the phone number 416 against a list of monitored phone numbers stored in data storage 408. If the phone number 416 is found in storage 408, information about the call is sent, at 424, to verification service 412, which, in some embodiments, is an example of verification service provider 120 of Figure 1. In some embodiments, check 418 is not performed against storage 408 and all phone numbers are sent to the verification service 412. When the relying party 410 receives the call, SMS, or push notification (420), the relying party 410 can detect the incoming phone number 416 and query, at 422, the verification service 412 to verify the incoming call. One example of communication 422 between the verification service 412 and the relying party 410 is a secure internet connection. In other embodiments, the communication channel includes one or more of Wi-Fi,

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3G/4G network, Bluetooth, audio, SMS, phone call, RDMA, interprocess communication within the same system, or any other communication channel.

[0098] Figure 5 illustrates an example of an environment in which enrollment of a device is performed. In this example, user 502 connects their smartphone device 504 with verification service 510, which, in some embodiments, is an example of verification service provider 120 of Figure 1. In some embodiments, a default phone number (514) is provided. In other embodiments, user 502 enters (526) a phone number for another verification service. In this example, the number is called, or an SMS is sent, at 516, to verification service 510.

[0099] Verification service 510 captures the inbound phone number and returns (518) either a call or an SMS to the same number to verify the number. Inbound interceptor 506, which, in some embodiments, is a portion of a communications unit such as communication unit 104 of Figure 1, recognizes the return call from the verification service 510 and initiates a network connection (520) to deliver a unique device identifier that is then stored (522) into local storage 512 by the verification service 510. The unique identifier is also stored locally at the smartphone device, at 524, into data storage 508 on smartphone device 504 for subsequent communication with the verification service. Once connected to the verification service, the smartphone device 504 can be used with each relying party or callee (e.g., relying party 410 of Figure 4) that uses the verification service with no additional enrollment steps.

[00100] Figure 6 illustrates an example of an environment in which verification of caller identification information is performed. In this example, verification using an application installed on a smartphone device (also referred to herein as an "app") is described. In this example, a user 602 starts, at 612, an app 606 installed on a smartphone 604. In this example, the app is configured to connect, using connection 614, to the relying party 610 with an account identifier. The relying party 610 performs a look up (616) of the associated phone number in account information 618. If the phone number is not found in the account information 618 or is not current, in some embodiments, the app 606 prompts the user 602 to enter the number.

[00101] In the example shown, the relying party generates a unique one time passcode (OTP) and sends the OTP as the caller id or ANI via a phone call or SMS (620) to the user's smartphone 604. Inbound interceptor 608, which in some embodiments, is an example of a

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portion of a communications unit such as communication unit 104 in Figure 1, captures the caller id of the inbound call or SMS and passes it, at 622, to app 606. App 606 relays the unique identifier to relying party 610 via the already established connection 614, to confirm that app 606 is running on the smartphone 604 that matches the account phone number in the account information 618. In some embodiments, the app can generate a second unique value and pass it with the OTP via the established connection 614, and the relying party 610 can store this second unique value with the user's account information 618 to use as a secret device identifier for the account. In some embodiments, the value is used later as a seed for encrypted communication between the smartphone 604 and the relying party 610.

[00102] Figure 7 illustrates an example of an environment in which verification of caller identification information is performed. In this example, a user 702 uses, at 712, a smartphone 704 to make a phone call (714) to a relying party 708 (also referred to herein as the "callee"). Relying party 708 passes, at 716, the user's phone number to verification service 710. In this example, verification service 710 sends an SMS message, at 722, to smartphone device 704. Inbound interceptor 706, which is an example of a portion of a communication unit such as communication unit 104 of Figure 1, captures the incoming SMS and recognizes that the message is from verification service 710. Inbound interceptor 706 then replies, at 718, with the device information and information about the call in progress. In this example, the reply 718 is sent via a 3G/4G network, WiFi, SMS, or any other appropriate network. The verification service 710 then validates the device and call information and provides a validation result (720) to relying party 708.

[00103] Figure 8 illustrates an example of an environment in which verification of caller identification information is performed. In this example, a user 802 starts, at 814, an app (806) installed on a smartphone device 804 in order to make a phone call (816) to a relying party 810 (also referred to herein as the "callee"). The relying party 810 passes, at 818, the user's phone number (e.g., obtained from caller id/ANI data) to verification service 812. In this example, the verification service then sends an SMS message (826) to smartphone device 804.

[00104] Inbound Interceptor 808, which in some embodiments is an example of a portion of a communication unit such as communication unit 104 of Figure 1, captures the incoming

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SMS and recognizes the message is from verification service 812. Inbound interceptor 808 can query (820) the caller app 806 to verify the current call number and status. Interceptor 808 replies, at 822, to the verification service, with the device information and information about the call in progress. In various embodiments, reply 822 is sent via a channel that includes one or more of a 3G/4G network, WiFi, SMS, or any other appropriate communication channel. The verification service then validates the device and call information and provides a validation result (824) to the relying party.

[00105] Figure 9 illustrates an example of an environment in which verification of caller identification information is performed. In the example shown, a user (902) starts/initiates a phone call at 914 through communication unit 906. In various embodiments, communication unit 906 is one or more of a communication unit such as communication unit 104 of Figure 1 and an app, such as app 806 of Figure 8, that are installed on smartphone device 904 and used to make a phone call (916) to relying party 910 (also referred to herein as the "callee").

[00106] In the example shown, relying party 910 passes, at 918, the user's phone number (the phone number indicated via caller id or ANI data that is observed by the relying party) to verification service 912. The verification service sends, at 920, an SMS message or other communication with a unique identifier to smartphone device 904. In various embodiments, the unique identifier includes one or more of a number, phrase, tone, or any other appropriate unique identifier.

[00107] Inbound interceptor 908, which in some embodiments, is an example of a portion of a communication unit such as communication unit 104 of Figure 1, captures the incoming message (920) and recognizes that the message is from verification service 912. The inbound interceptor extracts the unique identifier from message 920 and passes it (924) to communication unit 906.

[00108] In this example, the communication unit 906 inserts the unique identifier into the already open communication channel 916 to the relying party. In one embodiment, if communication channel 916 is an audio call, the unique identifier is then converted into a tone or spoken phrase (e.g., using text to speech) that is inserted into the audio call. The relying party 910 can capture the unique identifier and pass it to the verification service (912) for evaluation.

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[00109] The verification service 912 then verifies that the unique identifier is the expected result and sends a reply 922 to the relying party 910. In various embodiments, request (918), reply 922, and communication 920 with inbound interceptor 908 are sent via one or more of a 3G/4G network, WiFi, SMS, or any other appropriate communication channel/network.

[00110] Figure 10 illustrates an example of an environment in which verification of caller identification information is performed. In the example shown, a phone call is started (1010) by a user 1002 through a communication unit 1006 (which, in some embodiments, is an example of a communication unit such as communication unit 104 of Figure 1) on smartphone device 1004 in order to make a phone call (over communication channel 1012) to relying party 1018.

[00111] In the example shown, the relying party (or an entity associated with the relying party) generates a unique identifier, which includes one or more of a number, phrase, tone, or any other appropriate unique identifier. The relying party passes the unique identifier to the user's device 1004 via a second communication channel (1014), such as short message service (SMS).

[00112] Inbound interceptor 1008, which in some embodiments, is an example portion of a communication unit such as communication 104 of Figure 1, captures the incoming message sent via channel 1014 and recognizes that the message is from the relying party. The inbound interceptor extracts the unique identifier from message sent via channel 1014 and passes it, at 1016, to the communication unit 1006.

[00113] In the example shown, the communication unit 1006 inserts the unique identifier into the already open communication channel 1012 to the relying party. In one embodiment, using the already open communication channel 1012, the unique identifier is converted by the inbound interceptor 1008 into a tone or spoken phrase using text to speech, which is then inserted into communication channel 1012. The relying party receives the unique identifier, decodes, and verifies that it matches the expected value that was sent in message sent via channel 1014.

[00114] Figure 11 illustrates an example of an environment in which verification of caller identification information is performed. In the example shown, a phone call 1114 to relying

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party 1112 is started by a communication unit 1108, which, in some embodiments, is an example of a communication unit such as communication unit 104 of Figure 1. In this example, communication unit 1108 is a part of app 1106 installed on smartphone device 1104. In the example shown, the phone call is initiated when a user (1102) selects a phone number from a list that is already stored (e.g., in data store 1110) on the smartphone device.

[00115] Prior to, simultaneously, or immediately after starting call 1114, communication unit 1108 sends information to the relying party that is associated with the user-selected or provided phone number. The sent information includes information about the call, including one or more of a device identifier, call start time, and number called, that is sent via another communication path 1116 (which can be a network connection, SMS, etc.). The relying party compares the call information from the second path 1116 with the ANI observed on the first path to verify the source of the call.

[00116] Figure 12 illustrates an example of an environment in which verification of caller identification information is performed. In the example shown, a phone call (made over communication path 1214) to relying party 1212 is started by a communication unit 1208, which in some embodiments, is an example of a communication unit such as communication unit 104 of Figure 1. In the example shown, communication unit 1208 is a component of app 1206. In this example, the phone call is started when a user 1202 selects, at 1216, a phone number from a list that is already stored in data storage 1210 of telephonic device 1204. Once the relying party answers call 1214, the communication unit 1208 sends information to the relying party about the call, including one or more of a device identifier, call start time, and number called. In the example shown, the information is sent, via the same communication path 1214, as one of more of an audible series of tones, an audible voice, as sounds that are not noticeable to the user, etc. The relying party detects and validates the received call information against the ANI sent by the caller.

[00117] Figure 13 illustrates an example of an environment in which verification of caller identification information is performed. In the example shown, app 1306 installed on smartphone device 1304 has been previously connected to an account at relying party 1310. The relying party account is accessed, at 1312, by computing device 1308, such as a desktop or

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laptop, when a user (1302) attempts, at 1324, to log into the account. The relying party recognizes the account and contacts, at 1314, app 1306 on the associated user's device 1304. The user's device requests, at 1316, that the user confirm the account access. The user, at 1318, either confirms or denies the access via the app. The app provides the confirmation (1320) back to the relying party, which, at 1322, grants or denies access via the computing device.

[00118] Figure 14 illustrates an example of an environment in which verification of caller identification information is performed. In this example, app 1406 installed on smartphone 1404 places a phone call (1412) to relying party 1408 when a user (1402) enters a phone number at 1414. In this example, the app modifies the caller id or ANI of call 1412 to be a unique identifier that can be decoded by the relying party. The unique identifier is decoded by retrieving, at 1416, information that was previously stored in data storage 1410 when the instance of app 1406 was enrolled with the relying party.

[00119] Although the foregoing embodiments have been described in some detail for purposes of clarity of understanding, the invention is not limited to the details provided. There are many alternative ways of implementing the invention. The disclosed embodiments are illustrative and not restrictive.

[00120] WHAT IS CLAIMED IS:

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Filing Date	Herewith
First Named Inventor	Bjorn Markus Jakobsson
Title	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
Art Unit	Not Assigned
Examiner Name	Not Assigned
Attorney Docket Number	MJAKP016C1

SIGNATURE of Applicant or Patent Practitioner

Signature	/Yeu-Ting George Cheng/	Date (Optional)	
Name	Yeu-Ting George Cheng	Registration Number	69408
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The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

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Application No.:	Not Assigned	Examiner:	Not Assigned
Filed:	Herewith	Art Unit:	Not Assigned
Confirmation No.:	Not Assigned	Docket No.:	MJAKP016C1
First Inventor:	Bjorn Markus Jakobsson		
Title:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA		

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §§1.56 AND 1.97(B) BEFORE MAILING OF A FIRST OFFICE ACTION

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The references listed in the attached PTO SB/08 may be material to examination of the above-identified patent application. Applicants disclose the list of these references in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make these references of official record in this application. The above-identified application is a continuation of prior application U.S. Patent Application No. 14/535,064. This prior application is being relied upon for an earlier filing date under 35 U.S.C. § 120. Because the listed references were either cited by the PTO, or submitted to the PTO in the prior application, under 37 CFR §1.98(d), Applicants submit that copies need not be provided.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that these references indeed constitute prior art.

This Information Disclosure Statement is being filed (1) with the above-referenced application or (2) within three months of the filing date of the above-referenced application or

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(3) before the mailing date of a first Office Action on the merits or (4) before the mailing date of a first Office Action after filing of a Request for Continued Examination. Accordingly, it is believed that no fees are due in connection with the filing of this Information Disclosure Statement. However, if it is determined that any fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-0685 (Order No. MJAKP016C1).

Respectfully submitted,

Dated: November 2, 2018

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	Attorney Docket Number	MJAKP016C1

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	Attorney Docket Number	MJAKP016C1

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	41	20070101423		2007-05-03	OLIVER JONATHAN	
	42	20070107053		2007-05-10	SHRAIM IHAB	
	43	20070130618		2007-06-07	CHEN CHUAN	

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	102	20160225897		2016-08-04	SRIDHAR SEETHARAMAN	
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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☒ See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2018-11-02
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Application or Docket Number: 16/180,373

APPLICATION AS FILED - PART I

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BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	21 minus 20 =	* 1	x 50 =	50	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 230 =	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	835		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	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
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.

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 NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
16/180,373	11/05/2018	2653	835	MJAKP016C1	21	3

CONFIRMATION NO. 3758

21912
VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

FILING RECEIPT

OC000000104084823

Date Mailed: 11/29/2018

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)

Bjorn Markus Jakobsson, Portola Valley, CA;

Applicant(s)

RightQuestion, LLC, Portola Valley, CA;

Power of Attorney: The patent practitioners associated with Customer Number 21912

Domestic Priority data as claimed by applicant

This application is a CON of 14/535,064 11/06/2014
which claims benefit of 61/901,322 11/07/2013

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 11/27/2018

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/180,373**

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0102

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No
**** SMALL ENTITY ****
Title

VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA

Preliminary Class

379

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).

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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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.

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Electronic Acknowledgement Receipt

EFS ID:	34678052
Application Number:	16180373
International Application Number:	
Confirmation Number:	3758
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Customer Number:	21912
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Filer Authorized By:	Yeu-Ting George Cheng
Attorney Docket Number:	MJAKP016C1
Receipt Date:	21-DEC-2018
Filing Date:	05-NOV-2018
Time Stamp:	16:22:06
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	Information Disclosure Statement (IDS) Form (SB08)	MJAKP016C1_IDS_03_SB08.pdf	1054462 6d9a203168dd6bd81a031b00ad954a378d7edf12	no	7

Warnings:

Information:	
Total Files Size (in bytes):	1054462

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.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Fan S Tsang
	Attorney Docket Number	MJAKP016C1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8572184	B1	2013-10-29	COSOI CATALIN A	
	2	8667074	B1	2014-03-04	FARKAS BRADFORD L	
	3	8676155	B2	2014-03-18	FAN JAMES	
	4	8949353	B1	2015-02-03	BEGUIN JULIEN	
	5	8959163	B1	2015-02-17	LEDET DAVID GERARD	
	6	8996042	B1	2015-03-31	HANNIGAN MICHAEL K	
	7	9560506	B2	2017-01-31	GUDLAVENKATASIVA BHASKAR R	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Fan S Tsang
	Attorney Docket Number	MJAKP016C1

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030225850	A1	2003-12-04	TEAGUE ALAN H	
	2	20050188045	A1	2005-08-25	KATSIKAS PETER L	
	3	20070100944	A1	2007-05-03	FORD PETER S	
	4	20070276907	A1	2007-11-29	MAES STEPHANE H	
	5	20080022107	A1	2008-01-24	PICKLES DAVID KENDAL	
	6	20090037350	A1	2009-02-05	RUDAT ROBIN	
	7	20100198928	B2	2010-08-05	ALMEIDA JOHN	
	8	20100257222	A1	2010-10-07	HAMILTON II RICK A	
	9	20110066687	A1	2011-03-17	CHEN DANNY YEN-FU	
	10	20110145152	A1	2011-06-16	MCCOWN STEVEN HARVEY	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Fan S Tsang
	Attorney Docket Number	MJAKP016C1

	11	20110191688	A1	2011-08-04	HASEGAWA NOBUHIKO	
	12	20110294478	A1	2011-12-01	TRIVI JEAN-MICHEL	
	13	20120136780	A1	2012-05-31	EL-AWADY KHALID	
	14	20120242488	A1	2012-09-27	WILSON ERIC EDWARD	
	15	20140082726	A1	2014-03-20	DRELLER BRYAN P	
	16	20140258420	A1	2014-09-11	DENT TERRILL MARK	
	17	20140340822	A1	2014-11-20	LAL DHANANJAY	
	18	20150033343	A1	2015-01-29	JIANG WU	
	19	20150100896	B2	2015-04-09	SHMAROVOZ GEORGII VALENTINOVICH	
	20	20150148006	A1	2015-05-28	SKUDLARK ANN E	
	21	20150172233	A1	2015-06-18	SHE ZHIYONG	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Fan S Tsang
	Attorney Docket Number	MJAKP016C1

	22	20150216413	A1	2015-08-06	SOYAO GRACE CASTILLO	
	23	20150236990	A1	2015-08-20	SHAN YI	
	24	20150326510	A1	2015-11-12	TOMLINSON MARTIN	
	25	20150334065	A1	2015-11-19	YAN DAVID	
	26	20150363839	A1	2015-12-17	ZOLTY BARRY	
	27	20150371212	A1	2015-12-24	GIORDANO JOSEPH	
	28	20160037270	A1	2016-02-04	POLINSKE BEAU JAY	
	29	20160087925	A1	2016-03-24	KALAVAGATTU ARAVIND	
	30	20160094566	A1	2016-03-31	PAREKH SANJAY M	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0110

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Fan S Tsang
	Attorney Docket Number	MJAKP016C1

	1							

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NON-PATENT LITERATURE DOCUMENTS Remove

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Fan S Tsang
	Attorney Docket Number	MJAKP016C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2018-12-21
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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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.

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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 inspections 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.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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 contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7831522	B1	2010-11-09	SATISH SOURABH	
	2	9800589	B1	2017-10-24	ASVEREN TOLGA	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20120311703	A1	2012-12-06	YANOVSKY BORIS	
	2	20170251006	A1	2017-08-31	LAROSA VINCENT JAY	
	3	20170324767	A1	2017-11-09	SRIVASTAVA MANOJ KUMAR	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0114

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

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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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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Examiner Signature		Date Considered	

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2019-05-06
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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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 the Freedom of Information Act requires disclosure of these record s.

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 inspections or an issued patent.

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Electronic Acknowledgement Receipt

EFS ID:	35928366
Application Number:	16180373
International Application Number:	
Confirmation Number:	3758
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Customer Number:	21912
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Filer Authorized By:	Yeu-Ting George Cheng
Attorney Docket Number:	MJAKP016C1
Receipt Date:	06-MAY-2019
Filing Date:	05-NOV-2018
Time Stamp:	16:19:14
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	Information Disclosure Statement (IDS) Form (SB08)	MJAKP016C1_IDS_04_SB08.pdf	1053179 9c845196e42e830a35ae17782b3f88774db fb139	no	4

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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.

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Notice of References Cited	Application/Control No. 16/180,373	Applicant(s)/Patent Under Reexamination Jakobsson, Bjorn Markus	
	Examiner AKELAW A TESHALE	Art Unit 2653	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-9060057-B1	06-2015	Danis; Serdar Artun	H04M3/42059	1/1
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AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
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0120

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
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Attorney Docket Number	MJAKP016C1

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7831522	B1	2010-11-09	SATISH SOURABH	
	2	9800589	B1	2017-10-24	ASVEREN TOLGA	

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	1	20120311703	A1	2012-12-06	YANOVSKY BORIS	
	2	20170251006	A1	2017-08-31	LAROSA VINCENT JAY	
	3	20170324767	A1	2017-11-09	SRIVASTAVA MANOJ KUMAR	

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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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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Name/Print	Yeu-Ting George Cheng	Registration Number	69408

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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.

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
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S1	3	"9060057".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 12:33
S2	2	((("RightQuestion") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2019/06/06 12:58
S3	227	((("JAKOBSSON") near3 ("Bjorn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/06/06 12:58
S4	227	S2 or S3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 13:04
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EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
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S7	617	S5 or S6	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 13:15
S9	131	S7 and ((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or screen$3 or check$3 or authoriz$3 or authoris$3 or permit$3 or permission))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 13:37
S10	96	S9 and ((server or provider) with (stor$4 or regist$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 13:40
S11	1	"9060057".pn. and spoof$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 14:48
S12	2	"9060057".pn. and authenticat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 14:49
S13	25	S10 and spoof$4	US-PGPUB; USPAT; USOCR;	OR	OFF	2019/06/06 15:07

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0127

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S15	26	S7 and ((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or authoriz$3 or authoris$3 or permit$3 or permission)) same (deny$4 or block$4 or reject$4or blacklist$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 15:22
S16	27	S7 and ((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or authoriz$3 or authoris$3 or permit$3 or permission)) same (deny$4 or block$4 or reject$4 or blacklist$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 15:29
S17	22	S16 and ((server or provider) with (stor$4 or regist$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 15:37
S18	17	S16 and ((server or provider) with (device or apparatus) with (stor$4 or regist$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 15:38
S19	679750	((server or provider) with (device or apparatus) with (stor$4 or regist$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:42
S20	2786792	((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or screen$3 or check$3 or authoriz$3 or authoris$3 or permit$3 or permission))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:44
S22	73224	S19 same ((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or authoriz$3 or authoris$3 or permit$3 or permission))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:45
S23	8917	S22 AND ((H04W12/06 OR H04W12/08 OR H04W88/02 OR H04W12/00514 OR H04W12/12 OR H04W4/14 OR H04M3/382 OR H04M3/42042).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:49
S26	15087	((device or apparatus) near5	US-PGPUB;	OR	ON	2019/06/06

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
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		(authenticat$3 or verif$3 or validat$3 or identif$3 or authoriz$3 or authoris$3)) same ((server or provider) with (stor$4 or regist$4)) same (match$4 or compar$4)	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			16:59
S27	15286	((device or apparatus) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3)) same ((server or provider) with (stor$4 or regist$4)) same (match$4 or compar$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 17:01
S28	2433	S27 AND ((H04W12/06 OR H04W12/08 OR H04W88/02 OR H04W12/00514 OR H04W12/12 OR H04W4/14 OR H04M3/382 OR H04M3/42042).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 17:03
S29	5435	((device or apparatus) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3)) with ((server or provider) with (stor$4 or regist$4)) with (match$4 or compar$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 21:46
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AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0129

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AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0130

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S32	617	S30 or S31	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 21:47
S33	4	S29 and S32	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 21:48
S34	8888	((device or apparatus) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3)) same ((server or provider) with (stor$4 or regist$4)) with (match$4 or compar$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 21:49
S35	4	S32 and S34	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 21:50
S36	4603	S34 same authenticat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 21:53
S38	399	S36 and spoof$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 21:55
S39	1309	S36 same communication	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 22:49
S40	114	S39 and spoof$4	US-PGPUB;	OR	ON	2019/06/06

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AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0131

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S41	3	"9060057".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/07 09:43

EAST Search History (Interference)

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	
Examiner Name	
Attorney Docket Number	MJAKP016C1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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	2	6574658		2003-06-03	GABBER ERAN	
	3	6721784		2004-04-13	LEONARD JON N	
	4	7293063		2007-11-06	SOBEL WILLIAM E	
	5	7299261		2007-11-20	OLIVER JONATHAN J	
	6	7644274		2010-01-05	JAKOBSSON BJORN MARKUS	
	7	7797752		2010-09-14	VAIDYA VIMAL	
	8	7809795		2010-10-05	COOLEY SHAUN	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	
	Examiner Name	
	Attorney Docket Number	MJAKP016C1

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	10	7814545		2010-10-12	OLIVER JONATHAN J	
	11	7899213		2011-03-01	OTSUKA YUJI	
	12	7899866		2011-03-01	BUCKINGHAM JAY T	
	13	7917655		2011-03-29	COOMER GRAHAM	
	14	8010614		2011-08-30	MUSAT CLAUDIU C N	
	15	8131655		2012-03-06	COSOI ALEXANDRU C	
	16	8255572		2012-08-28	COOMER GRAHAM	
	17	8489689		2013-07-16	SHARMA VIPUL	
	18	8566938		2013-10-22	PRAKASH GAGAN	
	19	8667069		2014-03-04	CONNELLY MICHAEL	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.T/

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	First Named Inventor	Bjorn Markus Jakobsson
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	Examiner Name	
	Attorney Docket Number	MJAKP016C1

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	21	8752172		2014-06-10	DOTAN YEDIDYA	
	22	8832202		2014-09-09	YOSHIOKA TAKASHI	
	23	8984640		2015-03-17	EMIGH AARON T	
	24	9060057		2015-06-16	DANIS SERDAR ARTUN	
	25	9245115		2016-01-26	JAKOBSSON BJORN MARKUS	
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	27	9338287		2016-05-10	RUSSO RICHARD J	
	28	9471714		2016-10-18	IWASAKI NARUTAKA	
	29	9473437		2016-10-18	JAKOBSSON BJORN MARKUS	

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Attorney Docket Number	MJAKP016C1

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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	2	20020184315		2002-12-05	EARNEST JERRY BRETT	
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	4	20030229672		2003-12-11	KOHN DANIEL	
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	6	20040176072		2004-09-09	GELLENS RANDALL	
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	10	20050060643		2005-03-17	GLASS JEFFREY	

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	Attorney Docket Number	MJAKP016C1

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	12	20050076240		2005-04-07	APPLEMAN BARRY	
	13	20050080857		2005-04-14	KIRSCH STEVEN T	
	14	20050182735		2005-08-18	ZAGER ROBERT	
	15	20050188023		2005-08-25	DOAN CHRISTOPHER	
	16	20050198173		2005-09-08	EVANS ALEXANDER W	
	17	20050216587		2005-09-29	JOHN JOSEPH W	
	18	20050223076		2005-10-06	BARRUS WILLIAM	
	19	20050235065		2005-10-20	LE YANQUN	
	20	20050257261		2005-11-17	SHRAIM IHAB	
	21	20060004772		2006-01-05	HAGAN THOMAS	

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	23	20060026242		2006-02-02	KUHLMANN JOHN H	
	24	20060031306		2006-02-09	HAVERKOS TODD	
	25	20060053490		2006-03-09	HERZ FREDERICK	
	26	20060085505		2006-04-20	GILLUM ELIOT C	
	27	20060149821		2006-07-06	RAJAN VADAKKEDATHU	
	28	20060168329		2006-07-27	TAN TEEWOON	
	29	20060195542		2006-08-31	NANDHRA IAN	
	30	20060206713		2006-09-14	HICKMAN KENNETH	
	31	20060224677		2006-10-05	ISHIKAWA MARK	
	32	20060230461		2006-10-12	HAUSER RALF	

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	34	20060259558		2006-11-16	YEN WEN YI	
	35	20060265498		2006-11-23	TURGEMAN YEHUDA	
	36	20070019235		2007-01-25	LEE DONG H	
	37	20070027992		2007-02-01	JUDGE PAUL	
	38	20070038718		2007-02-15	KHOO JUSTIN	
	39	20070067465		2007-03-22	BLINN ARNOLD	
	40	20070086592		2007-04-19	ELLISON CARL M	
	41	20070101423		2007-05-03	OLIVER JONATHAN	
	42	20070107053		2007-05-10	SHRAIM IHAB	
	43	20070130618		2007-06-07	CHEN CHUAN	

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	Attorney Docket Number	MJAKP016C1

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	45	20070192169		2007-08-16	HERBRICH RALF	
	46	20070198642		2007-08-23	MALIK DALE	
	47	20070214495		2007-09-13	ROYER BARRY L	
	48	20070239639		2007-10-11	LOUGHMILLER SCOTT	
	49	20070271343		2007-11-22	GEORGE DAVID ALSON	
	50	20070299916		2007-12-27	BATES CARY LEE	
	51	20080004049		2008-01-03	YIGANG CAL	
	52	20080046970		2008-02-21	OLIVER IAN	
	53	20080050014		2008-02-28	BRADSKI GARY	
	54	20080104235		2008-05-01	OLIVER JONATHAN	

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	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	
	Examiner Name	
	Attorney Docket Number	MJAKP016C1

	55	20080141374		2008-06-12	SIDIROGLOU STYLIANOS	
	56	20080175266		2008-07-24	ALPEROVITCH DMITRI	
	57	20080178288		2008-07-24	ALPEROVITCH DMITRI	
	58	20080235794		2008-09-25	BOGNER ETAY	
	59	20080276315		2008-11-06	SHUSTER GARY STEPHEN	
	60	20080290154		2008-11-27	BARNHARDT DAVID WAYNE	
	61	20090064330		2009-03-05	SHRAIM IHAB	
	62	20090089859		2009-04-02	COOK DEBRA L	
	63	20090210708		2009-08-20	CHOU JESSE	
	64	20090228583		2009-09-10	POCKLINGTON RICHARD	
	65	20090252159		2009-10-08	LAWSON JEFFREY	

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	Examiner Name	
	Attorney Docket Number	MJAKP016C1

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	67	20090319629		2009-12-24	DE GUERRE JAMES ALLAN	
	68	20100030798		2010-02-04	KUMAR MOHAN	
	69	20100043071		2010-02-18	WANG TAK YIN	
	70	20100070761		2010-03-18	GUSTAVE CHRISTOPHE	
	71	20100094887		2010-04-15	YE JINGJUN	
	72	20100115040		2010-05-06	SARGENT JAMES	
	73	20100145900		2010-06-10	ZHENG LEI	
	74	20100287246		2010-11-11	KLOS THOMAS	
	75	20100299399		2010-11-25	WANSER KELLY	
	76	20100313253		2010-12-09	REISS WALTER STANLEY	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Examiner Name	
	Attorney Docket Number	MJAKP016C1

	77	20110087485		2011-04-14	MAUDE PETER	
	78	20110191847		2011-08-04	DAVIS MALCOLM H	
	79	20110271349		2011-11-03	KAPLAN MICHAEL GREGOR	
	80	20120030293		2012-02-02	BOBOTEK ALEXANDER	
	81	20120167233		2012-06-28	GILLUM ELIOT C	
	82	20120227104		2012-09-06	SINHA AMIT	
	83	20120246725		2012-09-27	OSIPKOV IVAN	
	84	20120278694		2012-11-01	WASHIO SUGURU	
	85	20130067012		2013-03-14	MATZKEL BEN	
	86	20130081142		2013-03-28	MCDOUGAL MONTY D	
	87	20130083129		2013-04-04	THOMPSON MICHAEL D	

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	Attorney Docket Number	MJAKP016C1

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	89	20130305318		2013-11-14	DELUCA LISA SEACAT	
	90	20130346528		2013-12-26	SHINDE RAJESH	
	91	20140230061		2014-08-14	HIGBEE AARON	
	92	20140250506		2014-09-04	HALLAM-BAKER PHILLIP MARTIN	
	93	20140259158		2014-09-11	BANK OF AMERICA CORPORATION	
	94	20140366144		2014-12-11	ALPEROVITCH DMITRI	
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	Attorney Docket Number	MJAKP016C1

	99	20150381653		2015-12-31	Proofpoint, Inc.	
	100	20160014151		2016-01-14	PRAKASH GAGAN	
	101	20160104132		2016-04-14	ABBATIELLO PIERPAOLO	
	102	20160225897		2016-08-04	SRIDHAR SEETHARAMAN	
	103	20160269437		2016-09-15	MCDOUGAL MONTY D	
	104	20170005961		2017-01-05	McAfee, Inc.	
	105	20170091274		2017-03-30	GUO SONGTAO	

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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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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EXAMINER SIGNATURE

Examiner Signature	/AKELAW TESHALE/	Date Considered	06/08/2019

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Art Unit	
	Examiner Name	
	Attorney Docket Number	MJAKP016C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☒ See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2018-11-02
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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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:

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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 inspections 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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/180,373	11/05/2018	Bjorn Markus Jakobsson	MJAKP016C1	3758

21912 7590 06/17/2019

VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

EXAMINER	
TESHALE, AKELAW	

ART UNIT	PAPER NUMBER
2653	

NOTIFICATION DATE	DELIVERY MODE
06/17/2019	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):

usptocorrespondence@ip-patent.com

Office Action Summary	**Application No.** 16/180,373	**Applicant(s)** Jakobsson, Bjorn Markus	
	Examiner AKELAW A TESHALE	**Art Unit** 2653	**AIA (FITF) Status** Yes

-- 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 11/05/2018.

☐ 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) 1-21 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) 1-21 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 11/05/2018 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) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0154

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(l)(1) - 706.02(l)(3) for applications not subject to examination under the first inventor to file

provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

2. Claims 1-21 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-3, 7-8, 19-26, and 28-29 of issued U.S. Application No. 14/535,064.

Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of the claims is substantially similar and recites similar limitations. It is because the claims in the continuation application are broader than the ones in the patent application, In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982).

For example, claim 1 of the present application recites “enroll”, “store”, “obtain”, and "preform” steps which are the same as claim 1 of the issued U.S. Application No. 14/535,064.

Furthermore, the cited patents has more limitations, thereby encompassing the present application's limitations.

Therefore, claim 1 of the present invention is broader than claim 1 of the issued U.S. Application No. 14/535,064.

3. The prior art does not appear to teach or make obvious the subject matter of the claims.

However, the 35 U.S.C. 101 and the nonstatutory double patenting rejections must be overcome.

Claim Rejections - 35 USC § 102

1. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

2. 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 –
>
> (a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale or otherwise available to the public before the effective filing date of the claimed invention.

3. **Claims 1-21** are rejected under 35 U.S.C. 102 (a) (1) as being anticipated by U.S Pub No. 9,060,057 B1 to Danis.

Regarding **claim 1**, Danis discloses a system, comprising:

a verification service provider, configured to, using one or more processors: enroll a first device with the verification service provider, wherein enrolling the first device includes associating, by the verification service provider, the first device with device information comprising at least one of an embedded hardware identifier, (column 39, lines 45-59; server can match the common secret to a specific customer, but would be hard to obtain by an attacker. Such common secrets may include but is not limited to; user biometric information, phone IMEI number, device MAC address);

store, at the verification service provider, the device information associated with the first device; obtain, at the verification service provider, information transmitted by a second device associated with a communications connection (Abstract, Fig. 3; Fig.6C, Fig.8A and column 5, lines 13-51; authentication server certifies authentication devices in order to prevent an authentication device from fraudulently updating or inquiring the authentication server. Such certification is done by the authentication device contacting the authentication server, transmitting the phone number of authentication device and requesting a password. The authentication server then dials the received phone number of the authentication device and transmits the certification password. The authentication device now must use the received password each time it contacts the authentication server. Thus, the authentication server can be assured that the certified authentication device is at the appropriate phone number and is not fraudulently stating a different number from the one it is connected to);

perform, at the verification service provider, a security determination at least in part by determining whether the obtained information transmitted by the second device matches at least a portion of the stored device information associated with the

enrolled first device; and based at least in part on the security determination, select an action comprising at least one of blocking the communication, requesting additional authentication, and permitting the communication (column 5, lines 12-51; authentication server certifies authentication devices in order to prevent an authentication device from fraudulently updating or inquiring the authentication server. Such certification is done by the authentication device contacting the authentication server, transmitting the phone number of authentication device and requesting a password. The authentication server then dials the received phone number of the authentication device and transmits the certification password. The authentication device now must use the received password each time it contacts the authentication server. Thus, the authentication server can be assured that the certified authentication device is at the appropriate phone number and is not fraudulently stating a different number from the one it is connected to).

Regarding **claim 2**, Danis discloses the system of claim 1, wherein the information transmitted by the second device is obtained via a backchannel that is different from the communications connection (Fig.3, Fig.6C, Fig8A, and column 5, lines 12-51).

Regarding **claim 3**, Danis discloses the system of claim 1, wherein based at least in part on the security determination, the verification service provider is further configured to convey an assurance to a recipient associated with the communications connection (Fig.3, Fig. 6C, Fig. 8A and column 5, lines 12-51).

Regarding **claim 4**, Danis discloses the system of claim 1, wherein the communications connection is associated with at least one of email, SMS, instant message, and a phone call (Abstract and column 5, lines 1-35).

Regarding **claim 5**, Danis discloses the system of claim 1, wherein the first device comprises at least one of a smartphone, a tablet, a PC, a phablet, and a wearable device (Fig. 2A).

Regarding **claim 6**, Danis discloses the system of claim 1, wherein enrolling the first device is based at least in part on at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number (column 5, lines 12-51).

Regarding **claim 7**, Danis discloses the system of claim 1, wherein the additional authentication comprises at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number (column 5, lines 12-51).

Claims 8-14 are method claims correspond to system claims 1-7. Therefore, claims 8-14 have been analyzed and rejected based on system claims 1-7.

Claims 15-21 are computer program product claims correspond to system claims 1-7. Therefore, Claims 15-21 have been analyzed and rejected based on system claims 1-7.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to AKELAW A TESHALE whose telephone number is (571)270-5302. The examiner can normally be reached on 9 am -6pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571)272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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 https://ppair-my.uspto.gov/pair/PrivatePair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access

to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AKELAW TESHALE
Primary Examiner
Art Unit 2653

/AKELAW TESHALE/
Primary Examiner, Art Unit 2653

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	**Art Unit**
	AKELAW A TESHALE	2653

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS										
☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM		**DATE**								
Final	Original	06/08/2019								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓								
	9	✓								
	10	✓								
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	12	✓								
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	17	✓								
	18	✓								
	19	✓								
	20	✓								
	21	✓								

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0163

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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 contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	
Examiner Name	
Attorney Docket Number	MJAKP016C1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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All References Considered Except Where Lined Through. /A.T/

Receipt date: 11/05/2018

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16180373 - GAU: 2653
Filing Date	
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	
Examiner Name	
Attorney Docket Number	MJAKP016C1

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EFS Web 2.1.18

All References Considered Except Where Lined Through. /A.T/

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Examiner Name	
Attorney Docket Number	MJAKP016C1

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EFS Web 2.1.18

All References Considered Except Where Lined Through. /A.T/

Receipt date: 11/05/2018

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Filing Date	
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	
Examiner Name	
Attorney Docket Number	MJAKP016C1

	23	R. Dhamija and J. D. Tygar. The Battle Against Phishing: Dynamic Security Skins. In Proceedings of the 2005 Symposium on Usable Privacy and Security, SOUPS '05, New York, NY, USA, 2005. ACM.
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If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/AKELAW TESHALE/	Date Considered	06/08/2019

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

All References Considered Except Where Lined Through. /A.T/

Receipt date: 11/05/2018

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16180373 - GAU: 2653
Filing Date	
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	
Examiner Name	
Attorney Docket Number	MJAKP016C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☒ See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2018-11-02
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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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 the Freedom of Information Act requires disclosure of these record s.

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 inspections 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.

All References Considered Except Where Lined Through. /A.T/

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	Art Unit
	AKELAW A TESHALE	2653

CPC - Searched*		
Symbol	Date	Examiner
H04W12/06, H04W12/08, H04W88/02, H04W12/00514, H04W12/12, H04W4/14, H04M3/382, H04M3/42042	06/06/2019	AT

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Inventor name search (east)	06/06/2019	AT
east search (US-PGPUB;USPAT;USOCR;FPRS;EPO;JPO;DERWENT; IBM_TDB)	06/06/2019	AT
Please see east search attachment	06/08/2019	AT

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0170

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Fan S Tsang
Attorney Docket Number	MJAKP016C1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8572184	B1	2013-10-29	COSOI CATALIN A	
	2	8667074	B1	2014-03-04	FARKAS BRADFORD L	
	3	8676155	B2	2014-03-18	FAN JAMES	
	4	8949353	B1	2015-02-03	BEGUIN JULIEN	
	5	8959163	B1	2015-02-17	LEDET DAVID GERARD	
	6	8996042	B1	2015-03-31	HANNIGAN MICHAEL K	
	7	9560506	B2	2017-01-31	GUDLAVENKATASIVA BHASKAR R	

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Filing Date	2018-11-05
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Art Unit	2653
Examiner Name	Fan S Tsang
Attorney Docket Number	MJAKP016C1

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030225850	A1	2003-12-04	TEAGUE ALAN H	
	2	20050188045	A1	2005-08-25	KATSIKAS PETER L	
	3	20070100944	A1	2007-05-03	FORD PETER S	
	4	20070276907	A1	2007-11-29	MAES STEPHANE H	
	5	20080022107	A1	2008-01-24	PICKLES DAVID KENDAL	
	6	20090037350	A1	2009-02-05	RUDAT ROBIN	
	7	20100198928	B2	2010-08-05	ALMEIDA JOHN	
	8	20100257222	A1	2010-10-07	HAMILTON II RICK A	
	9	20110066687	A1	2011-03-17	CHEN DANNY YEN-FU	
	10	20110145152	A1	2011-06-16	MCCOWN STEVEN HARVEY	

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All References Considered Except Where Lined Through. /A.T/

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	Art Unit	2653
	Examiner Name	Fan S Tsang
	Attorney Docket Number	MJAKP016C1

	11	20110191688	A1	2011-08-04	HASEGAWA NOBUHIKO	
	12	20110294478	A1	2011-12-01	TRIVI JEAN-MICHEL	
	13	20120136780	A1	2012-05-31	EL-AWADY KHALID	
	14	20120242488	A1	2012-09-27	WILSON ERIC EDWARD	
	15	20140082726	A1	2014-03-20	DRELLER BRYAN P	
	16	20140258420	A1	2014-09-11	DENT TERRILL MARK	
	17	20140340822	A1	2014-11-20	LAL DHANANJAY	
	18	20150033343	A1	2015-01-29	JIANG WU	
	19	20150100896	B2	2015-04-09	SHMAROVOZ GEORGII VALENTINOVICH	
	20	20150148006	A1	2015-05-28	SKUDLARK ANN E	
	21	20150172233	A1	2015-06-18	SHE ZHIYONG	

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	Art Unit	2653
	Examiner Name	Fan S Tsang
	Attorney Docket Number	MJAKP016C1

	22	20150216413	A1	2015-08-06	SOYAO GRACE CASTILLO	
	23	20150236990	A1	2015-08-20	SHAN YI	
	24	20150326510	A1	2015-11-12	TOMLINSON MARTIN	
	25	20150334065	A1	2015-11-19	YAN DAVID	
	26	20150363839	A1	2015-12-17	ZOLTY BARRY	
	27	20150371212	A1	2015-12-24	GIORDANO JOSEPH	
	28	20160037270	A1	2016-02-04	POLINSKE BEAU JAY	
	29	20160087925	A1	2016-03-24	KALAVAGATTU ARAVIND	
	30	20160094566	A1	2016-03-31	PAREKH SANJAY M	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]¡	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Examiner Name	Fan S Tsang
Attorney Docket Number	MJAKP016C1

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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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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EXAMINER SIGNATURE

Examiner Signature	/AKELAW TESHALE/	Date Considered	06/08/2019

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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First Named Inventor	Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Fan S Tsang
Attorney Docket Number	MJAKP016C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2018-12-21
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

All References Considered Except Where Lined Through. /A.T/

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 the Freedom of Information Act requires disclosure of these record s.

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 inspections 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.

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6073142		2000-06-06	GEIGER FRED J	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20100235636		2010-09-16	COHEN RAM	
	2	20130318580		2013-11-28	GUDLAVENKATASIVA BHASKAR R	
	3	20140214895		2014-07-31	HIGGINS JOHN M	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

EX-1002
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0178

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

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

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	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

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A certification statement is not submitted herewith.

SIGNATURE

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Signature	/Obert H. Chu/	Date (YYYY-MM-DD)	2019-08-22
Name/Print	Obert H. Chu	Registration Number	52744

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Electronic Acknowledgement Receipt

EFS ID:	36961217
Application Number:	16180373
International Application Number:	
Confirmation Number:	3758
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Customer Number:	21912
Filer:	Obert H. Chu/Kara Whitlow
Filer Authorized By:	Obert H. Chu
Attorney Docket Number:	MJAKP016C1
Receipt Date:	23-AUG-2019
Filing Date:	05-NOV-2018
Time Stamp:	12:22:49
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	Information Disclosure Statement (IDS) Form (SB08)	MJAKP016C1_IDS_05.pdf	1053071 bdf38b5a4d6d7ba2df550327a0931965cad61f51	no	4

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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.

Electronic Acknowledgement Receipt

EFS ID:	37491399
Application Number:	16180373
International Application Number:	
Confirmation Number:	3758
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Customer Number:	21912
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Filer Authorized By:	Yeu-Ting George Cheng
Attorney Docket Number:	MJAKP016C1
Receipt Date:	17-OCT-2019
Filing Date:	05-NOV-2018
Time Stamp:	18:33:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$100
RAM confirmation Number	E20190GI33595967
Deposit Account	500685
Authorized User	Elaine Nguyen
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 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	Fee Worksheet (SB06)	fee-info.pdf	30596 51ecd5e4e227210984c3d639368cc0ae46628a2a	no	2

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Electronic Patent Application Fee Transmittal

Application Number:	16180373
Filing Date:	05-Nov-2018
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Attorney Docket Number:	MJAKP016C1

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:				
CLAIMS IN EXCESS OF 20	2202	2	50	100
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**100**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	16/180,373	Examiner:	Akelaw Teshale
Filed:	November 05, 2018	Art Unit:	2653
Confirmation No.:	3758	Docket No.:	MJAKP016C1
First Inventor:	Bjorn Markus Jakobsson		
Title:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA		

TERMINAL DISCLAIMER UNDER 37 C.F.R. § 1.321 TO OBVIATE AN OBVIOUSNESS-TYPE DOUBLE PATENTING REJECTION

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

Dear Sir:

Applicant(s), RightQuestion, LLC, the owner(s) of the entire interest in the above-identified application hereby disclaim(s), except as provided below, the terminal part of the statutory term of any patent granted on the above-identified application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. 154 and 173 of any patent granted on United States Patent Application No. 14/535,064 (hereafter "other patent application"), as presently shortened by any terminal disclaimer. The applicant(s)/owner(s) hereby agree(s) that any patent so granted on the above-identified application shall be enforceable only for and during such period that it and the other patent application are commonly owned. This agreement runs with any patent granted on the above-identified application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant(s)/owner(s) do(es) not disclaim the terminal part of any patent granted on the above-identified application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 and 173 of any patent granted on the other patent application, as presently shortened by any terminal disclaimer, in the event that it later: expires for failure to pay a maintenance fee, is held unenforceable, is found

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invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 C.F.R. 1.321, has all claims canceled by a reexamination certificate, is reissued or is in any matter terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

The undersigned is an agent or attorney of record.

Please charge Deposit Account No. 50-0685 (MJAKP016C1) in the amount of $160.00 to cover the fee. If the required fees are missing or any additional fees are required during the pendency of the subject application, please charge such fees or credit any overpayment to Deposit Account No. 50-0685 (Order No. MJAKP016C1).

Respectfully submitted,

Dated: October 17, 2019

/Yeu-Ting George Cheng/
Yeu-Ting George Cheng
Registration No. 69408
408-207-4765

VAN PELT, YI & JAMES LLP
10050 N. Foothill Blvd., Suite 200
Cupertino, CA 95014
Fax 408-973-2595

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Electronic Patent Application Fee Transmittal

Application Number:	16180373
Filing Date:	05-Nov-2018
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Attorney Docket Number:	MJAKP016C1

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($)
Extension - 1 month with $0 paid	2251	1	100	100
Miscellaneous:				
STATUTORY OR TERMINAL DISCLAIMER	2814	1	160	160
		Total in USD ($)		**260**

Electronic Acknowledgement Receipt

EFS ID:	37491340
Application Number:	16180373
International Application Number:	
Confirmation Number:	3758
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Customer Number:	21912
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Filer Authorized By:	Yeu-Ting George Cheng
Attorney Docket Number:	MJAKP016C1
Receipt Date:	17-OCT-2019
Filing Date:	05-NOV-2018
Time Stamp:	18:27:41
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$260
RAM confirmation Number	E20190GI28095907
Deposit Account	500685
Authorized User	Elaine Nguyen
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 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	Amendment/Req. Reconsideration-After Non-Final Reject	MJAKP016C1_AMD_A.pdf	130076 73c123b07b453683350ccf030e1af5a4ad898f7e	no	9
Warnings:					
Information:					
2	Terminal Disclaimer Filed	MJAKP016C1_TD_14535064.pdf	80125 e0646407022335343 9a5c936a6819ec6ef20ab05	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32804 803fe61a124548d6d870411b62e6d085bbd93a20	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	243005		

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.

INTERVIEW SUMMARY

A telephonic interview in the above-referenced case was conducted on October 17, 2019 between the Examiner and the Applicants' undersigned representative. The Office Action mailed on June 17, 2019 was discussed. Specifically, the rejections of Claims 1, 8, and 15 in light of Danis and the proposed amendments set forth herein were discussed with the intent to place the claims in better condition for allowance or appeal.

The Applicants thank the Examiner for the interview.

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REMARKS

Claims 1, 8, and 15 have been amended to clarify the subject matter regarded as the invention. New Claims 22 and 23 have been added. Claims 1-23 are pending. No new matter has been added.

Double Patenting

Claims 1-21 have been rejected under the judicially created doctrine of obviousness-type double patenting. It is believed that the Terminal Disclaimer filed herewith is sufficient to overcome the double patenting rejection.

Claim Rejections – 35 U.S.C. §102

Claims 1-21 stand rejected under 35 U.S.C. §102 as being anticipated by Danis (U.S. Pat. No. 9,060,057). The rejection is respectfully traversed.

As amended, independent Claims 1, 8, and 15 each recite, in part, "enroll[ing] a first device with a verification service provider, wherein enrolling the first device includes associating, by the verification service provider, the first device with a device fingerprint that is generated based at least in part on a set of configuration information associated with the first device," "stor[ing], at the verification service provider, the device fingerprint associated with the first device," and "perform[ing], at the verification service provider, a security determination at least in part by determining whether the obtained information transmitted by the second device matches at least a portion of the stored device fingerprint that was generated based at least in part on the set of configuration information associated with the enrolled first device."

Support for the amendments may be found, without limitation, in Paragraphs [0049]-[0050]. Danis does not disclose these limitations. Independent Claims 1, 8, and 15 are therefore believed to be allowable. Claims 2-7, 9-14, and 16-21 depend, either directly or indirectly, from one of the aforementioned independent claims, and are therefore also believed to be allowable for the same reasons described above.

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New Claims

Support for new Claims 22 and 23 may be found, without limitation, in Paragraphs [0049] and [0050] of the Specification. New Claims 22 and 23 depend from independent Claim 1, and are therefore also believed to be allowable for the same reasons described above.

The foregoing amendments are not to be taken as an admission of unpatentability of any of the claims prior to the amendments.

Reconsideration of the application and allowance of all claims are respectfully requested based on the preceding remarks. If at any time the Examiner believes that an interview would be helpful, please contact the undersigned.

Respectfully submitted,

Dated: October 17, 2019

/Yeu-Ting George Cheng/
Yeu-Ting George Cheng
Registration No. 69408
408-207-4765

VAN PELT, YI & JAMES LLP
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Cupertino, CA 95014
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IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A system, comprising:

a verification service provider, configured to, using one or more processors:

enroll a first device with the verification service provider, wherein enrolling the first device includes associating, by the verification service provider, the first device with ~~device information comprising at least one of a software identifier, an embedded hardware identifier, and~~ a device fingerprint that~~, wherein the device fingerprint~~ is generated based at least in part on a set of configuration information associated with the first device;

store, at the verification service provider, the device fingerprint ~~information~~ associated with the first device;

obtain, at the verification service provider, information transmitted by a second device associated with a communications connection;

perform, at the verification service provider, a security determination at least in part by determining whether the obtained information transmitted by the second device matches at least a portion of the stored device fingerprint that was generated based at least in part on the set of configuration information associated with the enrolled first device ~~device information associated with the enrolled first device~~; and

based at least in part on the security determination, select an action comprising at least one of blocking the communication, requesting additional authentication, and permitting the communication.

2. (Original) The system of claim 1, wherein the information transmitted by the second device is obtained via a backchannel that is different from the communications connection.

3. (Original) The system of claim 1, wherein based at least in part on the security determination, the verification service provider is further configured to convey an assurance to a recipient associated with the communications connection.

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4. (Original) The system of claim 1, wherein the communications connection is associated with at least one of email, SMS, instant message, and a phone call.

5. (Original) The system of claim 1, wherein the first device comprises at least one of a smartphone, a tablet, a PC, a phablet, and a wearable device.

6. (Original) The system of claim 1, wherein enrolling the first device is based at least in part on at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number.

7. (Original) The system of claim 1, wherein the additional authentication comprises at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number.

8. (Currently amended) A method, comprising:

enrolling a first device with a verification service provider, wherein enrolling the first device includes associating, by the verification service provider, the first device with ~~device information comprising at least one of a software identifier, an embedded hardware identifier, and~~ a device fingerprint that~~, wherein the device fingerprint~~ is generated based at least in part on a set of configuration information associated with the first device;

storing, at the verification service provider, the device fingerprint ~~information~~ associated with the first device;

obtaining, at the verification service provider, information transmitted by a second device associated with a communications connection;

performing, at the verification service provider, a security determination at least in part by determining whether the obtained information transmitted by the second device matches at least a portion of the stored device fingerprint that was generated based at least in part on the set of configuration information associated with the enrolled first device ~~device information associated with the enrolled first device~~; and

based at least in part on the security determination, selecting, at the verification service provider, an action comprising at least one of blocking the communication, requesting additional authentication, and permitting the communication.

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9. (Original) The method of claim 8, wherein the information transmitted by the second device is obtained via a backchannel that is different from the communications connection.

10. (Original) The method of claim 8, wherein based at least in part on the security determination, the verification service provider is further configured to convey an assurance to a recipient associated with the communications connection.

11. (Original) The method of claim 8, wherein the communications connection is associated with at least one of email, SMS, instant message, and a phone call.

12. (Original) The method of claim 8, wherein the first device comprises at least one of a smartphone, a tablet, a PC, a phablet, and a wearable device.

13. (Original) The method of claim 8, wherein enrolling the first device is based at least in part on at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number.

14. (Original) The method of claim 8, wherein the additional authentication comprises at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number.

15. (Currently amended) A computer program product embodied in a tangible and non-transitory computer readable storage medium and comprising computer instructions for:

enrolling a first device with a verification service provider, wherein enrolling the first device includes associating, by the verification service provider, the first device with ~~device information comprising at least one of a software identifier, an embedded hardware identifier, and~~ a device fingerprint that~~, wherein the device fingerprint~~ is generated based at least in part on a set of configuration information associated with the first device;

storing, at the verification service provider, the device fingerprint ~~information~~ associated with the first device;

obtaining, at the verification service provider, information transmitted by a second device associated with a communications connection;

performing, at the verification service provider, a security determination at least in part

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by determining whether the obtained information transmitted by the second device matches at least a portion of the stored device fingerprint that was generated based at least in part on the set of configuration information associated with the enrolled first device ~~device information associated with the enrolled first device~~; and

based at least in part on the security determination, selecting, at the verification service provider, an action comprising at least one of blocking the communication, requesting additional authentication, and permitting the communication.

16. (Original) The computer program product of claim 15, wherein the information transmitted by the second device is obtained via a backchannel that is different from the communications connection.

17. (Original) The computer program product of claim 15, wherein based at least in part on the security determination, the verification service provider is further configured to convey an assurance to a recipient associated with the communications connection.

18. (Original) The computer program product of claim 15, wherein the communications connection is associated with at least one of email, SMS, instant message, and a phone call.

19. (Original) The computer program product of claim 15, wherein the first device comprises at least one of a smartphone, a tablet, a PC, a phablet, and a wearable device.

20. (Original) The computer program product of claim 15, wherein enrolling the first device is based at least in part on at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number.

21. (Original) The computer program product of claim 15, wherein the additional authentication comprises at least one of PIN verification, password verification, knowledge-based authentication, geolocation information, credit card information validation, and a check of at least one of a name, an address, and a phone number.

22. (New) The system of claim 1, wherein the set of configuration information comprises at least one of a set of device settings, a set of installed applications, system version information, application software version information, and a contact list associated with the first device.

23. (New) The system of claim 1, wherein the verification service provider is further

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configured to re-enroll the first device in response to a determination of a change in the device fingerprint.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	16/180,373	Examiner:	Akelaw Teshale
Filed:	November 05, 2018	Art Unit:	2653
Confirmation No.:	3758	Docket No.:	MJAKP016C1
First Inventor:	Bjorn Markus Jakobsson		
Title:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA		

AMENDMENT A

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

Dear Sir:

This is in response to the Office Action mailed June 17, 2019. The following amendment and remarks are respectfully submitted.

Applicant(s) believe that no (additional) fees are required beyond any fees submitted herewith. If required fees are missing or any additional fees are required during the pendency of the subject application, please charge such fees or credit any overpayment to Deposit Account No. 50-0685 (MJAKP016C1).

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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 16/180,373	Filing Date 11/05/2018	☐ 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 $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $230 =	
☐ 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

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	10/17/2019	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 23	Minus	** 21	= 2		x $50 =	100
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $230 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	100

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ 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.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/JASON B EADDY/
*** 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.	

This collection of information is required by 37 CFR 1.16. 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Application Number * 16/180,373 *	Application/Control No. 16/180,373	Applicant(s)/Patent under Reexamination Jakobsson, Bjorn Markus	
	Examiner TESHALE, AKELAW	Art Unit 2653	

Document Code - DISQ	Internal Document - DO NOT MAIL

TERMINAL DISCLAIMER	☑ APPROVED	☐ DISAPPROVED
Date Filed: 17 October 2019	**This patent is subject to a Terminal Disclaimer**	

Approved/Disapproved by:

/LAWANA R HIXON/

Technology Center: OPLC

Telephone: (571)272-6074

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UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/180,373	11/05/2018	Bjorn Markus Jakobsson	MJAKP016C1	3758

21912 7590 10/23/2019

VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

EXAMINER	
TESHALE, AKELAW	

ART UNIT	PAPER NUMBER
2653	

NOTIFICATION DATE	DELIVERY MODE
10/23/2019	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):

usptocorrespondence@ip-patent.com

Applicant-Initiated Interview Summary	**Application No.** 16/180,373	**Applicant(s)** Jakobsson, Bjorn Markus	
	Examiner AKELAW A TESHALE	**Art Unit** 2653	**AIA (FITF) Status** Yes

All participants (applicant, applicants representative, PTO personnel):

(1) AKELAW A. TESHALE (PTO personnel). (3) _____.

(2) Yeu-Ting George Cheng (applicant's representative). (4) _____.

Date of Interview: 17 October 2019.

Type: ☑ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☑ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☑102 ☐103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: 1.

Identification of prior art discussed: Danis.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

The examiner and applicant's representative discussed the difference of claim limitation and prior art rejection. Examiner agreed the draft amendments would overcome the prior art rejection. Applicant will file response accordingly .

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	/AKELAW TESHALE/ Primary Examiner, Art Unit 2653

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AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
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Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiners responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicants correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,-
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicants record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiners version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, Interview Record OK on the paper recording the substance of the interview along with the date and the examiners initials.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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 contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJKAP016C1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8560962		2013-10-15	WANG JAMES H	
	2	9258314		2016-02-09	XIAO FEI	
	3	9613341		2017-04-04	SHIVAKUMAR SHAILESH KUMAR	
	4	9940482		2018-04-10	NICHOLS TAMBRA	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20120192258		2012-07-26	SPENCER RON	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0208

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJKAP016C1

	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJKAP016C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Timothy H. Hwang/	Date (YYYY-MM-DD)	2019-11-04
Name/Print	Timothy H. Hwang	Registration Number	61145

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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 the Freedom of Information Act requires disclosure of these record s.

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 inspections 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.

Electronic Acknowledgement Receipt

EFS ID:	37652435
Application Number:	16180373
International Application Number:	
Confirmation Number:	3758
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Customer Number:	21912
Filer:	Timothy H. Hwang/Monique Huang
Filer Authorized By:	Timothy H. Hwang
Attorney Docket Number:	MJAKP016C1
Receipt Date:	04-NOV-2019
Filing Date:	05-NOV-2018
Time Stamp:	19:29:00
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	Information Disclosure Statement (IDS) Form (SB08)	MJAKP016C1_IDS_06.pdf	1052983 58c7dd7e40b4f628bcc43c741d0827167899e915	no	4

Warnings:

Information:	
Total Files Size (in bytes):	1052983

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.

Notice of References Cited	Application/Control No. 16/180,373	Applicant(s)/Patent Under Reexamination Jakobsson, Bjorn Markus	
	Examiner AKELAW A TESHALE	Art Unit 2653	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-9060057-B1	06-2015	Danis; Serdar Artun	H04M3/42059	1/1
*	B	US-9277049-B1	03-2016	Danis; Serdar Artun	H04M3/42042	1/1
*	C	US-20130060905-A1	03-2013	Mickens; James	H04L67/025	709/219
*	D	US-8583915-B1	11-2013	Huang; Andrew Shane	H04L63/0869	713/155
*	E	US-20060107323-A1	05-2006	McLean; Ivan Hugh	G06F21/33	726/23
*	F	US-20180160387-A1	06-2018	Chastain; Walter Cooper	H04W60/04	1/1
*	G	US-20150113627-A1	04-2015	CURTIS; William Allen	H04L63/06	726/10
*	H	US-20140245396-A1	08-2014	Oberheide; Jon	H04L63/08	726/4
*	I	US-20180184289-A1	06-2018	Dudley; William	H04W12/06	1/1
*	J	US-20170331824-A1	11-2017	Pender; Mark A.	H04L63/0892	1/1
*	K	US-20170331816-A1	11-2017	Votaw; Elizabeth S.	H04L63/0838	1/1
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC 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.

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0214

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

21912 7590 11/14/2019
VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

EXAMINER
TESHALE, AKELAW

ART UNIT	PAPER NUMBER
2653	

DATE MAILED: 11/14/2019

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/180,373	11/05/2018	Bjorn Markus Jakobsson	MJAKP016C1	3758

TITLE OF INVENTION: VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0.00	$0.00	$500	02/14/2020

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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)

21912 7590 11/14/2019
VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/180,373	11/05/2018	Bjorn Markus Jakobsson	MJAKP016C1	3758

TITLE OF INVENTION: VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0.00	$0.00	$500	02/14/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
TESHALE, AKELAW	2653	379-088200

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 03-09 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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required) ❑ Advance Order - # of Copies _____

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

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

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

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

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.
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.
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. _____

PTOL-85 Part B (08-18) Approved for use through 01/31/2020 OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0216

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.
16/180,373	11/05/2018	Bjorn Markus Jakobsson	MJAKP016C1	3758

21912 7590 11/14/2019

VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

EXAMINER	
TESHALE, AKELAW	
ART UNIT	PAPER NUMBER
2653	

DATE MAILED: 11/14/2019

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.

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0217

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 30 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. 16/180,373	Applicant(s) Jakobsson, Bjorn Markus	
	Examiner AKELAW A TESHALE	Art Unit 2653	AIA (FITF) Status Yes

-- 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 10/17/2019.
   ☐ 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 1-23 . 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 _____.

/AKELAW TESHALE/
Primary Examiner, Art Unit 2653

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0219

DETAILED ACTION

Reasons for Allowance

1. **Claims 1-23 are** allowed.

2. The following is an examiner's statement of reasons for allowance: Applicant arguments/ Remarks filed on 10/17/2019 in conjunction with the remarks page 8 have been reviewed by the examiner in view of the prior art of record and it is agreed that the prior art of record does not teach the independent claims 1,8 and 15.

Claims 2-7 and 22-23 are allowed as depending from claim 1.

Claims 9-14 are allowed as depending from claim 8.

Claims 16-21 are allowed as depending from claim 15.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AKELAW A TESHALE whose telephone number is (571)270-5302. The examiner can normally be reached on 9 am -6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571)272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AKELAW TESHALE
Primary Examiner
Art Unit 2653

/AKELAW TESHALE/
Primary Examiner, Art Unit 2653

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
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S44	239	((("JAKOBSSON") near3 ("Bjorn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/11/06 07:57
S46	75667	((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:01
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EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0222

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EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0224

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EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0225

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		"9800589" | "9940482").PN.				

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S65	16	((((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)) same (communication$1 OR connection$1 or session or call$4) same (service or provider) same ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3 (authenticat$3 or verif$5 or authoriz$3 or authoris$3 or fingerprint or print))).clm.	US-PGPUB; USPAT	OR	ON	2019/11/06 11:26
S66	185	("20050060643" | "20050198173" | "20050235065" | "20060004772" | "20060149821" | "20060224677" | "20070038718" | "20080141374" | "20080235794" | "20080276315" | "20100094887" | "20120278694" | "20130067012" | "20150030156" | "20160104132" | "20160225897" | "20170005961" | "6721784" | "7899213" | "7899866" | "20090037350" | "20110145152" | "20150216413" | "20160087925" | "8996042" | "9060057" | "20040176072" | "20050182735" | "20050257261" | "20060085505" | "20060195542" | "20060259558" | "20080004049" | "20080046970" | "20080050014" | "20090064330" | "20090228583" | "20100030798" | "20100043071" | "20130083129" | "20140230061" | "20140366144" | "20160014151" | "8255572" | "8832202" | "20140340822" | "20150100896" | "20150371212" | "20160037270" | "8676155" | "6073142" | "20030023736" | "20050223076" | "20060031306" | "20060253597" | "20070086592" | "20070107053" | "20070239639" | "20070271343" | "20100299399" | "20100313253" | "20110087485" | "20110191847" | "20120167233" | "20130081142" | "8667069" | "9277049" | "9473437" | "20070276907" | "20100198928" | "20100257222" | "20110066687" | "20150172233" | "7831522" | "20130318580" | "9258314" | "20020184315" | "20030236845" | "20040177120" | "20050033810" | "20070067465" | "20080178288" | "20090210708" | "20090319629" | "20100287246" | "20140250506" | "7293063" | "7644274" | "7797752" | "9060057" | "9245115" | "20070100944" | "20080022107" | "20120242488" | "20150363839" | "20050076084" | "20050216587" | "20060053490" | "20060230461" | "20080104235" | "20080290154" | "20090089859" | "20120227104" |	US-PGPUB; USPAT	OR	ON	2019/11/06 12:30

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0227

		"20130346528" | "7809795" | "8566938" | "8984640" | "9471714" | "20120136780" | "20120311703" | "20100235636" | "20120192258" | "8560962" | "20020138271" | "20040203589" | "20050076240" | "20060265498" | "20070214495" | "20090292781" | "20120246725" | "20130128883" | "20150067833" | "20150081722" | "20150288714" | "20150381653" | "20160269437" | "6574658" | "8719940" | "8752172" | "20030225850" | "20050188045" | "20110294478" | "20140082726" | "20150148006" | "20160094566" | "8572184" | "8949353" | "8959163" | "20170324767" | "20050188023" | "20060026242" | "20060206713" | "20070027992" | "20070101423" | "20070130618" | "20070143432" | "20080175266" | "20100070761" | "20100145900" | "20110271349" | "20140259158" | "20170091274" | "7299261" | "7917655" | "8131655" | "9338287" | "20110191688" | "20140258420" | "20150334065" | "8667074" | "9560506" | "20140214895" | "9613341" | "20030229672" | "20050080857" | "20060015563" | "20060168329" | "20070019235" | "20070192169" | "20070198642" | "20070299916" | "20090252159" | "20100115040" | "20120030293" | "20130305318" | "6161130" | "7809796" | "7814545" | "8010614" | "8489689" | "20150033343" | "20150236990" | "20150326510" | "20170251006" | "9800589" | "9940482").PN.				

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6073142		2000-06-06	GEIGER FRED J	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20100235636		2010-09-16	COHEN RAM	
	2	20130318580		2013-11-28	GUDLAVENKATASIVA BHASKAR R	
	3	20140214895		2014-07-31	HIGGINS JOHN M	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

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NON-PATENT LITERATURE DOCUMENTS [Remove]

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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EXAMINER SIGNATURE

Examiner Signature	/AKELAW TESHALE/	Date Considered	11/06/2019

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Obert H. Chu/	Date (YYYY-MM-DD)	2019-08-22
Name/Print	Obert H. Chu	Registration Number	52744

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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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 the Freedom of Information Act requires disclosure of these record s.

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 inspections 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.

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	**Art Unit**
	AKELAW A TESHALE	2653

CPC						
Symbol					**Type**	**Version**
H04M	/	3	/	42042	F	2013-01-01
H04W	/	4	/	14	I	2013-01-01
H04M	/	3	/	382	I	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
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NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	23	
/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	07 November 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20191106

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0233

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	**Art Unit**
	AKELAW A TESHALE	2653

INTERNATIONAL CLASSIFICATION				
CLAIMED				
H04M	/	3	/	42

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	23	
/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	07 November 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20191106

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0234

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	**Art Unit**
	AKELAW A TESHALE	2653

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

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	12	10	21	19										
2	2	13	11	22	20										
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6	6	17	15												
7	7	18	16												
10	8	19	17												
11	9	20	18												

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	23	
/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	07 November 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office Part of Paper No.: 20191106

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0235

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJKAP016C1

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8560962		2013-10-15	WANG JAMES H	
	2	9258314		2016-02-09	XIAO FEI	
	3	9613341		2017-04-04	SHIVAKUMAR SHAILESH KUMAR	
	4	9940482		2018-04-10	NICHOLS TAMBRA	

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	1	20120192258		2012-07-26	SPENCER RON	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.T/

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Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJKAP016C1

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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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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EXAMINER SIGNATURE

Examiner Signature	/AKELAW TESHALE/	Date Considered	11/06/2019

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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CERTIFICATION STATEMENT

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See attached certification statement.

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A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Timothy H. Hwang/	Date (YYYY-MM-DD)	2019-11-04
Name/Print	Timothy H. Hwang	Registration Number	61145

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	Art Unit
	AKELAW A TESHALE	2653

CPC - Searched*		
Symbol	Date	Examiner
H04W12/06, H04W12/08, H04W88/02, H04W12/00514, H04W12/12, H04W4/14, H04M3/382,H04M3/42042, H04M3/42042, H04M3/382, H04W4/14	11/06/2019	AT

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
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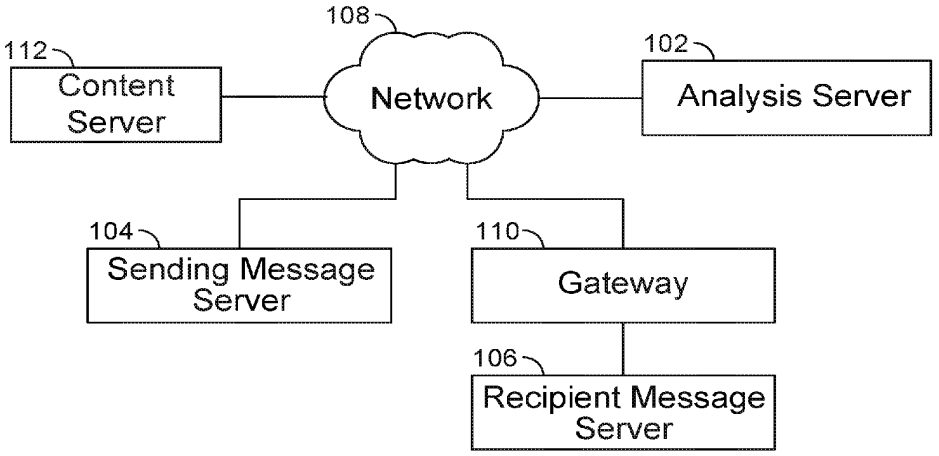

FIG. 1

(57) Abstract: Information of an electronic message to be delivered to an intended recipient is received. For an original resource identifier included in the electronic message, a corresponding alternative resource identifier that can be at least in part used to obtain the original resource identifier and obtain context information associated with the electronic message is determined. The original resource identifier included in the electronic message is replaced with the alternative resource identifier to generate a modified electronic message. The modified electronic message with the alternative resource identifier is allowed to be delivered to the intended recipient instead of the electronic message with the original resource identifier. A request made using the alternative resource identifier in the modified message triggers a security action based at least in part on the context information associated with the electronic message.

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USING MESSAGE CONTEXT TO EVALUATE SECURITY OF REQUESTED DATA

CROSS REFERENCE TO OTHER APPLICATIONS

[0001] This application claims priority to U.S. Provisional Patent Application No. 62/508,840 entitled USING MESSAGE CONTEXT TO EVALUATE WEBSITE VISIT REQUESTS filed May 19, 2017 which is incorporated herein by reference for all purposes.

BACKGROUND OF THE INVENTION

[0002] Email is one of the most common attack vectors used by criminals to compromise consumers and organizations alike. Many emails contain URLs (Uniform Resource Locators), some of which refer to malicious content. Often traditional methods fail to detect that many URLs are dangerous because these methods are based either on blacklisting known dangerous URLs or other heuristics. Blacklisting only works if the dangerous URL has been already detected as dangerous and reported in a blacklist update. The detection of the dangerous URLs can be often slow and inefficient due to the amount of time it takes to gather and analyze a sufficient amount of information to determine a security categorization. Heuristics are commonly circumvented by criminals who probe the system to determine what goes through and what is blocked or marked up. Targeted attacks may even avoid reuse of URLs to circumvent both blacklist-based and heuristic-based methods, since no suitable update will be generated and distributed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0003] Various embodiments of the invention are disclosed in the following detailed description and the accompanying drawings.

[0004] Figure 1 is a diagram illustrating an embodiment of a system environment for analyzing a message.

[0005] Figure 2 is a flowchart illustrating an embodiment of a process for analyzing a security risk of a message.

[0006] Figure 3A is a flowchart illustrating an embodiment of a process for replacing

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resource identifiers included in a message.

[0007] Figure 3B is a flowchart illustrating an embodiment of a process for handling a content request made using an alternative resource identifier.

[0008] Figure 4 is a flowchart illustrating an embodiment of a process for analyzing individual aspects of message information for security threats.

[0009] Figure 5 is a flowchart illustrating an embodiment of a process for analyzing aspects of a received message based on whether the message is from an independently controlled account of a sender.

[0010] Figure 6 is a flowchart illustrating an embodiment of a process for wrapping encrypted content of the message.

[0011] Figure 7 is a flowchart illustrating an embodiment of a process for tracking trusted contacts.

[0012] Figure 8 is a flowchart illustrating an embodiment of a process for determining information about a message sender to be utilized to assess a risk of a message.

[0013] Figure 9 is a flowchart illustrating an embodiment of a process for determining a total risk measure of a contact.

[0014] Figure 10 is a flowchart illustrating an embodiment of a process for assessing a received message for filtering.

[0015] Figure 11A is a flowchart illustrating an embodiment of a process for modifying a display name of a sender of the message.

[0016] Figure 11B is a flowchart illustrating an embodiment of a process for modifying a reply address of a sender of the message.

[0017] Figure 12 is a flowchart illustrating an embodiment of a process for securing a message.

[0018] Figure 13A is a flowchart illustrating an embodiment of a process for detecting misrecognition of a sender of a message by a recipient of the message.

[0019] Figure 13B shows an example of a modified message requesting manual

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classification of the sender of the message.

[0020] Figure 14A is a flowchart illustrating an embodiment of a process for requiring a sender of a message to verify an identity of the sender.

[0021] Figure 14B shows an example of an automatic reply message requesting verification of an identity of the sender of the message.

[0022] Figure 15 is a flowchart illustrating an embodiment of a process for determining a change in historical reputation of a sender of a message.

DETAILED DESCRIPTION

[0023] The invention can be implemented in numerous ways, including as a process; an apparatus; a system; a composition of matter; a computer program product embodied on a computer readable storage medium; and/or a processor, such as a processor configured to execute instructions stored on and/or provided by a memory coupled to the processor. In this specification, these implementations, or any other form that the invention may take, may be referred to as techniques. In general, the order of the steps of disclosed processes may be altered within the scope of the invention. Unless stated otherwise, a component such as a processor or a memory described as being configured to perform a task may be implemented as a general component that is temporarily configured to perform the task at a given time or a specific component that is manufactured to perform the task. As used herein, the term 'processor' refers to one or more devices, circuits, and/or processing cores configured to process data, such as computer program instructions.

[0024] A detailed description of one or more embodiments of the invention is provided below along with accompanying figures that illustrate the principles of the invention. The invention is described in connection with such embodiments, but the invention is not limited to any embodiment. The scope of the invention is limited only by the claims and the invention encompasses numerous alternatives, modifications and equivalents. Numerous specific details are set forth in the following description in order to provide a thorough understanding of the invention. These details are provided for the purpose of example and the invention may be practiced according to the claims without some or all of these specific details. For the purpose of clarity, technical material that is known in the technical fields related to the invention has not been described in detail so that the invention is not unnecessarily obscured.

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[0025] Targeted phishing emails are often used by criminals to compromise personal accounts, enterprise accounts, and accounts of government organizations, and used to steal funds, steal sensitive data, and to create launchpads against other targets. These other targets are commonly in the contact network of the compromised accounts, and therefore, as they receive malicious emails from the compromised accounts, they trust these emails. It is a current trend in online crime for criminals to use targeted phishing (also referred to as spear phishing) to compromise accounts used as launchpads, and then to use these accounts to perform targeted phishing, or other types of attacks, against users with a trust relationship with the launchpad account and its owner. An example of such an attack is the automated phishing attack that spread over the Internet in May 2017, and in which a corrupted account was used by the criminal to send messages to all contacts of the corrupted account, asking the recipient to give access, using OAUTH, to his or her email mailbox. As a new recipient fell for the attack, an automated script associated with a Google app identified the new victim's contacts and generated emails to them. The automated script would also have the capability of performing additional actions, such as identifying and exfiltrating sensitive information from the email accounts of victims. Thus, using compromised message accounts, an attacker can send messages with links to malicious content to cause recipients to visit the links to malicious content.

[0026] When a user browses webpages on the Internet, the user typically browses from one webpage to another webpage using hyperlinks on the webpages. When requesting a website using a hyperlink, there is a portion of data passed in the request, called the REFERER, which conveys from where the user came, e.g., what site referring a user to the site he or she visits. The REFERER information is commonly helpful to make security decisions. When a user enters a URL by typing input, there is no REFERER information in the request for the URL. However, when a user clicks on a hyperlink in an email, there is also no REFERER in the request from content of the link. If there were, then this could be used to aid in performing a security assessment. For example, a hyperlink contained in a message from a known malicious sender likely points to malicious content. A security assessment can then also distinguish between website visits that resulted from a user typing a URL and from a user clicking on a link of a message.

[0027] For these and related reasons, it is critical to develop security technologies that address the problem of phishing, and other related types of attacks in which an email, an SMS, or another type of message contains a malicious resource identifier that traditional security technologies may fail to identify as malicious, and to address the shortcoming that there is no contextual information for website visits resulting from users clicking on hyperlinks in messages.

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[0028] In some embodiments, information of a message to be delivered to an intended recipient is received. For example, message context information such as information about the sender, the recipient, message metadata, message content, and/or any other relevant information associated with the message is received at a message gateway to perform an initial security analysis prior to allowing the message to be delivered. For an original resource identifier (e.g., URL) included in the message, an alternative resource identifier (e.g., alternative URL) is generated. The original resource identifier included in the message is replaced with the alternative resource identifier to generate a modified message. The alternative resource identifier can be used to obtain the original resource identifier included in the message and context information associated with the message. The modified message with the alternative resource identifier is allowed to be delivered to the intended recipient instead of the message with the original resource identifier. When a recipient of the message makes a request using the alternative resource identifier in the modified message, the request may trigger a security action associated with the original resource identifier and based on the context information. In effect, the alternative resource identifier may serve as a proxy identifier of the original resource identifier that allows effective requests for the content referenced by the original resource identifier (made using the alternative resource identifier) to be intercepted for security analysis prior to allowing or not allowing access to the referenced content.

[0029] For example, an alternative resource identifier points to a secure proxy webpage that can use at least a portion of the alternative resource identifier to obtain the original resource identifier and the context information associated with the message. A security risk assessment can be then made dynamically based on the content referenced by the original resource identifier and the context information to make a security assessment. If it is determined that there is a low security risk, the proxy website can provide content referenced by the original resource identifier and/or redirect the request to the original resource identifier. If it is determined that there is a high security risk, the user may be provided a warning, prevented from obtaining the content referenced by the original resource identifier, and/or provided a modified version of the content referenced by the original resource identifier. A result of the security risk assessment may also be logged to allow an administrator to review risks and/or for use in future security analysis.

[0030] In an example, a URL hyperlink in an email is identified, and the URL hyperlink in the email is modified to reference an alternative URL prior to delivery. The alternative URL can be used to obtain the original URL hyperlink as well as contextual information associated with the email. When the alternative URL is visited by a message recipient, a determination is made on the security associated with the original URL and/or the associated email and/or the associated sender,

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utilizing the contextual information and the URL assessment. Here, the assessment of the URL can be done by performing one of rendering, partially rendering, automatically interacting with the associated site, making an assessment of the associated site behavior, including spawning of processes or other webpage rendering requests, and making an assessment of the domain and subdomain of the URL, including reputation, age, and contextual use. This decision can be done as soon as possible after the URL is identified, in batch mode, as a result of the user clicking on the modified URL in the delivered email, or as a result of an external event, such as notification of a risk or attack potentially affecting the recipient. Context relating to the email is used, including text in the email, logos and other graphics in the email, the recipient of the email and whether this user normally receives emails with URLs of a similar type according to a security classification, and based on the sender, whether the sender is a trusted party, and if the sender is not considered a trusted part, whether there is any potential likeness between the identity (e.g., including display name, email address, domain, and identity conveyed by or associated with content of the email) and that of entities that are trusted by the recipients, or trusted by many users like the recipient.

[0031] In addition to rendering the website, actions commonly associated with undesirable behavior can be identified, including but not limited to anomalous use of forwarding or redirection, such as using HTTP 301 or HTTP 401 requests; anomalous use of obfuscation including JavaScript that unpacks itself; and anomalous attempts to engage tracking beacons. Furthermore, the system identifies when websites use common commercial templates that are associated with service providers other than those associated with a scrutinized website. This is commonly indicative of the scrutinized website having been constructed by cloning or partially cloning a legitimate website, which is a common tactic employed by phishers.

[0032] There are several example benefits associated with the disclosed technology. These may include but are not limited to: (1) enable as context-aware analysis of documents, including webpages; (2) permits immediate delivery of emails while maximizing security by performing delayed scrutiny across applications; (3) identifies the origin of URL clicks for URLs without a REFERER; (4) permits internal tracking of messages, documents, and resources; (5) avoids duplicating the effort of scrutinizing messages and their contents; (6) secures email and other messaging methods against advanced threats; (7) optimizes storage of contextual information useful for managing analysis of risks, leveraging models on sender and recipient behavior and associated trust relationships; and (8) improves anti-virus filtering based on contextual information and threat information relating to the threat vector used for message delivery.

[0033] In some embodiments, the disclosed technology demonstrates how contextual

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information can be used both to draw positive and negative inferences. For example, assume that an email is sent by a trusted party, and that the system has verified that the email was not spoofed. The system has further verified that the email is not likely to be sent by a person who has corrupted the sending account; this can be detected by comparing the message user agent (MUA) of the email with previous emails from the same sender, and determining whether there is an MUA discrepancy. In this example, there is not. However, the email in this example contains a URL that leads to a site that requests credentials. It is not known to be a phishing site, and the site does not have any text or logos indicative of deception. For the particular recipient, the system configuration may be to not allow a site with this type of password entry, since this could be a high-risk site such as a phishing site. However, given that the contextual information indicates that the email was from a trusted party, that the party was not spoofed, and that the party is unlikely to have been compromised, the system makes the determination, after having scrutinized the site corresponding to the URL, that it is permissive for the recipient to visit this site. In a second example, the same email message, with the same URL, is sent by a trusted party, but it cannot be verified whether the user was spoofed or not. The system, in this example, after having scrutinized the site, determines that the email recipient is allowed to visit the site, but that the site needs to be marked up with a warning. One way to do that is to display a warning instead of the website, as the user clicks on the link, requiring the user to perform an action (such as clicking on a link, solving a captcha, answering a quiz, etc.) before the user is redirected to the real website. It is understood by a person skilled in the art how a mail server or gateway can act as a proxy between a user and the Internet, thereby performing such replacements of content. In a third example, an email with a similar content is sent by a sender with whom the recipient does not have a trusted relationship; this may correspond to the two not having exchanged a sufficient number of emails, such as five emails from each to the other; or the two not having exchanged emails for a duration of time exceeding a threshold amount of time, such as two weeks. The system examines the website and, based on the lack of established trust between recipient and sender, makes a determination not to allow the user access to the website. Using an alternative configuration, the recipient is allowed to access the website, but only after it has been scrutinized by an admin. A request for an admin to review the site is requested by the recipient, on the warning website, after the recipient has been shown a screenshot of the site or seen a rendering of the site which has been made inactive, e.g., in which user input has been disabled. If the admin gives permission to access the site, the recipient will be notified, e.g., in an email or SMS message, after which the recipient, clicking on the hyperlink, will be taken directly to the actual and fully functional site without first being sent to the warning site.

[0034] A further benefit of some embodiments is a method to automatically identify

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account take-overs, also referred to as corrupted accounts, with a high probability. This works by building a profile for each sender, where this profile comprises the mail user agent (MUA) of the sender; the IP ranges and originating servers used by the sender; the signature file(s) used by the sender; the length distribution of message texts associated with the sender; the logo and image use associated with the sender; the type of attachments associated with the sender, including the headers associated with these attachments; the URLs and classifications of the associated websites included in messages sent by the sender; and the semantic classification of texts sent by the sender. For example, the MUA identifies with a high degree of accuracy what type of computer or other device was used to send the message, including aspects such as the charset, the mail client version, the operating system, and more. The IP ranges and originating servers depend on what network the sender uses, and will, for example, be different for a user who is on the AT&T network from one who is on the Comcast network, and yet different from a user relying on a corporate network to send messages. The signature files are often different for different devices of the same user, but can be directly associated with the corresponding MUA, and as such can act as an "extension" of the MUA in terms of identification. Different users have different communication and message design patterns, including the typical use of logos and images, the semantic style, including the length of words, the extent to which spelling is correct, and the type of greetings the user uses. The disclosed security system builds profiles of sender characteristics by observing a series of messages from the sender. The system associates a certainty with a prediction of what constitutes "correct" characteristics based on the variance observed, the extent to which there is entropy for the characteristics, the commonality of change, along with external considerations such as the role of the sender, if known. When a new message is received, its characteristics are compared to previously recorded characteristics and any discrepancy scored by performing a prediction of the likelihood of this prediction being correct, given the past observations of the characteristics of the user in question, and based on the likelihood of potential change of characteristics based on similar changes observed for other users. A conditional probability is thereby computed, where this corresponds to the probability of the observation, given past observations for the sender, and given the general likelihood of changes observed over a larger population of senders. When this conditional probability is lower than a first threshold, which can be a parameter set by the message recipient or a representative thereof, then a first security action is taken; an example security action is to block the message. The threshold can also be a system parameter or depend on past communications and threats associated with the recipient. When the conditional probability is lower than a second threshold, then a conditional action is taken based on the context of the message, the content of the message, URLs and attachments associated with the message, and a

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policy associated with at least one of the sender, the recipient, or the system. Example methods to perform this conditional action, including the determination of whether to take the action are described in this disclosure, but will be understood by a person skilled in the art to also comprise similar methods and approaches.

[0035] For at least some embodiments, the disclosed technology has benefits beyond enabling blocking of risk. Whereas one of the primary benefits is associated with identifying risk associated with an email, and use that identified risk to limit access to web resources and other actionable material, such as attachments, macros, and phone links, another example type of benefit is that the technology can be used to audit risk. There is great need for organizations to identify the level of risk they are exposed to, and to determine changes over time. It is also important for organizations to determine what users - internal and external, associated with the organization or not - pose a risk by sending dangerous emails, receiving dangerous emails, visiting dangerous sites, performing dangerous actions, and more. To enable tracking and auditing of such behavior, it may be necessary to determine what events on one layer (such as the receiving of an email from a stranger) lead to actions on another layer (such as placing a phone call or clicking on a link.) A person skilled in the art will recognize that these are benefits that are enabled by the disclosed technology. One way to implement an auditing mechanism uses the stored records, including information of the context, sender and recipient, along with the actions (or lack thereof) identified as taken by the end user, which is detected as the recipient interacts with the modified resource identifier, and to store this information. This is later used to compile statistics of risky behavior.

[0036] The disclosed technology is not limited to identifying and evaluating URLs based on their context in an email or other messaging form, but can also be used for other marked-up data, such as mailto links, click-to-call links, and other material that a recipient can interact with. For example, a mailto link can be temporarily modified to convey the context in which it was embedded; this context can later be used by an automated method that screens the content of an outgoing email and looks for sensitive data that should not be leaked outside the trusted perimeter. Thus, if the mailto link was contained in an email that came from a non-trusted party, this contextual information would be used to censor the message, block the message from being transmitted, cause an alert to the sender, cause an alert to an IT admin, cause the message to be temporarily quarantined before it is delivered, or another action. For example, a regular mailto link may specify an email address on the format "name@organization.com," which can be marked up by changing the email to "name@organization.alert.37662772," where "alert" is a tag to indicate that the email should not be delivered as-is, and 37662772 is a code that either indicates the context

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or is a pointer into a database with contextual information. Thus, when a mail server, gateway, cloud service provider, or other entity processes this information, the email is scrutinized in the context associated with the contextual information indicated in the augmented email address. This entity could be configured to scrutinize all email transmissions to non-trusted entities if they do not have a contextual extension, to avoid that a malicious sender tricks a recipient to remove the context information. All incoming emails from non-trusted entities could also be augmented by adding a reply-to address that corresponds to the address to which a reply would otherwise go to, with an added extension providing contextual information. The contextual information can contain information about the identity of the sender; the trust level of the sender; and/or the extent to which the sender identity is similar to that of a trusted entity. As the mail server or other entity concludes the scrutiny, a security action may be taken or the email simply delivered with the content unchanged, but with the email address first modified to make the email deliverable with respect to the intended recipient. This means to remove any mark-up of the address. It is beneficial to add x-headers indicating to the recipient system how the message was processed, including if any part of it was redacted, modified or blocked, and potentially a description of the reasons, which may include the contextual information used for the decision. Parts or all of this added information may be encrypted in a manner that only trusted received systems can access the information.

[0037] Similarly to how URLs, mailto, and reply-to can be augmented to convey contextual information, call-to-numbers can also be augmented, thereby passing contextual information to an app that is used to place a phone call, initiate an SMS, or similar. This permits a screening of content; or an application of a policy (e.g., such as who pays for the call, or whether the call is allowed during office hours, whether the call is made from a particular geographic location, and similar).

[0038] Furthermore, attachments, such as spreadsheets and word documents, can be replaced by icons or texts identifying their existence, where these icons or texts are clickable, wherein a hyperlink is activated as a user clicks on an icon or text. The hyperlink can be associated with a record created in a database, where this record is populated with information relating to the context of the message, the context relating to the sender and receiver, and additional information useful to assess the risk level of the document. As a user requests access to a document, a determination can be made whether this is safe, unsafe, or has a risk in between; and whether a security action should be taken. Such security actions include removing or disabling macros, rewriting the content on a normalized form, requiring a user action, and more. Therefore, it should be understood that this disclosure is relative to resource identifiers in general, as opposed to limited

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to particular types of resource identifiers such as URLs, mail-to, and other identifiers that a user can interact with.

[0039] It should also be understood that the disclosed technology of some embodiments enables functionality not necessarily related to identifying or reducing risk. It is, for example, possible to use the modification of resource identifiers to change the user experience. For example, if an organization wishes for all internally placed phone calls to use a proprietary calling application and not the regular phone application, then the modification of the phone link is used to modify the action taken by the system when the user clicks on the modified resource identifier. This can also be used to augment the functionality. For example, an organization that requires that certain phone calls be recorded automatically may signal the selection of what phone calls should be recorded in an identifier included in the modified resource identifier, causing recording to take place automatically by passing a parameter to the associated application or otherwise starting a recording functionality.

[0040] Figure 1 is a diagram illustrating an embodiment of a system environment for analyzing a message. Examples of the message include an electronic mail (i.e., email), an instant message, a text message, a Short Message Service (SMS) message, a text message, a Multimedia Messaging Service (MMS) message, and any other forms of electronic messages. Analysis server 102 is connected to recipient message server 106 via network 108. In some embodiments, analysis server 102 is directly embedded or implemented in recipient message server 106. Sending message server 104 sends a message to recipient message server 106 for delivery to a recipient associated with recipient message server 106. In some embodiments, recipient message server 106 is a local message server. Gateway 110 receives the message prior to delivery to recipient message server 106. Gateway 110 may process incoming email messages for one or more recipient users of an organization (e.g., for users with a common domain email address). In various embodiments, recipient message server 106 may be any type of server that receives a message for delivery to a recipient user. Sending message server 104 is the last server that handled a message prior to delivery to recipient message server 106 via network 108. For example, sending message server 104 is an outgoing email server of a sender of the message. In various embodiments, sending message server 104 may be any type of server able to send a message to recipient message server 106.

[0041] Analysis server 102 processes a received message and filters it for potentially harmful or undesired messages. For example, incoming messages are filtered and analyzed for spam, viruses, spoofing, impersonation, ATOed sender, and any other harmful or undesired content

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to detect, prevent, or minimize such messages from reaching a message recipient served by the recipient message server. In some embodiments, analysis server 102 determines and/or maintains a list of trusted contacts for one or more users (e.g., user accounts) of recipient message server 106. For example, by obtaining an address book from a user and/or observing message traffic to and from server 106 of the user, server 102 determines and/or maintains a list for each user. In some embodiments, analysis server 102 analyzes information associated with a received message to identify one or more resource identifiers included in the message (e.g., URL referencing a webpage of content server 112) and determine corresponding alternate resource identifiers to the original identifier resource identifiers. Then the identified resource identifiers can be replaced with the corresponding alternate resource identifiers.

[0042] The original resource identifiers reference external content (e.g., provided by content server 112) that a recipient can obtain using the resource identifier (e.g., resource identifier address content of content server 112). Because a resource identifier can potentially reference malicious content, the resource identifier can be replaced with a corresponding alternate resource identifier. The alternate resource identifier may refer to a security service (e.g., provided by analysis server 102 or another server connected to the network). The alternate resource identifier also includes a portion that identifies the corresponding original resource identifier as well as context information of the message that included the original resource identifier. When a user attempts to obtain referenced content using the alternate resource identifier, the security service (e.g., via a proxy webpage of the security service referenced by the alternate resource identifier) performs a security risk analysis associated with the original reference identifier using the context information (e.g., obtained using the portion of the alternative resource identifier). By analyzing the context information of the original message that included the original resource identifier (e.g., in addition to content referenced by the original resource identifier), a more accurate and efficient security analysis can be performed. For example, if the message was received from a sender that is known to send malicious content, resource identifiers included in the message of the sender are likely malicious as well. Based on the security analysis result triggered by the user making a content request using the alternate resource identifier, the user may be proxied/redirected to the content of the original resource identifier (e.g., content of content server 112), blocked from obtaining content of the original resource identifier (e.g., blocked from accessing content of content server 112), and/or provided content modified based on a security risk. The security analysis result may be logged for review by an administrator or for use in a future security analysis associated with the same message sender, message recipient and/or original resource identifier. By delaying the security analysis until a user requests content using the alternate resource identifier, not only are

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unnecessary security analyses avoided, most current information learned after the message was received can be leveraged to make better security risk assessments.

[0043] In some embodiments, a message sent from sending message server 104 is first received at analysis server 102 prior to being received at gateway 110 and recipient message server 106. In some embodiments, a message sent from sending message server 104 is first received at gateway 110 that sends the message to analysis server 102. In some embodiments, a message sent from sending message server 104 is received at gateway 110 that sends the message to recipient message server 106 and recipient message server 106 send the message to analysis server 102. In an alternative embodiment, analysis server 102 is included in gateway 110. In an alternative embodiment, analysis server 102 is included in message server 106.

[0044] In addition to analyzing the message, analysis server 102 may block and/or modify the message or instruct another server (e.g., instruct server 106) to block and/or modify the message (e.g., in the event a potential threat is detected). In some embodiments, analysis server 102 initiates a user inquiry regarding a sender of the message in the event a potential threat is detected. In some embodiments, analysis server 102 receives information about one or more messages sent by a user of message server 106 (e.g., receives the message or a portion of the message, a recipient identifier included in the message, etc.). This information may be utilized by analysis server 102 to identify message behavior and/or message contacts of the user.

[0045] In some embodiments, recipient message server 106 performs a risk analysis for an incoming message at least in part by performing an authenticity and/or reputation analysis to determine an overall measure of risk (e.g., risk score). Performing authenticity analysis may include determining a measure of confidence that a sender identified in the message (e.g., domain of sender) is the actual sender of the message. Performing reputation analysis may include determining a measure that an identified sender of the email (e.g., domain of sender) is likely to send a message that is of value to a recipient (e.g., likelihood of sending message that a recipient would want/desire to receive).

[0046] In some embodiments, a risk analysis performed by recipient message server 106 results in a risk value of a message. The risk value may be utilized at least in part to flag/label the message, modify the message (e.g., add warning), and/or to determine whether to allow the message to be delivered to an intended recipient of the message.

[0047] Examples of network 108 include one or more of the following: a direct or indirect

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physical communication connection, a mobile communication network, Internet, intranet, Local Area Network, Wide Area Network, Storage Area Network, and any other form of connecting two or more systems, components, or storage devices together. Other communication paths may exist and the example of Figure 1 has been simplified to illustrate the example clearly. Although single instances of many of the components shown in Figure 1 have been shown to simplify the diagram, additional instances of any of the components shown in Figure 1 may exist. For example, a plurality of recipient message servers are connected and/or managed by analysis server 102. Multiple analysis servers may exist. Multiple recipient message servers may serve the same recipient entity/domain. Components not shown in Figure 1 may also exist. Any of the components shown in Figure 1 may be a logical, physical, or virtual component.

[0048] Figure 2 is a flowchart illustrating an embodiment of a process for analyzing a security risk of a message. The process of Figure 2 may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. The process of Figure 2 may be at least in part implemented on an end user device.

[0049] At 202, information associated with a message (e.g., message to be delivered to an intended recipient) is received. In some embodiments, the information is received at analysis server 102 of Figure 1. The information may include information included in or related to the message. For example, the information includes email header information including information related to email accounts (e.g., email address, display name, etc.) of the sender, recipient(s) information, devices used to compose/send the message (e.g., mail user agent, operating system, location, device time zone, etc.), networks utilized (e.g., server, IP address, cellular network/carrier, etc.), automation, if any, utilized to send the message (e.g., whether a script/API was utilized to send the message), etc.

[0050] In some embodiments, the information about the message includes contents of the message (e.g., a copy of the message). Examples of the message include an electronic mail (i.e., email), an instant message, a chat message, and any other forms of electronic messages. The information may be received as a part of a computer security analysis and filtering to identify and neutralize security threats prior to delivering the message and allowing an intended recipient of the message to access the message. In some embodiments, each message received for delivery to its intended recipient associated with the system performing analysis of the message is to be analyzed and information about each of the messages is received for analysis.

[0051] At 204, the message is analyzed. Analyzing the message includes performing a

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security assessment using metadata and/or contents of the message. For example, the message is profiled. Profiling the message may include storing information about and/or included in the message in a database to track historical observations about the sender of the message, the recipient of the message, and/or the content portion of the message. In various embodiments, a total risk score associated with the message is determined based on one or more component analyses performed (e.g., for different security risk types).

[0052] At 206, a delivery and security action is performed, if applicable, based on the analysis. In some embodiments, one or more security risk scores are determined in 204 and based on these score(s), a delivery and security action is selected among different action options. The selected security action is performed. For example, a security risk score may indicate that the message is of very low risk (e.g., risk score is below a first threshold) and the message is fully allowed to be accessed by the intended recipient (e.g., allow the message to a message inbox of the intended recipient). If not, the security risk score may indicate that the message is of medium risk (e.g., risk score is above the first threshold but below a second threshold) and the message is modified to include a warning prior to being allowed to be accessed by the intended recipient (e.g., allow the modified message to a message inbox of the intended recipient). Otherwise, the security risk score may indicate that the message is of high risk (e.g., risk score is above the second threshold) and the message not allowed to be accessed by the intended recipient (e.g., send the message to an administrator for further analysis). If there exists a different security risk score for different types of security risks, each different type of score may be analyzed separately and/or analyzed in combination to determine which level, if any, of security action is to be performed.

[0053] Examples of the delivery and security action include the following: modifying/replacing one or more resource identifiers included in the message; allowing a recipient to access the received message; updating an identity profile associated with the sender of the received message based on the received message; sending a message to the sender to determine whether it automatically forwards responses; generating a security challenge sent to the sender (e.g., if this is not responded to, it is indicative of higher risk and if it is responded to in an anomalous manner, that is also indicative of higher risk); generating a challenge sent to an alternative account of the sender (e.g., another email address associated with the sender); sending an SMS message to a phone number associated with the sender; placing an automated call to a phone number associated with the sender (e.g., requesting a confirmation or a response from the user associated with the account the security challenge is sent to); modifying content of the

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message; removing an attachment from the message; not allowing an executable of the message to be executed and/or be included in the message; performing additional automated scrutiny of the message (e.g., including its content portion); performing additional manual scrutiny of the message (e.g., including its content portion); quarantining the message; blocking the message; delivering the message; augmenting the message to reduce the risk associated with it (e.g., modifying its attachments); modifying a display name of the sender; removing a display name of the sender; adding a warning to a display name of the message; adding a warning to a content of the message; analyzing attachments of the message by attempting to execute them in a sandbox or virtual machine; adding a warning to the message prior to allowing the message to be accessed by the intended recipient; and moving the message to a special folder identifying its higher risk.

[0054] Figure 3A is a flowchart illustrating an embodiment of a process for replacing resource identifiers included in a message. In some embodiments, at least a portion of the process of Figure 3A is included in one or more steps of the process of Figure 2. The process of Figure 3A may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. In various embodiments, the process of Figure 3A may be at least in part implemented on a mail transfer agent, a mail relay, a gateway, a cloud security device, an on-premise security appliance, and/or an end-user computer device.

[0055] At 302, information associated with a message (e.g., message to be delivered to an intended recipient) is received. In some embodiments, the information is received at analysis server 102 of Figure 1. The information may include information included in or related to the message. For example, the information includes email header information including information related to email accounts (e.g., email address, display name, etc.) of the sender, recipient(s) information, devices used to compose/send the message (e.g., mail user agent, operating system, location, device time zone, etc.), networks utilized (e.g., server, IP address, cellular network/carrier, etc.), automation, if any, utilized to send the message (e.g., whether a script/API was utilized to send the message), etc. In some embodiments, the information associated with the message includes contents of the message (e.g., a copy of the message) and/or attachments of the message. Examples of the message include an electronic mail (i.e., email), an instant message, a chat message, and any other forms of electronic messages.

[0056] At 304, the received message information is analyzed and one or more resource identifiers in the received message to be replaced are identified. Examples of the resource identifiers include URLs, URIs, hyperlinks, mailto/reply-to links, call-to-numbers, click-to-call links, File Transfer Protocol links, linked files, attachments, and references to any other materials

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that a message recipient may interact with. In some embodiments, all resource identifiers (e.g., URLs) included in the message are to be replaced with corresponding alternative resource identifiers. In some embodiments, only those resource identifiers identified to pose a threshold security risk are to be replaced with corresponding alternative resource identifiers. There are benefits associated with replacing all resources identifiers, as opposed to only resource identifiers that are considered high risk. Namely, this approach produces a uniform view from the user's perspective; it permits retroactive classification of threats; and it creates insight into user behavior, including actions taken by users on personal devices. Such devices commonly do not have the same degree of protection as enterprise-issued computers, and introducing URL proxies is helpful to monitor and audit risk.

[0057] The security risk assessment of one or more resource identifiers included in the message may be performed prior to delivery of the message to an intended recipient and/or after delivery of the message to an intended recipient (e.g., when a user requests content using the alternative resource identifier). For example, an initial assessment is made on whether the sender of the message is a known malicious sender, a trusted sender for the recipient (e.g., is sender in an address book of the recipient, is the sender a stranger, amount of previous communication between the sender and recipient, etc.), and/or a verified sender (e.g., whether the sender is from a domain with a Domain-based Message Authentication, Reporting and Conformance (DMARC) policy passes Sender Policy Framework (SPF) and DomainKeys Identified Mail (DKIM) validations). In another example, an assessment is made on whether the resource identifier refers to known malicious content by comparing at least a portion of the resource identifier to a known list and/or obtaining and analyzing content referenced by the resource identifier. In some embodiments, a classification of the message is determined based at least in part on the received information associated with the message. For example, a classification of the message is determined based on information about whether the sender and the intended recipient of the message has an established relationship. The classification may indicate one or more of the following: whether the sender is trusted, whether the sender is unknown, whether the sender has a potentially deceptive identity, whether the sender is associated with the recipient, whether a display name of the sender is similar to a trusted contact of the intendent recipient (e.g., display name matches but a message address of the sender does not match the trusted contact), a role associated with the sender, etc.

[0058] In some embodiments, the sender of the message has an established relationship with the intended recipient of the message if the sender (e.g., from email address of the sender) has sent a message to the intended recipient of the message (e.g., recipient email address of the

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message) a threshold number of times, if the intended recipient has previously sent a message to the sender a threshold number of times and/or if the sender has been sending messages to the intended recipient of the message for a threshold length of time. For example, the sender of the message is the established relationship contact of the intended recipient of the message if a threshold number of messages have been exchanged between the sender and the recipient. In some embodiments, a sender model developed for the sender of the message is utilized to determine whether the sender is an established relationship contact of an intended recipient of the message.

[0059] In some embodiments, determining whether the message was received from an established relationship contact of an intended recipient of the message includes determining a trust score associated with the sender of the message for the intended recipient of the message. If the trust score is above a threshold, the sender is identified as having an established relationship with the recipient and otherwise, the sender is identified as not having an established relationship with the recipient. The trust score indicates the closeness of the relationship between the sender and the intended recipient. This can either be a binary predicate or a real number. In a simplified example, the trust score can be set to 1 (e.g., indicating established relationship) if each of the two parties has sent the other at least three messages over a course of no shorter than one month, and otherwise to 0 (e.g., indicating not an established relationship). In another example, the trust score can be a function of the number of messages received by the recipient organization sent by the sender's organization and the number of messages that have been identified as undesirable, whether by the classifier or by a recipient.

[0060] In some embodiments, the trust score of the message identifies the extent to which the system recognizes the sender based on its historical message traffic; as such, it may not be limited to the history of the recipient or her organization. For example, a message from a sender with a very brief history would receive a low trust score, especially if the communication pattern is similar to that of previously identified malicious senders. A sender with a longer history and low traffic volume (but very few or no complaints of past abuse) would have a higher trust score, and a sender with a long history, high volume, and few or no complaints would correspond to an even higher trust score.

[0061] In some embodiments, determining whether the sender of the message has an established relationship with the intended recipient includes determining whether the sender of the message is included in a contact list (e.g., address) of the intended recipient. For example, if the sender of message is included in the contact list of the intended recipient and a sufficient number of the message was previously exchanged between the sender and the recipient, it is determined that

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the sender has an established relationship with the recipient.

[0062] In some embodiments, determining whether the sender of the message has an established relationship with the intended recipient includes obtaining a social, organizational, communication, collaboration, business and/or other relationship information of the sender and/or the intended recipient. Information about the sender and/or other users connected/related to the intended recipient may be obtained by requesting the desired information from a service (e.g., an external third-party service accessed via an Application Programming Interface such as Microsoft Graph API). For example, an identifier of the intended recipient of the message is provided to the service, and the service provides a list of other users connected to the intended recipient (e.g., connected via a social network, organizational relationship, business contact, etc.) that is ordered by the various other user's relevance to the intended recipient (e.g., order based on previous communication, collaboration, business relationships, etc.). It is determined that the sender of the message has an established relationship with the intended recipient if the sender is included in this list as having a sufficient relationship with the intended recipient (e.g., included in the list). Otherwise it is determined that the sender of the message does not have an established relationship with the intended recipient. In another example, an identifier (e.g., email address) of the sender of the message is provided to the service and the service provides information about the sender (e.g., information about the sender gathered across various different message repositories, contact lists and social networks). This information about the sender is used to assess a strength of a relationship between the sender and the intended recipient of the message (e.g., along with message history between them), and if the strength value of the relationship is greater than a threshold value, it is determined that the sender of the message has an established relationship with the intended recipient. Otherwise it is determined that the sender of the message does not have an established relationship with the intended recipient.

[0063] In some embodiments, the initial security risk assessment is performed based on a security policy. The security policy may distinguish the sender from other senders, distinguish the recipient from other users and/or be based on information associated with a threat, a configuration and/or a logged event. In some embodiments, a result of the initial security risk assessment of the original resource identifier is specific to the associated message, a recipient of the associated message, and/or a sender of the associated message, and thus may not valid for other messages, recipients and/or senders of the same resource identifier.

[0064] A result of any initial security risk assessment and/or classification may be identified as context information of the message (e.g., to be associated with alternative resource identifiers

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generated in 306). The security assessment may also be performed when a user actually requests content associated with the resource identifier.

[0065] At 306, for each original resource identifier identified to be replaced, an alternative resource identifier is determined. At least a portion of the alternative resource identifier (e.g., handle included in the alternative resource identifier) can be used to obtain the corresponding original resource identifier and context information associated with the message. In various embodiments, at least a portion of the alternative resource identifier is associated with the message, a record in a database, a message storage unit, a campaign, a key used to compute an authentication value, a security process, and/or a security action.

[0066] In some embodiments, the original resource identifier is mapped to a handle value (e.g., any alphanumeric value that may be the same or different from the original resource identifier) and included in an alternative resource identifier generated for the original resource identifier. The network domain of the alternative resource identifier may be the selected network domain of a security service and the handle value is included in the alternative resource identifier as at least a part of a URL argument (e.g., after "?" character), subdomain, path, and/or filename. This handle value can be later extracted from the alternative resource identifier and used as a lookup into a database (e.g., including a message storage) that associates the handle value to the corresponding original resource identifier and associated context information. For example, when the alternative resource identifier is determined for the original resource identifier, a corresponding database entry is stored in the database.

[0067] In some embodiments, at least the original resource identifier is encoded/encrypted as an encoded/encrypted value (e.g., the original resource identifier may be encrypted along with context information), and the encoded/encrypted value is included in the alternative resource identifier generated for the original resource identifier. The network domain of the alternative resource identifier may be the selected network domain of a security service and the encrypted value is included in the alternative resource identifier as at least a part of a URL argument (e.g., after "?" character), subdomain, path, and/or filename. This encrypted value can be later extracted from the alternative resource identifier and used to obtain the corresponding original resource identifier and context information by decrypting the encrypted value. In an embodiment where the context information is not included in the encrypted value, the encrypted value and/or the original resource identifier may be used to look up in a database the associated context information.

[0068] For example, say that the original resource identifier is a URL that references

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"www.somesite.com/somepath." This resource identifier is mapped to a value 7623655, and the alternative URL can be determined as www.somesite.com.7623655.alert.com/somepath. This value can serve as a handle, which can be used as an index into a database or the handle can encode information directly. There are many alternative encodings of state information. For example, a URL such as the example URL www.somesite.com/somepath can be replaced with a URL such as www.somesite.com/somepath?7623655 where the added portion is identified by a plugin, a modified browser, a gateway or other perimeter device, or by middleware on a computer such as the recipient's computer or phone. This modified URL may look less confusing to a typical end user, and is typically rendered the same way as the original URL if forwarded to a third party who does not have the security system described herein. It is possible to leave the extension there even if the second recipient does not have functionality to evaluate the site and the context and perform a security decision. Similarly, a URL can be replaced with a URL that bears no resemblance to the original URL, but which encodes the value identifying the context or an entry in a database that describes the context. For example, a URL such as www.somesite.com/somepath can be replaced with a URL such as www.securelink.com/7623655 or even a URL that is of a format that is not normally clickable, such as http://www.7623655; whereas this is not a legitimate URL, the proxy will identify it as a modified URL and perform a lookup or other determination before taking a security action.

[0069] For resource identifiers that are determined to be safe, these resource identifiers may either be the original resource identifiers or a resource identifier that is modified by attaching a "secure confirmation value" instead of the previous context-conveying value. For resource identifiers that are determined to be unsafe, these resource identifiers may be modified resource identifiers that replace the context-conveying value with an "insecure confirmation value." At any time when the unit identifies a request corresponding to a secure or insecure confirmation value, it can take an immediate action that does not require any lookup of contextual determination. Several resource identifiers may share the same confirmation values, or the confirmation values may be at least in part message-specific, resource identifier-specific, campaign-specific, origin-specific, or similar. A campaign may correspond to a positive series of messages (such as desired marketing messages from one vendor) or a negative series of messages (such as attack emails related to one particular threat). A portion of a resource identifiers-dependent confirmation value may comprise a resource identifiers-specific message authentication code, or portions thereof, thereby detecting potential attempts to modify marked-up resource identifiers by a recipient. Such resource identifiers can be treated separately, and may cause blocking as well as feedback to an admin or the user. Message authentication codes, also known as MACs, may be calculated using inputs that comprise

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a key unique to an entity such as one or more units used for security screening

[0070] Examples of the associated context information (e.g., stored in a database entry associated with at least a portion of the alternative resource identifier or encrypted and included in the alternative resource identifier) include: a display name, an address, an associated security risk, and any other information associated with a sender of the original message; a display name, an address, an associated security risk, and any other information associated with an intended recipient of the original message; a classification/security risk analysis result associated with the original message; a classification/security risk analysis result associated with the original resource identifier; at least a portion of a metadata of the original message; at least a portion of a message content of the original message; and any other information associated with the original message or the original resource identifier.

[0071] The database storing the context information may store information indefinitely; until it has been accessed and a determination made; for a fixed amount of time, such as one week; until a positive (safe) decision has been made; until a negative decision (high risk) has been made, in which case the original URL may be placed on a block list; and/or until a user action has been performed, such as placing the message in the trash folder, or according to a policy that is associated with the recipient or his or her organization. In one embodiment, only the first determined context of a message is stored, where this corresponds to when the message is sent from outside the security perimeter to inside the security perimeter, and the security perimeter may correspond to an organization that is protected. In other embodiments, the last context is stored, corresponding to the context between the last observed sender and the last observed receiver; or all context accumulated over the course of the transmission of the message in to and within the security perimeter. As an alternative, different contexts are used for the evaluation of the resource identifier, depending on the context relative to the clicking recipient of the message, which is the party who clicked on the resource identifier, and the sender that sent the email to that person. In one embodiment, it is part of the context whether the message was sent to multiple users or just one, and in the case of multiple, what users, and whether there is a known group that these correspond to. Such a group being matched could either be a positive indication of good security, or a negative indication of high risk, depending on the group and the policy. In one embodiment, the value used in the alternative resource identifier or otherwise identifies its context can be a value that indexes not a database of contextual information, but which identifies one or more emails in the mail archive maintained by the organization, thereby allowing a retrieval of the email and its context at the time of the security evaluation, which may be performed in response to a request from a

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user/recipients to access the website associated with the alternative resource identifier.

[0072] Security analysis may take several minutes, and sometimes even longer. Therefore, it is also advantageous to create a record in a database, and modify the original resource identifier of the received email by adding or incorporating a reference to this database entry at the time of the initial processing of the incoming message. Then, in some embodiments, a process is spawned to perform the scrutiny, where this process has as input, the message, and contextual information relating to the sender, the recipient(s), and any type of related policies, along with the identifier of the database record. As the process is making inferences relating to risk and context, these are added to the database entry. Alternatively, the processing can be performed in response to the recipient requesting content of the alternative resource identifier. In some situations, a policy is used to determine whether to proactively evaluate a resource identifier and the context of the message, or to perform these tasks in response to a system event, such as a request content of the resource identifier. Other triggering system events include the forwarding of the message, the response to the message, or the opening of the message; these are all events that can be identified in many message systems. If multiple users are receiving messages from the same sender, with the same content, or otherwise matching the same classification rule, it may be sufficient that the context of the resource identifier and the content of the website be evaluated once. To take advantage of this, it may be beneficial to associate such related records to each other. This can be done by linking the records to each other, e.g., by flagging that they all triggered the same rule, and adding cross-record links in the database. If one resource identifier is considered highly risky, then it may not be necessary to evaluate the same resource identifier sent to others in the system. Similarly, if a resource identifier is determined to be very low risk, then it is also not necessary to re-evaluate the resource identifier when sent to other users.

[0073] However, some resource identifiers and their security assessments depend directly on information relating to the recipient (e.g., such as whether this person is a developer who commonly received executable code by email) and relating to the pair of sender and recipient (e.g., such as whether the file types of files with related contents are commonly sent between these two parties). In such cases, at least a portion of the security assessment can be performed on an individual basis, whether for all recipients or for all recipients who request content of the resource identifier in question. However, it still may be beneficial for portions of the processing, such as the evaluation of the website, to be performed only once. The same argument applies to similar but non-identical resource identifiers assessed to belong to the same cluster, e.g., due to having the same sender or very similar email text content. Another benefit with associating records with each

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other is that if a large-scale campaign hits one or more enterprises that are all managed by the security service, then the information relating to the volume of the message can be used to score the risk; this score may be automatically adjusted over time as more information is learned about a particular campaign.

[0074] At 308, the identified one or more resource identifiers are replaced in the message with corresponding determined alternative resource identifier(s). The modified message with the alternative resource identifier(s) may then be allowed to be delivered to the intended recipient(s) of the message instead of the original message. Because the alternative resource identifier(s) can point a proxy that can dynamically track when the recipient requests content of the alternative resource identifier, further security analysis can be performed dynamically when the request is made. For example, using the alternative resource identifier, the corresponding original resource identifier and associated context information are obtained and used in analyzing a security risk of content referenced by the original resource identifier. If it is determined that content referenced by the original resource identifier is safe, the content is obtained and provided and/or the requester is redirected to the original resource identifier. Otherwise, the request for the content is blocked or a modified content is provided.

[0075] If an email with an alternative resource identifier is forwarded, then in one embodiment, the replacement of the original resource identifier is undone. In another embodiment, the replacement of the original resource identifier is kept conditional on who the new recipient is, and his or her relationship to the original recipient. This allows for a tracking of the transmission in the system, wherein the receiving system of the new recipient may add to the database of contextual information to describe the context as seen by the second and new recipient. It is also possible to add a second alternative resource identifier associated with this second-recipient context.

[0076] Figure 3B is a flowchart illustrating an embodiment of a process for handling a content request made using an alternative resource identifier. The process of Figure 3B may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. In various embodiments, the process of Figure 3B may be at least in part implemented on a mail transfer agent, a mail relay, a gateway, a cloud security device, an on-premise security appliance, and/or an end-user computer device.

[0077] At 310, a content request made using an alternative resource identifier is received. In some embodiments, the alternative resource identifier was determined using the process of Figure

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3A. For example, the content request is made by a message recipient selecting a hyperlink of the alternative resource identifier included in a received email message. An example of the content request is an HTTP request using an alternative resource identifier URL. The alternative resource identifier refers to content of a security service (e.g., proxy webpage) that when detected by a security service, triggers an analysis to determine a security risk associated with an original resource identifier corresponding to the alternative resource identifier.

[0078] At 312, using the alternative resource identifier, an original resource identifier and context information corresponding to the alternative resource identifier are obtained. In some embodiments, at least a portion of the alternative resource identifier is used to look up an entry in a remote database that corresponds to the alternative resource identifier. This entry may include the corresponding original resource identifier and/or associated context information. Alternatively, instead of database lookup, an application programming interface (API) may be used to convert the lookup value to context information, whether by decoding it, accessing a database, or a combination of these. In some embodiments, at least a portion of the alternative resource identifier is decrypted to obtain the original resource identifier and/or the context information. For example, the alternative resource identifier may directly include an encrypted version of the original resource identifier and/or the context information.

[0079] In some embodiments, at least a portion of the process of Figure 3B may be performed by a web browser, whether by having support from the browser manufacturer or because the end user or an admin had installed a browser plugin performing the functionality of the unit. Alternatively, a gateway scans outgoing network traffic for the user and performs at least a portion of the process of Figure 3B. It can also be performed remotely, e.g., on a website of the domain of the alternative resource identifier.

[0080] Examples of the associated context information (e.g., stored in a database entry associated with at least a portion of the alternative resource identifier or encrypted and included in the alternative resource identifier) include: a display name, an address, an associated security risk, and any other information associated with a sender of the original message; a display name, an address, an associated security risk, and any other information associated with an intended recipient of the original message; a classification/security risk analysis result associated with the original message; a classification/security risk analysis result associated with the original resource identifier; at least a portion of a metadata of the original message; at least a portion of a message content of the original message; and any other information associated with the original message or the original resource identifier.

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[0081] At 314, a security risk assessment is performed using the obtained information. For example, the content referenced by the original resource identifier is obtained and analyzed along with the obtained context information. One or more various components of security risk assessment may be performed to determine a security risk score. For example, the obtained information is evaluated, in light of a policy that is associated with at least one of the sender, the recipient, groups or organizations that either of these belong to, or a combination of these matters, along with additional information such as temporary policy override information, domain-specific information, recipient preferences, data related to the time of the day, and more. A more careful scrutiny may be preferred during early am hours, compared to during business hours, since the latter may impose an inconvenience on users by potentially causing delays. Performing security risk assessment may include rendering or emulating the rendering of the site referenced by the original resource identifier, and identifying functionality that is associated with high risk, such as JavaScript that initiates a download of a file, or two fields appearing to be for username and password, or logos that are commonly used on phishing sites, and which are not associated with the domain of the site. Here, it should be understood that rendering the site does not require displaying any portion of it on a screen; the rendering can be performed in a virtual machine that examines the result of said rendering by analyzing what a user would have seen if the website were rendered on a screen. These are indicators of risk. Based on the information of the sender, whether the sender is trusted, whether the sender or other aspects of the message are potentially deceptive or have a high associated risk score, based on the recipient and his or her risk preferences, information about the site, and one or more policies, which may be hardcoded in or provided separately, a risk determination is made. A result of the security risk assessment may also be logged to allow an administrator to review risks and/or for use in future security analysis.

[0082] In some embodiments, the security risk assessment is performed based on a security policy. The security policy may distinguish the sender from other senders, distinguish the recipient from other users and/or be based on information associated with a threat, a configuration and/or a logged event. In some embodiments, a result of the security risk assessment of the original resource identifier is specific to the associated message, a recipient of the associated message, and/or a sender of the associated message, and thus may not valid for other messages, recipients and/or senders of the same resource identifier.

[0083] In one embodiment, a user risk score is computed. This is a score that depends on the sender and his or her historical risk behavior (such as distributing dangerous messages, links, and attachments); the sender's role (such as being an influential person); the role of any party

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whose identifying information resembles the sender, where this party is known by and/or trusted by the recipient; the recipient and his or her historical risk behavior (such as opening dangerous messages, clicking on dangerous links, and opening dangerous attachments, where an item is considered dangerous if it or its format is correlated with risk); and the recipient's role (such as being a person who is desirable for an attacker to attack). Further, the risk may vary not only with the sender and recipient but with the pairing: a recipient with access to financial data or controls in combination with a finance-related attack may present a much higher risk than a recipient in IT; but the same recipient may be the most dangerous target for an attack relating to cloud credentials. The example benefit of this approach is that it allows specification not only of the putative destination for a resource identifier (which proxies and crawlers already do), or the internal user (which security agents and internal controls do), but of the pairing.

[0084] The scores can be derived from past interaction with emails; past results in training sessions; past browsing history; and configurations made by the sender/recipient or admins associated with either of these. Context here is also historical - given the benefit of hindsight. Very often attacks are much clearer after they have passed. This is useless information in many security approaches, since the danger has moved on. But with historical data, notably unavailable to the web crawler or proxy, actions by the given user taken months ago may be evaluated in light of everything learned since the actions. And if this can color the assessment of the risk of the user's actions today, it can greatly ameliorate the dangers posed by their actions tomorrow on threats not yet understand. This can be a general measurement of the "gullibility" and "value" of the target, but can be even more specific to a behavior or attack type - over the past year, it may be noted that a user will blindly click on anything that looks related to their social media presence. This can then be used to tune the risk of a specific link in a message to that user. Lastly, this historical data can be used to project increased exposure proactively. If historical data shows a user has engaged with a previous threat or it has been observed in previous campaigns, it is known that their email address and/or identity is known to bad actors, and this may be utilized to evaluate new threats. For example, if a resource identifier shows up for multiple receivers, and it is known that the same set of recipients were victims of previous attacks, a higher risk can be ascribed to the resource identifiers even before evaluating it because of the correlation. There are many circumstances where an email address that has been exposed this way may be known and thus any resource identifiers sent to that user can be given a more aggressive check.

[0085] Another aspect of the "metadata" this markup can provide to a web analysis is "epidemiological." One aspect involves understanding how a given attack played out and whether

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there are further risks. For example, if a resource identifier turns out to be malicious and was sent to a given user - but then emails to other users including the resource identifier are observed in a pattern which does not match that user's normal email behavior, it may indicate some lasting infection on the user's computer. Another aspect is more preventative - if indications of an attack on the user have been recently detected, or on other related addresses, the resource identifier analysis can be more aggressive. Similarly, if a sender has been associated with previous attacks, the resource identifier analysis can be more suspicious of novel resource identifiers - and this metadata is only available as historical (and cross-customer) email context.

[0086] In some embodiments, at least one portion of the risk score is automatically derived and based on behavioral observations made by the system or entities related to the system. For example, consider a first value, corresponding to the score between 1-100 that assessed the extent with which the sender identity information matches the identity information of a party that is trusted by the recipient, and which is not equal to the sender itself, and where a sender is trusted if there has been historic communication between the sender and the recipient exceeding a threshold amount. The score is 100 if the identity information that a user can select aligns perfectly with that of a trusted party, and it is 1 if there is no alignment at all with any trusted party, and 50 if there is an average alignment with at least one trusted party, where alignment is measured using string distance or a similar measure. Consider further a second value that is a score between 1-100 that corresponds to the degree of trust the recipient has for the sender. This is a value that can be computed as the 100 times the percentage of the messages sent by the sender that the recipient opened, divided by the percentage of messages sent by the sender that are considered insecure using some security measure, such as having a macro, being associated with phishing, triggering a security risk assessor unit, etc. This second value, therefore measures how trustworthy the sender is, both in terms of his and her objective behavior and in terms of the recipient's reactions to this behavior. The risk score is computed, in this example, as the pair of the two scores (score1, score2), where score1 indicates the match with a trusted party and score2 indicates the extent to which the recipient trusts the sender combined with how trustworthy the sender is. This risk score, being a pair of scores, is valuable when assessing a resource identifier. Therefore, the context in which resource identifiers associated with the email are evaluated comprises this risk score. The score may comprise a score obtained from evaluating DMARC predicates associated with the received email, e.g., indicate whether DKIM policies were satisfied, whether SPF policies were identified, and the type of and age of DMARC policy that is associated with the sender. The score may comprise a score obtained from evaluating the authenticity and trustworthiness of the sending domain of the email which included the URL. The score may also include information about the

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sender useful to assessing and analyzing risk. Such information could include (a) whether the email was sent from a personal webmail account, (b) whether the email was sent from a well-known and trusted business partner, and (c) whether the email was sent from an account with a well-known and trusted sending history.

[0087] In some embodiments, the context information contains personally identifying information associated with the sender, and the message content and/or the relationship between the sender and the recipient, whereas in other embodiments, the context is redacted to only comprise non-identifying information. This latter embodiment is beneficial when the context is communicated outside the system or stored on insecure servers, as well as when data privacy laws require it.

[0088] In some embodiments, a user exhibiting good security hygiene would cause the logging of information indicating that this user can have a more permissive policy associated with access to resources. For some users, whether identified by their past actions, by an admin based on a security decision, or by an automated system based on the users' roles, a policy can include information that forces escalated scrutiny of some resources prior to permitting full user access to these resources. This escalated scrutiny may comprise at least one of manual review by a trusted party, such as an admin; automated interaction with the apparent sender; generation of a request for information sent to a system associated with the sender; and use of additional security measures that may be demanding of processor power, requiring substantial storage resources, or causing user friction.

[0089] In some embodiments, a stateful browsing session is enabled based on contextual information. For example, consider a user who receives an email that contains a URL that corresponds to a landing page that is not determined to be insecure. However, as a result of the user's selections and actions, the user navigates from the landing page to a page that is risky, given the context of the URL of the message the user received. For example, a user may receive an email from a relative stranger or a stranger, the email containing a URL and the URL pointing to a webpage with a survey. However, at the end of the survey, the user is asked to log in to an account, e.g., using Oauth or a password, in order to be given a benefit, such as a reward for taking the survey. This is a risk that might not be possible to identify by merely automatically scanning the landing page; and the risky page may not be automatically reachable by an automated tool. One reason for this is that pages between the landing page and the risky page may require actions that implicitly involve a human, and potentially, actions that require knowledge held by the receiver but not necessarily by others. This problem is addressed by the disclosed technology, as the proxy

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making the security determination before issuing a GET request to the resource will preferably modify any URLs in the obtained webpage data in a manner that is consistent with how the URL in the email was modified. This way, as the user clicks on links in the webpage, the proxy will identify these webpage requests as belonging to the same initial message and message context, and therefore, will determine that that consecutive pages should also be examined, as they are being requested, using the same context and policy as the first page. To the extent that end-to-end encryption is used by the accessed websites, this can be addressed by letting the proxy also act as an encryption proxy, very much like what a man-in-the-middle proxy does. As an alternative, the proxy can carry out an independent session with the website, generating web content requests matching those of the users as closely as possible. In embodiments where the proxy resides at least in part on the end user machine, as is the case when a browser plugin is used, the issue of end-to-end encryption goes away, since the proxy then is attached right at the user-end of the encrypted channel. In one embodiment, a policing unit identifies and blacklists websites that have a behavior that depends on whether the requester is identified by the website as an end user or as a proxy. This blacklist can be fed to a security system used to limit traffic to blacklisted sites, and to take other actions, such as the automated filing of complaints and the initiation of take-down efforts, as needed.

[0090] In some embodiments, the analysis of executable elements - including macros, webpage JavaScript elements, documents that use display software vulnerabilities to execute code, trojans, and other types of malware and malware risks - can be improved using contextual information. For example, two developers may exchange executable elements by email, and this should not be blocked. Similarly, IT admins may send out messages with hyperlinks associated with webpages where executable elements can be downloaded. This should also not be blocked. When one colleague sends another colleague a suggestion of what software to use, that is almost always benevolent. However, when a stranger sends messages with URLs or attachments associated with executables, this is a much higher risk. The risk is particularly high if the display name or email address of the sender is reminiscent of the display name or email address of a party the recipient trusts. Therefore, such emails should typically be blocked. On the other hand, an email from a stranger that does not contain any high-risk URLs or attachments should typically be delivered. Therefore, it is beneficial to include context in the evaluation of URLs, associated websites, and attachments. In some embodiments, component risk scores are determined for URLs, webpages, and attachments to generate one or more risk scores, and these risk scores are evaluated using a policy that takes context into consideration. The policy may encode organizational preferences that have been collected using an interface in addition to user-specific configurations

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that depend on historical behavior of recipients, senders, and pairs of these. As a special case is encountered, such as a user receiving an executable attachment from a colleague who has never sent such an attachment, an escalated security review is performed. This may involve senders confirming that they intended to send the message; recipients confirming that they understand that the attachment is executable; and admins confirming that the attachment is acceptable in this context; or some subset of these actions. Additional computational actions may also be performed, e.g., performing a detailed scrutiny of the sender's system, to determine that it has not been compromised, and the functionality of the attachment. Similarly, URLs and messages with URLs can be treated in an analogous manner. After such review and scrutiny, a policy can be augmented to simplify the process the next time a similar event takes place.

[0091] At 316, an action is performed based on the security risk assessment. Examples of the action includes allowing access to the content referenced by the original resource identifier (e.g., either as proxy or by redirection to the original resource identifier), blocking access to the content referenced by the original resource identifier, providing a modified version (e.g., modifying the functionality) of the content referenced by the original resource identifier, providing a warning, notifying an administrator, requiring an additional user action, logging an event/action associated with the resource identifier, and/or storing information related to the resource identifier.

[0092] In some embodiments, if a determined security risk score is below a threshold and/or certain security risks are not detected, the original content referenced by the original resource identifier is provided in response to the request made using the alternative resource identifier (e.g., in acting as a proxy, the original content referenced by the original resource identifier is obtained and provided). In another example, if a determined security risk score is below a threshold and/or certain security risks are not detected, the request made using the alternative resource identifier is redirected to the original resource identifier (e.g., via HTTP 301 or HTTP 401 response). In some embodiments, if a determined security risk score is above a threshold and/or certain security risks are detected, the request made using the alternative resource identifier is rejected or a modified content of the original resource identifier provided (e.g., modified to provide a security warning message or disable/remove risky content portions).

[0093] Events that are associated with a resource, a resource identifier, a sender, a recipient, or a threat may be logged. For example, if one particular user is found to commonly attempt to access high-risk resources, these attempts can be logged. A user-specific policy then takes these logged attempts into consideration as context information, potentially resulting in a more restrictive permission to access resources associated with high risk, such as any resource whose risk score

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exceeds a threshold. Seen from another perspective, the threshold associated with a recipient can be part of a policy specific to this user, and be a function of the logged attempts to access resources.

[0094] In some embodiments, a security system allows access to a website referenced by the original resource identifier but with additional security measures such as utilizing browser isolation technology, allowing access only to known good sites or allowing access but without JavaScript or other active content enabled. The determination of what functionality to enable/disable may be made based on the obtained context information, the policy associated with the sender, recipient or system, and the threat level, where the threat level is determined based on recent historic events, such as emails and threats received or observed by the system. The "policing" of this determination may be done on the client device, e.g., using middleware, a browser plugin, or the browser itself. Alternatively, it is made on a proxy or a gateway that filters web elements by observing web traffic, and which blocks some types of elements, or which selectively blocks elements with certain capabilities or functionalities, or elements that are not on a whitelist of approved elements. An example element is a JavaScript snippet. In one embodiment, the filtering is made on a proxy that acts as a man-in-the-middle, and which selectively evaluates all traffic or some traffic initiated as a result of a user clicking on a link that originated with a high-risk email, where the risk is assessed relative to a policy, and where the risk is assessed based on the identity of the sender; the identity of the recipient; the roles of the sender and receiver, to the extent that this is known; the historical interaction between the sender and the recipient; the trust determined by the system of the sender and its organization; the assessed likely trust as experienced by the recipient, which is estimated by comparing the sender identity information such as the display name of the sender to the sender identity information of parties that are trusted by the recipient and the recipient organization. This proxy acts as a web browser in a sandbox, and evaluates the risk and functionality of associated web elements requested as part of rendering the website corresponding to the original resource identifier that the recipient user clicked on, determining which ones can be transmitted to the recipient browser and which ones should be blocked. In some embodiments, this is preferably done in real time, but could also be done in anticipation of the user requesting content referenced by an alternative resource identifier, and determine risk of the site and its associated elements in a proactive manner, storing determinations in a database that is later queried if the user requests to render the webpage. In some embodiments, information of this type is stored for about a week, and if there are no requests, then the information can be overwritten. Should the user request after this takes place, then the determination has to be performed again.

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[0095] Figure 4 is a flowchart illustrating an embodiment of a process for analyzing individual aspects of message information for security threats. The process of Figure 4 may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. In some embodiments, at least a portion of the process of Figure 4 is performed in 204, 304, and/or 314 of the processes of Figures 2-3B. For example, the analysis of the process of Figure 4 is performed to determine a security risk score associated with a message that includes a reference identifier.

[0096] At 402, content included in a message is analyzed to determine one or more content risk component scores of the message. For example, a message body of the message is analyzed to identify whether it includes one or more text/keywords from a list of keywords associated with a security risk. A keyword may be included in the list because the keyword identifies conversations about sensitive content that could cause harm to the recipient if the recipient replies or takes action related to the keyword. For example, keywords "social security number," "password," "login," "wire instructions," "confidential," "payment," "ID," obfuscated text, etc. may be included in the list of keywords associated with a security risk. A content risk component score is determined based on whether the message includes a text/keywords from the list of keywords (or associated synonyms or related words) associated with a security risk. For example, an increase in the number (e.g., of different types) and degree of risk of security risk keywords included in the message increases the associated content risk component score.

[0097] If the sender of the message has been determined to have an established relationship with the recipient of the message, past observations about messages sent by the sender are utilized in determining the content risk component score based on whether the message includes a text/keywords from the list of keywords (or associated synonyms or related words) associated with a security risk. For example, if it is common for a sender to communicate with the recipient about invoices and payment, an inclusion of a keyword related to invoices and payment would not cause the content risk component score to go up as much as compared to a situation in which it is not common for sender to communicate with the recipient about invoices and payment. Thus a contribution of a security risk keyword included in the message to the content risk component score is reduced if the same or similar keyword in scope and topic (e.g., keyword that is a synonym or topically related word) has been previously observed in previous messages from/to the sender to/from the recipient. The magnitude of this reduction may depend on the number and length of time the same or similar keyword in scope and topic has been previously observed in previous messages from/to the sender to/from the recipient.

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[0098] In some embodiments, analyzing content included in the message to determine one or more content risk component scores of the message includes determining a content risk component score based on a message signature included in the message. For example based on past observations about types of email signatures typically included in email messages from the sender of the message, the associated content risk component score is increased if an expected signature is not included in the message (e.g., given other detected attributes of the message and the expected signature for the given other detected attributes) or if an unexpected signature is detected (e.g., never observed signature or included signature is an out of context signature that does not match an expected signature for the given detected attributes of the message).

[0099] At 404, entries included in a header of the message are analyzed to determine one or more header entry risk component scores of the message. Examples of the entries included in the analyzed header include one of more of the following: a mail user agent (i.e., MUA) identification, time zone identification, IP address, X-header, supported foreign language character sets of the sender, identification of automation or script that generated the message, or any other data included in the header (e.g., email header) of the message. For each header entry to be analyzed, a header entry risk component score is calculated based on a risk factor associated with the entry. For example, certain sender IP addresses and/or header entries, given what is known about the intended recipient (e.g., mismatch between sender and recipient) may increase the associated header entry risk component score. If the sender of the message has been determined to have an established relationship with the recipient of the message, past observations about headers of messages sent by the sender are utilized in determining the header entry risk component scores. For example, the header entry risk component score for a header entry is reduced if the same or similar entry (e.g., change in entry from a previously observed entry conforms to known change pattern) has been previously observed in previous message headers of messages from the sender of the message. The magnitude of this reduction may depend on degree of similarity and/or conformance to a typical pattern of change from previous observations.

[00100] In some embodiments, the header entry risk component score for a header entry is associated with whether the message is an automatically generated message. For example, one or more x-header entries identify whether the message was automatically generated. These entries may be identified based on keywords that identify that the message was generated using a script (e.g., generated using a PHP mailer/script). If the sender of the message has been determined to have an established relationship with the recipient of the message, past observations about headers of messages sent by the sender are utilized in determining the header entry risk component scores.

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For example, the header entry risk component score for a header entry identifying an automatically generated message is reduced if the sender typically sends automatically generated messages (e.g., including the same or similar header entry) to the recipient of the message. The magnitude of this reduction may depend on degree of similarity and/or conformance to a typical pattern of change from previous observations. The following are examples of header entries identifying an automatically generated message and these entries are identified by matching one or more search terms with at least a portion of the text of these entries:"X-Mailer: PHPMailer 5.2.23 (https://github.com/PHPMailer/PHPMailer)"; "X-Php-Originating-Script: 1002:srjvdopc.php(1189) : runtime-created function(1) : eval()'d code(1) : eval()'d code."

[00101] At 406, one or more other security analyses are performed to determine one or more other security risk component scores. This step may be optional in various embodiments. Examples of other types of analysis performed include one or more of the following: a virus threat detection, a malware threat detection, identification of risky content type (e.g., executable, file attachment, link to a website that requests login information, content that requests OAuth authentication, etc.) included in the message, analysis of a number and type of recipients of the same message, and determining whether the sender from a domain with a Domain-based Message Authentication, Reporting and Conformance (DMARC) policy passes Sender Policy Framework (SPF) and DomainKeys Identified Mail (DKIM) validations.

[00102] In some embodiments, performing a security analysis includes identifying which domains and subdomains are used to send legitimate traffic, e.g., by recording what subdomains/domains are used to originate large volumes of emails, and which are not known to be spam or fraud email. For example, "large amounts" may mean greater than a threshold value, such as 100 emails per week, or at least 0.1% of the traffic associated with a particular domain, or any traffic that is not known to be good, e.g., by being associated with correct SPF and/or DKIM data in the headers. Next, any traffic associated with a subdomain and domain that is not on the list of subdomains/domains that are known to send legitimate traffic is flagged, and, depending on a policy and/or contents, quarantined, blocked, marked up, or escalated for additional scrutiny.

[00103] In some embodiments, a security analysis involves web bugs, which are also referred to as web trackers. Some users set their browser preferences not to permit web bugs, whereas others do not. Therefore, the acceptance or rejection of a web bug is a trait that can be tracked. When it changes, that is indicative of risk. A web bug can be set to send a signal to the security service when the email or webpage in which it is integrated is rendered. The security service can send a message to a user considered at risk for having been corrupted, and then

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determine whether the web bug is operating in a manner that is consistent with past uses. The email can also demand that the user allows web bugs, after which user-specific information can be collected. If this is found to be inconsistent with past observations, the associated risk component score is increased.

[00104] At 408, one or more of the risk component scores are combined together to determine one or more combined security risk scores. Determining a combined security risk score includes statistically combining (e.g., adding together, weighting then adding together, averaging, weighted averaging, etc.) together the various risk component scores to determine a single combined risk score. In some embodiments, each of the risk component score(s) is associated with one or more specific types of risk. For example, risk component scores of each risk type are to be combined together by type to determine a total risk score for each specific risk type. For example, a security risk component score may be identified as being associated with a malware risk type and/or a phishing risk type and a combined security risk score for the malware risk type and a separate combined security risk score for the phishing risk type are calculated. In some embodiments, the combined security risk scores are utilized in determination of which security action to perform.

[00105] Figure 5 is a flowchart illustrating an embodiment of a process for analyzing aspects of a received message based on whether the message is from an independently controlled account of a sender. The process of Figure 5 may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. In some embodiments, at least a portion of the process of Figure 5 is performed in 204, 304, and/or 314 of the processes of Figures 2-3B. For example, the analysis of the process of Figure 5 is performed to determine a security risk associated with a message that includes a reference identifier. In some embodiments, the process of Figure 5 is performed in response to a determination that the sender of the electronic message is not an established communication contact of the intended recipient of the message.

[00106] At 502, it is determined whether an electronic message account of a sender of the electronic message is likely an independently controlled account. For example, a message that was sent from an account that belongs to a large organization that closely controls who can send a message via its domain (e.g., web domain) is not an independently controlled account whereas a personal email message account is an independently controlled account.

[00107] In some embodiments, determining whether the electronic message account of a sender of the electronic message is likely an independently controlled account includes identifying

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a domain of an address (e.g., email address) of the sender of the message using the domain to identify using preconfigured data, whether the domain corresponds to independently controlled accounts. For example, certain domains are known to only allow not independently controlled accounts and any email address using these domains is identified as not an independently controlled account, while other domains are known to allow independently controlled accounts and any email address using these domains are identified as an independently controlled account. If the domain is unknown, the electronic message account of the sender is identified as an independently controlled account.

[00108] In some embodiments, the electronic message account of the sender of the electronic message is determined to be likely an independently controlled account based on a message traffic pattern associated with the electronic message account of the sender. For example, based on the volume of messages (e.g., large volume of message traffic above a threshold to/from the sender indicates that it is not an independently controlled account) and/or number/ratio of sent messages vs. received messages (e.g., a ratio of sent messages by the sender as compared to messages to the sender that is above a threshold indicates that it is not an independently controlled account where as a generally even ratio of sent vs. received indicates an independently controlled account), it is determined whether the electronic message account of the sender of the electronic message is likely an independently controlled account.

[00109] The notion of autonomy (e.g., independently controlled) of an account is important with respect to trust of the account. For example, a "gmail" account is autonomous (e.g., independently controlled). Even though many members share the same domain, there is no coherency in their actions. On the other hand, an official work organization email address of one employee is not autonomous from another employee of the same organization.

[00110] In a first example, consider Alice with an email address with the domain "Aliceco.com" that sends an email to Bob at an email address with the domain "Bobco.com." Assume that the recipient Bob has a trust relationship with Alice (i.e., the recipient email address for Bob has sufficient interaction with the Alice email account). Then there is *"personal trust"* by the recipient directed to the sender. Assume that the recipient does not have a trust relationship with Alice, but somebody else at "Bobco.com" does. Then there is *"organizational trust"* by the recipient directed to the sender. Assume now that the recipient Cindy at "Bobco.com" has no trust relationship with Alice, but Cindy does have one with Dave at Aliceco.com. Then there is *"personal transitive trust"* by the recipient directed to the sender. This is because Alice and Dave both belong to "Aliceco.com", and "Aliceco.com" is one autonomous entity -- Alice and Dave are

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not two independent autonomous entities. Finally, assume that the recipient has no trust relationship with either Alice or Dave -- or anybody else at "AliceCo.com" -- but that somebody else at "Bobco.com" does. This shows *"organizational transitive trust."*

[00111] In another example, consider Bob using his "gmail" personal account, sends an email to somebody at "Bobco.com." Assume that the recipient has a trust relationship with Bob (e.g., the recipient email address has sufficient interaction with the Bob "gmail" email account). Then there is *"personal trust"* by the recipient directed to the sender. Assume that the recipient does not have a trust relationship with Bob's "gmail" account, but somebody else at "Bobco.com" does. Then there is *"organizational trust"* by the recipient directed to the sender. Assume now that the recipient has no trust relationship with Bob, but they do have one with Cindy's personal "hotmail" account. There is no trust -- Bob and Cindy are not two independent autonomous entities when represented by their personal email addresses.

[00112] Thus, if an email comes from a stranger whose email address is similar to a party the recipient trusts, then this is a high-risk scenario. Trust is different from more general reputation: one is not more likely to act on an email from a trustworthy but unknown organization than one of an email from a non-trustworthy and unknown organization. However, whether one has a good relationship with a sender matters more in terms of trust than whether others have a good relationship with the sender. Different kinds of trusts may be computed in different ways but also have different strengths. For example: strength("personal trust") > strength("organizational trust"); strength("personal trust") > strength("personal transitive trust"); strength("personal transitive trust") > strength("organizational transitive trust"); strength("organizational trust") > strength("organizational transitive trust"). In some embodiments, different weights can be assigned to these different types of trust to determine a risk of a message.

[00113] If at 502 it is determined that the electronic message account of the sender of the electronic message is likely an independently controlled account, at 504, the message is analyzed to determine whether the message is an automatically generated message. For example, a header of the message is analyzed to determine whether one or more x-header entries identify whether the message was automatically generated. These entries may be identified based on keywords that identify that the message was generated using a script (e.g., generated using a PHP mailer/script). The following are examples of header entries identifying an automatically generated message and these entries are identified by matching one or more search terms/keywords with at least a portion of the text of these entries: "X-Mailer: PHPMailer 5.2.23 (https://github.com/PHPMailer/PHPMailer)"; "X-Php-Originating-Script: 1002:srjvdopc.php(1189)

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: runtime-created function(1) : eval()'d code(1) : eval()'d code."

[00114] In some embodiments, determining whether the message is an automatically generated message includes identifying a likely scripted behavior associated with a protected account. For example, attackers typically configure accounts they have compromised to forward emails to another account, either selectively (such as based on the subject line, the sender, the thread, etc.) or for all emails. In addition, attackers sometimes configure compromised accounts so that selective emails are hidden, as will be described in more detail below. When attackers make such a configuration, then this affects the traffic patterns in a way that will be measured and detected by the security service. By monitoring the different mail folders, including the inbox, the sent box, the archive, the trash folder and other folders, the security service provider will detect forwarding behavior that is anomalous in that it has not been performed by the account owner before; that is selective; that is rapid; or that is to recipients that are considered high risk, or any combination of these. It also detects signs of scripted forwarding, which is indicated by a very short time period between receipt of an email and the forwarding of the email. In addition, the security service also looks for other indications of scripted behavior, such as an anomalous addition of an account in the bcc, which is considered anomalous by not having been performed previously, and/or which is considered scripted due to the time periods being very short. Another related detection method is to observe if the MUA of emails to some recipients of emails sent from the protected account are different than those of others, and considered high risk, e.g., due to information that is anomalous for the account owner.

[00115] If at 504 it is determined that the message is an automatically generated message, at 506, an automated message security risk component score associated with the message is set (e.g., set to a high value) to reflect a high security risk of the message (e.g., higher than otherwise). This security risk component score may be utilized in 212 of Figure 2 and/or 308 of Figure 3A.

[00116] If at 502 it is determined that the electronic message account of the sender of the electronic message is likely not an independently controlled account or if at 504, it is determined that the message is not an automatically generated message, at 508, the automated message security risk component score associated with the message is set to reflect a low risk of the message (e.g., lower than otherwise).

[00117] Figure 6 is a flowchart illustrating an embodiment of a process for wrapping encrypted content of the message. The process of Figure 6 may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. In various embodiments,

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at least a portion of the process of Figure 6 is performed in 206 of Figure 2. For example, the process of Figure 6 describes one of the security actions that is selected to be performed.

[00118] If a message includes encrypted content such as an encrypted email attachment, that encrypted content is often unable to be properly analyzed for security threats because analysis tools are unable to access the encrypted content. Hackers may take advantage of this by sending an encrypted malware attachment along with a password to be utilized by the recipient to open the attachment.

[00119] At 602, encrypted content included in a message is identified. Examples of the message include an email, instant message, a chat message, and any other forms of electronic messages. The message may be analyzed as a part of a computer security analysis and filtered to identify and neutralize security threats prior to allowing an intended recipient of the message to access the message. In some embodiments, each message received for delivery to its intended recipient associated with the system performing analysis of the message is to be analyzed. Examples of the encrypted content include: an encrypted executable file, an encrypted zip file, an encrypted text, an encrypted script, an encrypted image, and any other encrypted content. The encrypted content may have been identified by identifying content that requires a password to access it.

[00120] At 604, a wrapped version of the identified encrypted content is generated and the message is modified to include the wrapped version of the encrypted content instead of the original encrypted content. In some embodiments, wrapping the encrypted content includes embedding the encrypted content in an executable program. When the executable program is executed, the executable program requests a decryption password from the user and the encrypted content of the message is encrypted using the decryption password and the decrypted content is analyzed for security threats prior to allowing the user access to the decrypted content once the analysis has completed without identifying a security threat. If the security analysis identifies a threat, a user may not be allowed to access the decrypted content and the security threat may be logged or reported to an administrator.

[00121] For example, the wrapped version of an encrypted zip file is a file that, when opened, causes execution, whether of the file wrapper itself or of an associated application that the message recipient needs to download, and as the file wrapper is executed, it requests and receives a decryption key, PIN, or password from the user and uses the PIN or password to decrypt the wrapped zip file. This is done by executing the unzip program associated with the zip file, or a

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compatible version to this, providing the unzip program with the PIN or password provided by the user. It then automatically accesses the contents of the unzipped file and analyzes it for security risks. This can be done in a multiplicity of ways, including detonating each file, determining whether any of the files match an anti-virus signature, determining whether any of the files has executable code segments in it, etc. The same approach also works for messages with attachments that are encrypted pdfs, or any other encrypted file. In such cases, the execution of the wrapper file causes the decryption of the encrypted file, which is then analyzed for security risks, including executable code. If a file, independent of type, passes the verification, then the decrypted content is made available to the recipient. Thus, the user experience associated with the opening of wrapped encrypted content would be the same as that of unwrapped encrypted content, except for a delay during security analysis (e.g., in most cases this would be too short to detect).

[00122] At 606, the message with the wrapped version of the encrypted content is allowed to be delivered. For example, the modified message is allowed to be delivered to an email inbox (or other email categorization folder to be actively accessed by a user to obtain new messages, e.g., not a spam or trash folder) of an end recipient. Allowing the modified message to be delivered includes allowing an intended user recipient of the message to be able to access the wrapped encrypted content. When the recipient opens the wrapped encrypted content, the wrapper program requests a decryption key, decrypts the encrypted content using the decryption key, and initiates the security analysis of the decrypted content prior to allowing the recipient access to the decrypted content of the encrypted content. Any security analysis technique or method described in this specification may be performed on the decrypted content to analyze it for security threats. If a security threat is detected, the user may not be allowed access to the decrypted content and a security may be performed. The security action may include revoking access to the message, deleting the message, forwarding the message, reporting the message, further modifying the message, moving the message (e.g., to a different folder), preventing access to a portion of the message, providing an additional warning, and/or performing further analysis.

[00123] Figure 7 is a flowchart illustrating an embodiment of a process for tracking trusted contacts. The process of Figure 7 may be at least in part performed by analysis server 102, gateway 110 and/or message server 106 of Figure 1. Examples of the contacts include email addresses, usernames, display names, user identifiers, an identification photo, and any other identifier that may be utilized to identify a sender or recipient of a message. In some embodiments, at least a portion of the process of Figure 7 is performed in 204, 304, and/or 314 of the processes of Figures 2-3B. For example, the analysis of the process of Figure 7 is performed to determine a security risk

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associated with a message that includes a reference identifier.

[00124] At 702, trusted contacts for a user (e.g., message recipient) are determined. The trusted contacts are to be utilized to identify potential message threats of the user. The trusted contacts identify one or more contacts (e.g., senders or recipients of messages) that are familiar to the user because the user has previously interacted with the contact and/or is aware of the contact. In some embodiments, determining the trusted contacts includes receiving a list of contacts for the user. For example, the user provides access to an address book of the user and information about contacts in the address book is received. In some embodiments, the trusted contacts include contacts that have been specifically identified by the user. In some embodiments, information about the trusted contacts is stored. For example, the trusted contacts for the user are stored in a database of trusted contacts. This database may track trusted contacts for a plurality of different users and allows trusted contacts to be retrieved for a specific identified user. The stored information of each contact may include one or more of the following: email address, associated name (e.g., display name), relationship identifier, identifying image (e.g., contact photo), username, instant message identifier, address, phone number, a measure of trust, a measure of message interaction, and any other identifier utilized to identify a sender or a receiver of a message.

[00125] In some embodiments, the trusted contacts for the user are at least in part determined automatically based on contacts detected in messages sent or received by the user. For example, by observing and analyzing message traffic of the user and patterns of message recipients and senders, contacts that receive messages from the user and contacts that send messages to the user can be determined and correlated to infer and determine trust, frequency, and/or importance of interaction and relationship between the user and the contact to identify one or more of these contacts as a trusted contact. In one example, if a threshold number of messages has been sent to and from a contact for a user, the contact is identified as a trusted contact and added to a stored list of trusted contacts for the user. Information about the messages of the user utilized to at least in part automatically determine the trusted contacts has been obtained for analysis by receiving at least a portion of the messages (e.g., a copy of the entire message, email addresses and names of contacts of messages, etc.) for analysis (e.g., at server 102 from server 104, gateway 110, or server 106 of Figure 1).

[00126] At 704, trusted contacts for a group that the user belongs to are determined. For example, trusted contacts for the users included in the group are aggregated to identify patterns among the aggregated trusted contacts. Examples of the group include a network domain that the user belongs to (e.g., domain of the email address of the user), an entity/organization that the user

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belongs to (e.g., company that the user belongs to), a message service provider, or an authority that controls a message account of the user. In some embodiments, determining trusted contacts for the group includes aggregating information about a trusted contact and/or a network domain of one or more trusted contacts from information gathered for different users for the trusted contact and/or the network domain. In some embodiments, determining the trusted contacts for the group includes storing information about the trusted contacts in a data storage structure and associating this stored information with the group.

[00127] At 706, determined trusted contacts are utilized to identify potential message threats for the user. For example, the contacts in the trusted contacts may be utilized as a proxy for contacts that are familiar to the user and if an attacker tries to attack the user using an impersonation attack, contact being impersonated likely corresponds to one of the contacts in the list of trusted contacts of the user. By determining a measure of similarity between a sender identifier of a message received for the user with each identifier of each trusted contact, messages attempting impersonation attacks may be identified. For example, if the email address of the sender matches an email address of a trusted contact, the message is to be trusted and not filtered but if the email address of the sender does not match any trusted contacts but is similar to an email address of a trusted contact, the message is identified as potentially a part of an impersonation attack and filtered. Filtering the message may include blocking the message, quarantining the message, further analyzing the message, and/or modifying the message (e.g., insert a warning).

[00128] Figure 8 is a flowchart illustrating an embodiment of a process for determining information about a message sender to be utilized to assess a risk of a message. The process of Figure 8 may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. In some embodiments, at least a portion of the process of Figure 8 is performed in 702 and/or 704 of Figure 7. For example, the process of Figure 8 may be repeated for each trusted contact determined for a user (e.g., for each contact in a list of trusted contacts stored in a repository) and stored in a data structure that tracks the trusted contacts. The process of Figure 8 may be repeated periodically. In some embodiments, at least a portion of the process of Figure 8 is performed in 204, 304, and/or 314 of the processes of Figures 2-3B.

[00129] At 802, a measure of global reputation for a sender is determined. The sender may correspond to a group of individual sender addresses in some embodiments or an individual sender address in other embodiments. For example, the sender corresponds to a trusted contact in a list of trusted contacts determined using the process of Figure 7. In another example, the sender corresponds to a domain of a trusted contact identified using the process of Figure 7. In some

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embodiments, the sender is a network/Internet domain and the measure of global reputation corresponds to all individual sender addresses of the domain. For example, the determined measure of global reputation of a domain is applicable to all email addresses within the domain. In some embodiments, the measure of global reputation for a sender is specific to an individual sender address. For example, the measure of global reputation for a sender is specific to an email address. In some embodiments, the sender is one of a plurality of senders in a list of senders to be analyzed to predetermine its global reputation. The list of senders may be automatically determined from one or more previously received messages (e.g., senders of previously received messages) and/or specified by a user/administrator. The measure of global reputation of the sender is applicable for a plurality of recipients of a message from the sender while a measure of local reputation of the sender is specific to a particular recipient domain or individual recipient address of a message from the sender.

[00130] In some embodiments, the measure of global reputation indicates a general measure that a sender is likely to send a message that is of value to a recipient of the message. For example, a higher measure of reputation indicates a higher likelihood that any message sent by the sender will not include malicious and/or undesired content (e.g., message will not include a virus, malware, spam, etc.). In some embodiments, determining the measure of global reputation includes determining one or more component factors to be utilized to determine a total measure of global reputation. For example, each determined component factor may be utilized to add, subtract, or multiply a value to/from the measure of global reputation to determine the total measure of global reputation. In one example, determined component factor values are summed to determine the global reputation measure. In some embodiments, machine learning or another automated process is utilized to determine the measure of global reputation based on gathered/generated information about the sender of the global reputation.

[00131] In some embodiments, determining the measure of global reputation for the sender includes determining whether an identifier of the sender (e.g., domain name, subdomain, IP address) is included in a list of senders known to be reputable. For example, there exists a predetermined list of entities and their associated identifiers that are known to be reputable and if the identifier of the sender is included in the predetermined list, the resulting measure of global reputation would be higher than otherwise. In some embodiments, determining the measure of global reputation for the sender includes determining whether an identifier of the sender is included in a list of senders known to be not reputable. For example, there exists a list of IP addresses associated with a server that are known to be commonly utilized to send spam messages and in the

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event an IP address associated with the sender is included in this list, the determined measure of global reputation would be lower than otherwise. Whether the identifier of the sender is included in the list of senders known to be reputable or not reputable may be utilized to determine a component factor value utilized in determining the measure of global reputation of the sender.

[00132] In some embodiments, determining the measure of global reputation for the sender includes determining a category of business associated with an entity of the sender. For example, businesses in certain categories (e.g., banking) may be associated with a higher reputation than businesses in other categories (e.g., digital marketing). In some embodiments, using a list/database that maps an identifier of a sender to a known associated category/line of business, the category/line of business associated with the sender is determined, if applicable (e.g., the line of business for some senders may be unknown or not applicable). A reputation component factor (e.g., value to be added, multiplied, or subtracted to/from total score measure) associated with the identified category/line of business may be utilized in determining the measure of global reputation.

[00133] In some embodiments, determining the measure of global reputation for the sender includes analyzing domain registration history and Domain Name System (i.e., DNS) activity of the sender. For example, a sender that is typically reputable will register a domain name far ahead of time prior to the use of the domain while a less reputable sender will likely temporarily utilize a domain for a short period of time prior to moving on to another domain and will register a domain within a short amount of time prior to the use of the domain. In some embodiments, determining the measure of global reputation includes utilizing a component factor value determined based on the domain registration history and DNS activity analysis (e.g., add, multiply, subtract, etc. using the factor value). For example, the factor value is based at least in part on a length of time since registration of a domain of the sender, an amount of time between registration of the domain and a first use of the domain to send a message, Internet content (e.g., webpage) located at a URI utilizing the domain of the sender, an entity that registered the domain of the sender, etc.

[00134] In some embodiments, determining the measure of global reputation for the sender includes analyzing historical statistics and/or a history of messages sent by the sender. For example, there exists one or more repositories of previous messages sent by the sender and the repositories of messages are analyzed to determine one or more of the following: an amount/volume/rate of messages sent by the sender, a number/breadth of different recipients (e.g., number of different domains of recipients, number of different email addresses of recipients, etc.) of messages from the sender, a distribution of messages sent to different recipients, a length of time the sender has been

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sending messages, a regularity that the sender has been sending messages (e.g., difference in average number of messages per time period), a type of content of messages sent by the sender, a difference/regularity between content of messages sent by the sender, amount/rate of content opened/viewed by recipients of messages sent by the sender, a number/rate of messages sent by the sender that have been identified as malware, spam, and/or a virus by an analysis/filter/scanner tool, etc. The historical analysis may be performed using machine learning. In some embodiments, based on the historical analysis, a historical analysis component factor value is determined and the historical analysis component factor value is added, multiplied, subtracted, etc. to determine the measure of global reputation for the sender.

[00135] In some embodiments, determining the measure of global reputation for the sender includes determining whether an identifier of the sender is similar to an identifier of another sender. For example, it is determined whether a domain of the sender is similar to a domain of another sender. Determining whether an identifier of the sender is similar to an identifier of another sender may include determining whether an identifier of the sender is similar to an identifier of another sender with a relatively high measure of global reputation. For example, an attempt to confuse a recipient by utilizing a domain that is only slightly different from a highly reputable domain is detected. In some embodiments, based on the similarity analysis, a similarity component factor value is determined and the similarity component factor value is added, multiplied, subtracted, etc. to determine the measure of global reputation for the sender.

[00136] In some embodiments, the global reputation for the sender is determined by combining (e.g., averaging, adding, etc.) measures of local reputation (determined in 804) for the sender determined for each recipient of a group of different recipients to determine a combined measure (e.g., combined score).

[00137] At 804, a specific measure of local reputation for the sender is determined for each of one or more different recipients. For example, although the measure of global reputation determined in 802 may apply to any recipient that receives a message from the sender, the specific measure of local reputation is only applicable to a specific recipient. In one example, one recipient may have a different relationship to a sender than another recipient (e.g., existing business relationship) and interest/relevance of a message from the sender may be different for different recipients and this difference is reflected as a different measure of local reputation for each different recipient. In some embodiments, the one or more different recipients include the user in 702 of the process of Figure 7. In some embodiments, the recipient represents a network/Internet domain and the measure of local reputation corresponds to all individual recipients of the domain.

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For example, the determined measure of local reputation for a recipient domain is applicable to all recipient email addresses within the domain. In some embodiments, the measure of local reputation for the sender is specific to an individual recipient address.

[00138] In some embodiments, the recipient is one of a plurality of recipients in a list of recipients to be analyzed to predetermine the local reputation of the sender for the specific recipient. The list of recipients may correspond to the recipients/email servers accessible (e.g., list of email domains being managed) by an analysis server. In some embodiments, each email server of each recipient performs its own determination of its measure of local reputation for the sender. In some embodiments, the measure of local reputation is determined dynamically. For example, when a recipient receives a message from the sender, the recipient determines the measure of local reputation for the sender.

[00139] In some embodiments, the measure of local reputation indicates a measure that the sender is likely to send a message that is of value to a specific recipient. For example, a higher measure of reputation indicates a higher likelihood that an authentic message sent by the sender will not include malicious and/or undesired content (e.g., message will not include a virus, malware, spam, etc.) for the specific recipient. In some embodiments, determining the measure of local reputation includes determining one or more factors to be utilized to determine a total measure of local reputation. For example, each determined factor may be utilized to add, subtract, or multiply a value to/from the measure of local reputation to determine the total measure of local reputation. In some embodiments, machine learning or another automated process is utilized to determine the measure of local reputation based on gathered/generated information about the sender.

[00140] In some embodiments, determining the measure of local reputation for the sender includes determining whether an identifier of the sender (e.g., domain name, subdomain, IP address) is included in a list of senders known to be reputable for the recipient. For example, there exists a predetermined list of entities and their associated identifiers that are known to be reputable for the specific recipient. If the identifier of the sender is included in the predetermined list, the resulting measure of local reputation would be higher than otherwise. In some embodiments, determining the measure of local reputation for the sender includes determining whether an identifier of the sender is included in a list of senders known to be not reputable for the specific recipient. For example, there exists a list of IP addresses associated with a server that are known to be commonly utilized to send spam messages and in the event an IP address associated with the sender is included in this list, the determined measure of local reputation would be lower than

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otherwise. Whether the identifier of the sender is included in the list of senders known to be reputable or not reputable may be utilized to determine a component factor value utilized to determine the measure of local reputation of the sender.

[00141] In some embodiments, determining the measure of local reputation for the sender includes determining a category of business associated with an entity of the sender with respect to a property of the specific recipient. For example, businesses in certain categories (e.g., banking) may be associated with a higher reputation than businesses in other categories (e.g., digital marketing) with respect to the category of business of the recipient (e.g., recipient is also in banking). In some embodiments, a reputation component factor (e.g., value to be added, multiplied, or subtracted to/from total score measure) associated with the identified category/line of business with respect to the recipient may be utilized in determining the measure of local reputation

[00142] In some embodiments, determining the measure of local reputation for the sender includes analyzing domain registration history and Domain Name Service (i.e., DNS) activity of the sender with respect to a property of the recipient. For example, it may be typical for certain recipients to be in communication with senders that utilize a domain for a short period of time while for other recipients it is not typical. In some embodiments, determining the measure of local reputation includes utilizing a component factor value determined based on the domain registration history and DNS activity analysis (e.g., add, multiply, subtract, etc. using the factor value). For example, the factor value is based at least in part on a length of time since registration of a domain of the sender, an amount of time between registration of the domain and a first use of the domain to send a message, Internet content (e.g., webpage) located at a URI utilizing the domain of the sender, an entity that registered the domain of the sender, etc.

[00143] In some embodiments, determining the measure of local reputation for the sender includes analyzing historical statistics and/or a history of messages sent by the sender for the specific recipient domain or individual recipient addresses. For example, there exists a repository of previous messages sent by the sender to the recipient (e.g., messages stored at a recipient message server of the recipient) and the repository of messages is analyzed to determine one or more of the following: an amount/volume/rate of messages sent by the sender, a number/breadth of different individual users of the recipient (e.g., number of different email addresses of recipient) that received messages from the sender, a distribution of messages sent to different individual users of the recipient, a length of time the sender has been sending messages to the recipient, a regularity that the sender has been sending messages to the recipient (e.g., difference in average number of

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messages per time period), a type of content of messages sent by the sender to the recipient, a difference/regularity between content of messages sent by the sender to the recipient, amount/rate of content opened/viewed by the recipient of messages sent by the sender, a number/rate of messages sent by the sender that have been identified as malware, spam, and/or a virus by an analysis/filter/scanner tool, etc. The historical analysis may be performed using machine learning. In some embodiments, based on the historical analysis, a historical analysis component factor value is determined and the historical analysis component factor value is added, multiplied, subtracted, etc. to determine the measure of local reputation of the sender for the recipient.

[00144] In some embodiments, determining the measure of local reputation for the sender includes determining whether an identifier of the sender is similar to an identifier of another sender and/or an identifier of the recipient. For example, it is determined whether a domain of the sender is similar to a domain of another sender or a domain of the recipient. Determining whether an identifier of the sender is similar to an identifier of another sender or the recipient may include determining whether an identifier of the sender is similar to an identifier of another sender with a relatively high measure of local reputation for the recipient. For example, an attempt to confuse a user by utilizing a sender domain that is only slightly different from a highly reputable domain for the recipient is detected. In some embodiments, an attempt to confuse a user by utilizing a sender domain that is only slightly different from a domain of the recipient is detected (e.g., detect trying to mimic an intra-organization message). In some embodiments, based on the similarity analysis, a similarity component factor value is determined and the similarity component factor value is added, multiplied, subtracted, etc. to determine the measure of local reputation of the sender for the recipient.

[00145] At 806, a global sender model for the sender is determined. For example, the sender model may be utilized to determine whether a message that indicates a sender was actually sent by the indicated sender. In some embodiments, the sender model identifies one or more properties that are characteristic of a message that is sent by the sender. In some embodiments, the sender model associates the sender with one or more IP addresses of message servers that are known or authorized to send messages for the sender. For example, an IP address of a last server that sent a message is a reliable identifier that indicates an origin of the message and this IP address information is utilized to determine whether the last server that sent the message corresponds to the sender identified in the message. In some embodiments, the sender model includes directly provided information. For example, a list of IP addresses of servers that send messages for the sender is received from a user, the sender, or a published source of information about the sender. In

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some embodiments, at least a portion of the sender model is determined using message authentication/validation information about the sender. For example, IP addresses associated with a domain of the sender are obtained using standardized message authentication/validation systems (e.g., using Domain-based Message Authentication (DMARC), DomainKeys Identified Mail (DKIM), Sender Policy Framework (SPF), etc.).

[00146] In some embodiments, the sender model is automatically determined. For example, using one or more repositories storing messages received from the sender, a list of server IP addresses authorized or historically known to send messages for the sender is automatically determined. The one or more repositories may include a message store of a plurality of different recipients (e.g., different recipient message servers managed by an analysis server) and external message sources (e.g., information from third-party sources that gather message information). Machine learning may be utilized to automatically detect sources of and properties that are characteristic of authentic messages from the sender using historical information about messages previously sent by or on behalf of the sender. In some embodiments, an IP address is automatically associated with the sender in the sender model if it is detected that a message likely/verified to be sent by the sender was sent from the IP address. In some embodiments, before an IP address is associated with the sender, the sender must have sent a message from the IP address at least a threshold number of times. In some embodiments, a message is determined to have been sent by the sender if the message was validated using an email authentication/validation system and/or sent from the IP address that has been utilized to send messages identified as being sent by the sender for at least a threshold amount of time and/or a threshold number of times. Other factors may be utilized to verify whether a message in a repository was sent by the sender prior to using IP address information of the message in determining the sender model of the sender.

[00147] In some embodiments, an IP address is only added to the sender model to be associated with the sender in the event the IP address has been determined to be consistent for the sender. For example, a history of senders associated with the IP address is analyzed and the IP address is only associated with the sender if the IP address is not already associated with another sender, has not been associated with another sender for at least a threshold amount of time, and/or the number of different previous senders that have been with associated with the IP address is less than a threshold number.

[00148] In some embodiments, the sender model identifies one or more blocks of adjacent IP addresses that are authorized or historically known to send messages on behalf of the sender. These blocks of adjacent IP addresses may be owned or be under the control of a single administrative

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entity or domain or may be detected to exhibit similar sending behavior. The block of adjacent IP addresses may be specified by a user, a sender, an administrator, and/or a source of published information about the sender or a provider authorized by the sender. In some embodiments, one or more blocks of adjacent IP addresses to be included in the sender model are automatically determined. For example, once one or more IP addresses within a block of adjacent IP addresses have been associated with a sender model, the entire block of adjacent IP addresses may be associated with the sender model if they are determined or expected to exhibit similar message sending behavior.

[00149] In some embodiments, the sender model identifies a network/Internet domain that is common to all hostnames of servers that are authorized or historically known to send messages on behalf of the sender. The servers that share this network/Internet domain may be owned or be under the control of a single administrative entity or domain or may be detected to exhibit similar sending behavior. The network/Internet domain may be specified by a user, a sender, an administrator, and/or a source of published information about the sender or a provider authorized by the sender. In some embodiments, the network/Internet domain to include within the sender model is automatically determined. For example, once one or more IP addresses whose hostnames share an organizational network/Internet domain have been associated with a sender model, all servers whose hostnames share that network/Internet domain may be associated with the sender model if they are determined or expected to exhibit similar message sending behavior.

[00150] In some embodiments, the sender model identifies one or more autonomous system numbers (i.e., ASN) associated with servers that are authorized or historically known to send messages on behalf of the sender. For example, an ASN identifies a collection of IP routing prefixes owned by or under the control of a single administrative entity or domain and the ASN associated with the sender is specified in the sender model. The ASN associated with the sender may be specified by a user, a sender, an administrator, and/or a source of published information about the sender. In some embodiments, the ASN associated with the sender is automatically determined. For example, once one or more IP addresses associated with a sender model have been identified, the ASN(s) associated with the IP addresses may be associated with the sender if they are determined or expected to exhibit similar message sending behavior.

[00151] The determined or specified sender model associated with a sender may be stored in a data structure such as a list, a database, a table, or any other data structure that can be indexed based on an identifier of the sender.

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[00152] At 808, a specific sender model for the sender is determined for each of one or more recipients, if applicable. For example, although the sender model determined in 806 may apply to any recipient, the specific sender model is only applicable to a specific recipient. In one example, one recipient may receive a message from the sender via a different set of sending message servers than another recipient due to geographical location differences between the recipients. In some embodiments, the recipient represents a network/Internet domain and the recipient specific sender model corresponds to all individual recipients of the domain. In some embodiments, the recipient specific sender model is specific to an individual recipient address. In some embodiments, the recipient specific sender model is determined in a similar manner as the sender model determined in 806 except for utilizing data specific to the recipient rather than various different recipients. For example, using a repository storing messages received from the sender to only the recipient, individual or neighborhoods of IP addresses associated with the sender model for a sender are automatically determined.

[00153] Figure 9 is a flowchart illustrating an embodiment of a process for determining a total risk measure of a contact. The process of Figure 9 may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. At least a portion of the process of Figure 9 may be performed in 204, 304, and/or 314 of the processes of Figures 2-3B.

[00154] At 902, a measure of trust associated with a message contact (e.g., sender of a message) is determined. In some embodiments, the measure of trust (e.g., numerical value) indicates a measure that the message contact is likely to send a message that is of value to a recipient/user. For example, a higher measure of trust indicates a higher likelihood that an authentic message sent by the contact will not include malicious and/or undesired content (e.g., message will not include a virus, malware, spam, impersonation attack, etc.). The measure of trust may be for a domain of the message contact that covers all messages of the same domain, a group of domains (e.g., domains of similar category), a group of contact addresses, or a specific contact address (e.g., email address). In some embodiments, the measure of trust is for a specific recipient/user. For example, the measure of trust indicates a measure of trust between the message contact and a specific recipient/user. In this example, the measure of trust may be determined based on a history of interaction between the message contact and the specific user.

[00155] In some embodiments, the measure of trust is determined at least by a portion of the process of Figure 8. For example, the measure of trust is the specific measure of local reputation determined in 804. In another example, the measure of trust is the measure of global reputation included in the global sender model determined in 806. In another example, the measure of trust is

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determined based on a combination (e.g., average, sum, product, etc.) of the measure of global reputation and the specific measure of local reputation.

[00156] At 904, a measure of spoofing risk associated with the message contact is determined. For example, a likelihood that a spoofing attack could be technically carried out to spoof the message contact is determined. The measure of spoofing risk may be for a domain of the message contact that covers all messages of the same domain, a group of domains, a group of contact addresses, or a specific contact address (e.g., email address). The measure of spoofing risk may be a numeric score corresponding to the spoofing risk associated with the message contact.

[00157] An organization with a published and complete Domain-based Message Authentication, Reporting and Conformance (i.e., DMARC) policy has a low risk of being spoofed, as does each user account associated with such an organization. An organization that has a DMARC policy but which does not reject all messages that fail corresponds to a medium risk, as do users of such an organization. An organization without a DMARC policy or one that only involves monitoring and no rejection is associated with a high risk of being spoofed, as are users of such an organization. For example, if the message contact is associated with a DMARC policy that requires every message of the domain of the message contact to be signed with a digital signature, the measure of spoofing risk is assigned a low risk value. If the message contact is associated with a DMARC policy that enables but does not require every message of the domain of the message contact to be signed with a digital signature, the measure of spoofing risk is assigned a medium risk value. If the message contact is not associated with a DMARC policy, the measure of spoofing risk is assigned a high risk value. Thus, determining the measure of spoofing risk associated with the message contact may include assigning a score based on the DMARC or other message validation system policy associated with the message contact.

[00158] At 906, the measure of trust and the measure of spoofing risk are combined to determine a measure of total risk associated with the message contact. For example, the measure of trust and the measure of spoofing risk are multiplied together to determine the measure of total risk. In another example, the measure of trust and the measure of spoofing risk are averaged together to determine the measure of total risk. In another example, the measure of trust and the measure of spoofing risk are summed together to determine the measure of total risk. Thus, the measure of total risk is able to measure the threat of the message contact being impersonated, both in terms of the likely impact to the recipient (e.g., measure of trust provides a gauge on the likelihood the message recipient is likely to confuse the spoofed message as a message from a highly trusted and important contact) and the likelihood of technical feasibility (e.g., measure of spoofing risk provides a gauge

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on the measure of technical feasibility). In some embodiments, the measure of trust and the measure of spoofing risk may be each weighted before being combined. In some embodiments, the determined measure of total risk is stored in a data structure and associated with the message contact.

[00159] At 908, the measure of total risk is utilized to mitigate risk of messages received from the message contact. For example, when a message from the message contact is received, its measure of total risk for the sender of the message (e.g., message contact) is obtained and the measure of total risk is utilized to determine whether to filter and/or allow the message to be delivered. In an example, if a value of the measure of total risk is above a threshold value, the message is identified as a risk and the message is filtered to reduce its risk to the recipient.

[00160] Figure 10 is a flowchart illustrating an embodiment of a process for assessing a received message for filtering. The process of Figure 10 may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. At least a portion of the process of Figure 10 may be performed in 204, 304, and/or 314 of the processes of Figures 2-3B.

[00161] At 1002, information about a message is received. In some embodiments, the information is received at analysis server 102 of Figure 1. The information may include information about a sender of the message. For example, the information includes email address header information including an email address and a display name of the sender of the message. In some embodiments, the information about the message includes contents of the message. Examples of the message include an electronic mail (i.e., email), an instant message, a chat message, and any other forms of electronic messages.

[00162] At 1004, it is determined whether a sender of the message exactly matches a trusted contact. For example, it is determined whether an address of the sender of the message (e.g., in a "From:" field of a message header) exactly matches an address of a trusted contact in a list of trusted contacts for the recipient of the message. In some embodiments, the trusted contacts include trusted contacts identified in 702 and/or 704 of Figure 7. For example, a list of trusted contacts for the recipient of the message is obtained from storage and email addresses for each trusted contact of the list are compared with the email address of a sender of the message to identify whether there is an exact match.

[00163] If at 1004 it is determined that the sender of the message exactly matches the trusted contact, at 1006, it is determined to allow the message to be fully accessed by the recipient, if

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applicable. For example, because the sender of the message exactly matches the trusted contact, the message is allowed to be delivered (e.g., by sending the message to a mail delivery server and indicating that the message is allowed to be delivered) to the recipient user. In some embodiments, the message is allowed to be accessed by the recipient without message filtering that would otherwise be performed if the message was identified as potentially a part of an impersonation attack. In some embodiments, the message is further analyzed prior to allowing it to be fully accessed by the recipient. For example, the message may be analyzed to identify whether it includes a virus, a spam, or a malware. In some embodiments, the total risk score determined using 906 of Figure 9 is utilized to determine whether to allow full access to the message. If a value of the measure of total risk of the sender is above a threshold value, the message is identified as a risk and the message is filtered as in 1010 to reduce its risk to the recipient.

[00164] If at 1004 it is determined that the sender of the message does not exactly match a trusted contact, at 1008, it is determined whether the sender of the message is similar to a trusted contact. For example, by determining whether the sender of the message is similar to a trusted contact, a likelihood of confusion by a recipient of the message that the message is from a trusted contact is determined. In some embodiments, the determining whether the sender of the message is similar to a trusted contact includes determining a measure of similarity between the sender of the message and each contact in a list of trusted contacts. In some embodiments, the list of trusted contacts includes trusted contacts identified in 702 and/or 704 of Figure 7. For example, a list of trusted contacts for the recipient of the message (e.g., recipient identified in a "To:" field of the message) is obtained from storage.

[00165] In some embodiments, determining the measure of similarity includes determining a string similarity measure (e.g., string distance) using a string matching algorithm (e.g., Jaro-Winkler). For each trusted contact in a group of trusted contacts, string similarity measures may be determined between an address of the trusted contact and/or a display name of the trusted contact with an address of the sender of the message (e.g., string in a "From:" field of the message between "<" and ">" characters), a display name of the sender of the message (e.g., string in a "From:" field of the message prior to "<" character), and/or a subject of the message. For example, potentially six string similarity measures may be determined for each trusted contact email/display name combination (e.g., trusted contact address compared to sender address, trusted contact address compared to sender display name, trusted contact address compared to message subject, trusted contact display name compared to sender address, trusted contact display name compared to sender display name, and trusted contact display name compared to message subject).

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[00166] Comparison of the subject to the message to the trusted contact address/display name is performed to detect masquerade attempts in which the actual sender uses deceptive display names and/or subject lines to trick recipients that emails are from a trusted sender. For example, the sender joe123@gmail.com may set his display name to appear as a subject line, and use a subject line that appears as a from email address. This attacker may use the display name "Please review this material and let me know your thoughts. Fwd: slide deck, June 15 version," and the subject line "Bob Bigboss <bbigboss@bigbossventures.com>" to an email. The display name, being very long, will often hide the attacker's email address (e.g., which is displayed after the display name for a typical mail client, or not displayed at all for some mail clients). Many recipients will not realize that the subject line appears where the sender address is normally shown, and vice versa. Therefore, such recipients will believe that the email comes from Bob Bigboss <bbigboss@bigbossventures.com>, despite it being displayed in the subject field. In some embodiments, the subject of the message is only utilized to perform the determination of the measure of similarity if the display name of the sender of the email is longer than a threshold length.

[00167] In some embodiments, prior to performing the string comparison to determine the measure of similarity, element portions of the strings are sorted (e.g., alphabetically sorted) based on a predetermined order. The element portions of the string may be delimited by a space character or other special characters (e.g., comma, period, etc.). For example, strings "Bob Bigboss" and "Bigboss Bob" may be determined to be not similar in string distance despite them being a simple reversal of the order of the first/last names. Thus, the element portions "Bob" "Bigboss" in "Bob Bigboss" can be alphabetically sorted as "Bigboss Bob" prior to being used in the string comparison.

[00168] In some embodiments, determining the measure of similarity includes detecting use of substitution characters that mimic corresponding traditional alphabet/number characters in the sender address, sender display name, and/or subject of the message prior to comparison with identifiers of the trusted contact. For example, an attacker may use substitution characters to visually mimic a character in an identifier of a trusted contact (e.g., replace "o" with zero, replace with Cyrillic letter, replace with Greek letter, replace with symbol resembling a traditional letter/number, etc.). In some embodiments, if substitution characters are detected, various versions of the sender address, sender display name, and/or subject of the message that replace one or more different combinations of substitution characters with corresponding traditional characters are generated and utilized in the string comparisons with the identifiers of the trusted contacts.

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[00169] In some embodiments, it is determined that the sender of the message is similar to a trusted contact if any measure of similarity (e.g., string distance measure) meets a threshold value. For example, if any string distance measure determined for a list of trusted contacts is greater than a threshold value, the message is identified as potentially an impersonation attack message and it is determined that the sender of the message is similar to the trusted contact.

[00170] In some embodiments, messages that are highly authentic (e.g., associated with a valid DMARC signature, correct SPF records, or both) but which come from domains that are associated with low control are to be subject to increased analysis. For example, a measure of control of the domain of the sender is determined. The measure of control measures how easy it is to create an account of the domain without having to pass a careful screening. For example, any user is able to create a Google Gmail account by setting the username to any available user name and setting the display name to any correctly formed display name. Thus, domains correspond to a very low degree of control by the domain owner. In contrast, the typical enterprise or government entity has high control over account creation, allowing only employees and affiliates to create accounts, where these have to satisfy some common criteria related to the real-life identity of the user. When the message is identified as having high authenticity but low domain control, then the display name is to be scrutinized (e.g., compared to trusted display names using string distance as previously discussed), whereas for domains with high control, the display name is not scrutinized (e.g., display name impersonation detection not performed).

[00171] If at 1008 it is determined that the sender of the message is similar to a trusted contact, at 1010, it is determined to filter the message, if applicable. Filtering the message may include modifying at least a portion of the message, affecting delivery of the message, providing a notification regarding the message, and/or performing additional analysis on the message. An example of filtering the message is performing a security action.

[00172] In some embodiments, modifying at least a portion of the message includes modifying (e.g., replacing, adding or removing/deleting) data included in a data field (of the message) that includes an identification of the sender of the message. For example, the data field that is identified to include the identification of the sender is selected from a plurality of data fields of a message header and contents of the selected data field is modified. Examples of the identification of the sender includes a display name, an email address (e.g., "from" email address), a reply-to address, a phone number, an image, a content link, or any other identifier/identification of the sender specified in the message. The data field of the message may be included in a header of the message. For example, the data field of the message is a "From:" field, a "Reply-To:" field or a

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"Return-Path:" field of an email message header. In some embodiments, the message is a SMS message or a MMS message and a phone number of the sender in the data field is modified. For example, the sender phone number is removed or changed to a different number. In some embodiments, modifying data included in the data field includes modifying a location identifier of content associated with the sender of the message. For example, a URL to an image of the sender is modified to reference a different image (e.g., replacement image includes a warning message).

[00173] One example filtering is quarantining the message and sending an automated message to the email address in the "From:" field of the message regarding the quarantine. The automated email may require the recipient to click on a hyperlink that is unique and not predictable to an attacker. If the system determines that such a link was clicked on (e.g., by receiving a corresponding GET request), then the email may be taken out of quarantine and delivered.

[00174] Another example filtering is sending an automated email in response to the received message (e.g., whether to the address in the from field or a potential address in the 'reply-to' field or both), requiring the recipient to click on a hyperlink where he or she has to enter a code obtained from an authenticator module, such as a SecurID token or Google authenticator app. If the entered code is correct, the message is taken out of quarantine and delivered.

[00175] In an alternative embodiment, the received message is not quarantined but delivered to its recipient after being modified. For example, a warning message is added to one or more header fields and/or the body of the message (e.g., add warning message to subject of message, add warning message to modify sender address, etc.). In some embodiments, the received message is modified to change, remove, and/or censure at least a portion of the message (e.g., remove attachment, remove hyperlinks, remove/modify reply to address, etc.).

[00176] If at 1008 it is determined that the sender of the message is not similar to a trusted contact, the process returns to 1006. In an alternative embodiment, if at 1008, it is determined that the sender of the message is not similar to a trusted contact, the message is identified for filtering if the recipient of the message has never sent a message to the sender of the message. In some embodiments, the total risk score determined using 906 of Figure 9 is utilized to determine whether to allow full access to the message. If a value of the measure of total risk of the sender is above a threshold value, the message is identified as a risk and the message is filtered in 1010 to reduce its risk to the recipient.

[00177] Figure 11A is a flowchart illustrating an embodiment of a process for modifying a

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display name of a sender of the message. The process of Figure 11A may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. In some embodiments, at least a portion of the process of Figure 11A is performed in filtering the message in 1006 and/or 1010 of Figure 10. At least a portion of the process of Figure 11A may be performed in 206 of Figure 2. For example, 1104 of Figure 11A is performed in 206 Figure 2 as a selected security action to perform.

[00178] At 1102, a message is identified as suspicious. For example, it is identified in 708 that a sender of the message is similar to a trusted contact based on a measure of similarity of a sender of the contact with a trusted contact of a particular identified recipient of the message. An example of a trusted contact is a contact that has been previously identified by the recipient (e.g., included in an address book of the recipient) or is a contact with whom the recipient has had at least a minimum amount of positive engagement (e.g., having exchanged emails at least twice, and at least two weeks apart) without a recent "negative engagement" (e.g., recipient has not recently marked a message from the contact as spam). In some embodiments, the message is identified as suspicious if a sender of the message has not previously sent a message to a recipient identified in the message. In some embodiments, the message is identified as suspicious if a recipient identified in the message has not previously sent a message to the sender of the message. In some embodiments, the message is identified as suspicious if a spam detector, a virus detector, and/or a malware detector has detected that the message includes a spam, virus, or malware.

[00179] At 1104, a display name of a sender of the message is modified prior to allowing the message to be accessed by a recipient user of the message. For example, the display name of the sender is rewritten to include a warning regarding its risk. In one example, consider an email with display name "Pat Peterson," but not associated with an email address of a Pat Peterson that is considered trusted. This may cause the system to determine that the email is risky, and modify the display name to "Warning! Unknown user with the name 'Pat Peterson.'" Conversely, if an email is determined to come from a trusted sender, the system may modify the display name by adding symbol(s) (e.g., icon of a star) identifying its risk. In some embodiments, display names of senders in messages identified as not suspicious are normalized, which may involve removing anything looking like a trust indicator (e.g., such as an icon of a star) from the display name, or adding another symbol to the display name. Alternatively, a message from a user that is neither considered risky nor trusted could have its display name removed and replaced by only the message address of the sender (e.g., only email address without display name), drawing the attention of the recipient to the fact that this is a user with whom the system has not determined there to be a trust relationship.

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This may be particularly beneficial to users who use mail clients that do not display the full email address, but only show the display name.

[00180] In some embodiments, in addition to or instead of the display name, an email address of the sender is also modified. For example, the entire "From:" field of a header of the message that includes both the display name and an email address is modified with a warning.

[00181] Figure 11B is a flowchart illustrating an embodiment of a process for modifying a reply address of a sender of the message. The process of Figure 11B may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. In some embodiments, at least a portion of the process of Figure 11B is performed in filtering the message in 1006 and/or 1010 of Figure 10. At least a portion of the process of Figure 11B may be performed in 206 of Figure 2. For example, 1114 of Figure 11B is performed in 206 Figure 2 as a selected security action to perform.

[00182] At 1112, a message is identified as suspicious. For example, it is identified in 508 that a sender of the message is similar to a trusted contact based on a measure of similarity of a sender of the contact with a trusted contact of a particular identified recipient of the message. An example of a trusted contact is a contact that has been previously identified by the recipient (e.g., included in an address book of the recipient) or is a contact with whom the recipient has had at least a minimum amount of positive engagement (e.g., having exchanged emails at least twice, and at least two weeks apart) without a recent "negative engagement" (e.g., recipient has not recently marked a message from the contact as spam). In some embodiments, the message is identified as suspicious if a sender of the message has not previously sent a message to a recipient identified in the message. In some embodiments, the message is identified as suspicious if a recipient identified in the message has not previously sent a message to the sender of the message. In some embodiments, the message is identified as suspicious if a spam detector, a virus detector, and/or a malware detector has detected that the message includes a spam, virus, or malware.

[00183] At 1114, a reply address of a sender of the message is modified prior to allowing the message to be accessed by a recipient user of the message. In the event where the message does not have a reply address, a "Reply-To:" field is automatically added to the message. This can be a real email address, different from the "from" address of the received message, and act as a quarantine for outgoing responses to high-risk emails. In such a quarantine, the recipient system can carefully verify (e.g., whether automatically or using manual effort, or a combination thereof) that the outgoing message is safe before it is automatically sent to the "from" address of the received email.

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[00184] In some embodiments, an address in a "Reply-To:" field of an email header is replaced or inserted with a warning message (e.g., not a valid reply address) regarding the suspicious risk of the message. In one example, the "reply to" address of a message is replaced/created as "Warning! This is a user you have never sent an email to - If you want to proceed, remove this text from the recipient field of the email you want to send, and add the address of the recipient you wish to send it to." This reply address will cause a pop-up on some message clients with the text above (e.g., and an error stating that it is not a valid email address) or may cause on some message clients to bounce the email.

[00185] Figure 12 is a flowchart illustrating an embodiment of a process for securing a message. The process of Figure 12 may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. In some embodiments, at least a portion of the process of Figure 12 is performed in filtering the message in 1006 and/or 1010 of Figure 10. At least a portion of the process of Figure 12 may be performed in 204 and/or 206 of the process of Figure 2.

[00186] At 1202, a first risk analysis of the message is performed. For example, it is determined whether the message is suspicious. In some embodiments, steps 1004 and/or 1006 of Figure 10 is performed in 1202. For example, it is determined whether the sender of the message is similar to a trusted contact. By determining whether the sender of the message is similar to a trusted contact, a likelihood of confusion by a recipient of the message that the message is from a trusted contact may be determined. In some embodiments, the determining whether the sender of the message is similar to a trusted contact includes determining a measure of similarity between the sender of the message and each contact in a list of trusted contacts. In some embodiments, the list of trusted contacts includes trusted contacts identified in 702 and/or 704 of Figure 7. For example, a list of trusted contacts for the recipient of the message (e.g., recipient identified in a "To:" field of the message) is obtained from storage.

[00187] In some embodiments, determining the measure of similarity includes determining a string similarity measure (e.g., string distance) using a string matching algorithm (e.g., Jaro-Winkler). For each trusted contact in a group of trusted contacts, string similarity measures may be determined between an address of the trusted contact and/or a display name of the trusted contact with an address of the sender of the message (e.g., string in a "From:" field of the message between "<" and ">" characters), a display name of the sender of the message (e.g., string in a "From:" field of the message prior to "<" character), and/or a subject of the message. For example, potentially six string similarity measures may be determined for each trusted contact email/display name

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combination (e.g., trusted contact address compared to sender address, trusted contact address compared to sender display name, trusted contact address compared to message subject, trusted contact display name compared to sender address, trusted contact display name compared to sender display name, and trusted contact display name compared to message subject).

[00188] Comparison of the subject to the message to the trusted contact address/display name is performed to detect masquerade attempts in which the actual sender uses deceptive display names and/or subject lines to trick recipients that emails are from a trusted sender. For example, the sender joe123@gmail.com may set his display name to appear as a subject line, and use a subject line that appears as a from email address. This attacker may use the display name "Please review this material and let me know your thoughts. Fwd: slide deck, June 15 version," and the subject line "Bob Bigboss <bbigboss@bigbossventures.com>" to an email. The display name, being very long, will often hide the attacker's email address (e.g., which is displayed after the display name for a typical mail client, or not displayed at all for some mail clients). Many recipients will not realize that the subject line appears where the sender address is normally shown, and vice versa. Therefore, such recipients will believe that the email comes from Bob Bigboss <bbigboss@bigbossventures.com>, despite it being displayed in the subject field. In some embodiments, the subject of the message is only utilized to perform the determination of the measure of similarity if the display name of the sender of the email is longer than a threshold length.

[00189] In some embodiments, prior to performing the string comparison to determine the measure of similarity, element portions of the strings are sorted (e.g., alphabetically sorted) based on a predetermined order. The element portions of the string may be delimited by a space character or other special characters (e.g., comma, period, etc.). For example, strings "Bob Bigboss" and "Bigboss Bob" may be determined to be not similar in string distance despite them being a simple reversal of the order of the first/last names. Thus, the element portions "Bob" "Bigboss" in "Bob Bigboss" can be alphabetically sorted as "Bigboss Bob" prior to being used in the string comparison.

[00190] In some embodiments, determining the measure of similarity includes detecting use of substitution characters that mimic corresponding traditional alphabet/number characters in the sender address, sender display name, and/or subject of the message prior to comparison with identifiers of the trusted contact. For example, an attacker may use substitution characters to visually mimic a character in an identifier of a trusted contact (e.g., replace "o" with zero, replace with Cyrillic letter, replace with Greek letter, replace with symbol resembling a traditional

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letter/number, etc.). In some embodiments, if substitution characters are detected, various versions of the sender address, sender display name, and/or subject of the message that replace one or more different combinations of substitution characters with corresponding traditional characters are generated and utilized in the string comparisons with the identifiers of the trusted contacts.

[00191] At 1204, it is determined whether the first risk analysis results in a determination that the message meets a first criteria. For example, it is determined whether the message meets a criteria to be deemed suspicious. In some embodiments, message meets the first criteria if a measure of similarity (e.g., string distance measure) meets a threshold value. For example, if any string distance measure determined for a list of trusted contacts (e.g., determined in 1202) is greater than a threshold value, the message is identified as potentially an impersonation attack message and it is determined that the message meets the first criteria.

[00192] In some embodiments, the message meets the first criteria if a sender of the message has not previously sent a message to a recipient identified in the message. In some embodiments, the message meets the first criteria if a recipient identified in the message has not previously sent a message to the sender of the message. In some embodiments, the message meets the first criteria if a spam detector, a virus detector, and/or a malware detector has detected that the message includes a spam, virus or malware.

[00193] In some embodiments, a total risk score determined using 906 of Figure 9 is utilized to determine whether message meets the first criteria. For example, if a value of the measure of total risk of the sender is above a threshold value, the message is identified as meeting the first criteria.

[00194] If at 1204 it is determined that the message does not meet the first criteria, at 1206 it is determined to allow the message to be fully accessed by the recipient, if applicable. For example, because the sender of the message exactly matches the trusted contact or sender of the message is not similar to any trusted contact, the message is allowed to be delivered (e.g., by sending the message to a mail delivery server and indicating that the message is allowed to be delivered) to the recipient user. In some embodiments, the message is allowed to be accessed by the recipient without message filtering that would otherwise be performed if the message was identified as potentially a part of an impersonation attack. In some embodiments, the message is further analyzed prior to allowing it to be fully accessed by the recipient. For example, the message may be analyzed to identify whether it includes a virus, a spam, or a malware.

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[00195] If at 1204 it is determined that the message does meet the first criteria, at 1208 the message is modified prior to sending a modified version of the message to a specified recipient of the message. For example, a warning message is added to one or more header fields and/or the body of the message (e.g., add warning message to subject of message, add warning message to modify sender address, etc.). The first risk analysis is performed before sending the modified version of the message. Sending the modified version may include delivering the modified version to the specified recipient (e.g., deliver to a mailbox of the specified recipient on server 106 of Figure 1).

[00196] In some embodiments, modifying at least a portion of the message includes modifying (e.g., replacing, adding or removing/deleting) data included in a data field of the message that includes an identification of the sender of the message (e.g., modify an identifier of the sender). Examples of the identification of the sender includes a display name, an email address (e.g., "from" email address), a reply-to address, or any other identifier/identification of the sender specified in the message. The data field of the message may be included a header of the message. For example, the data field that includes the identification of the sender is a "From:" field, a "Reply-To:" field or a "Return-Path:" field of an email message header. The contents of the data field may be modified to provide a warning to a recipient, prevent a potential confusion of an identity of the sender of the message by the recipient of the message and/or prevent the recipient from responding to the message or sending a message to the sender of the message.

[00197] In some embodiments, the received message is modified to change, remove, and/or censure at least a portion of a content of the message (e.g., remove attachment, remove hyperlinks, remove a portion of the message content beyond a selected beginning body portion, etc.). For example, a message body section of an email message is modified to censure at least a portion of a content of the email message. In some embodiments, modifying the message includes inserting an inquiry associated with a verification of the sender of the message, wherein the inquiry requests a user response.

[00198] At 1210, a second risk analysis of the message is performed and it is determined whether the second risk analysis results in a determination that the message meets the second criteria. In some embodiments, the modified version of the message is sent to the specified recipient of the message (e.g., sent to a mailbox of the specified recipient on server 106 of Figure 1) prior to a conclusion of the second risk analysis. For example, the modified version of the message is sent and delivered to a mailbox of the specified recipient of the message prior to the conclusion of the second risk analysis. In some embodiments, the second risk analysis concludes upon

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determination of whether the second risk analysis results in a determination that the message meets the second criteria.

[00199] In some embodiments in 1210, any of a plurality of different types of verification/security actions may be performed to further analyze and verify the message (e.g., verify an identity of the sender of the message). For example, it is determined whether a classification of the sender of the message requested and received from the specified recipient of the message matches an automatically identified classification of the sender, and it is determined the message meets the second criteria if a user response to the requested classification matches the automatically identified classification (e.g., see the process of Figure 13A). In another example, an automatically generated reply message to a received message is sent the sender of the received message requesting verification of an identity of the sender of the message and it is determined the message meets the second criteria if the sender has provided a valid identity in response to the reply message (e.g., see the process of Figure 14A).

[00200] If at 1210 it is determined that the second risk analysis results in a determination that the message meets the second criteria, at 1212, content of the message that was previously prevented from being accessed by the specified recipient is provided to the specified recipient of the message. The second risk analysis may be a more in-depth and/or resource intensive analysis of the message reserved for messages that fail the first risk analysis. For example, an original version of the message prior to the modification in 1208 is sent to the specified recipient of the message. This original version may be a duplicate message in addition to the initially provided modified version of the message (e.g., original version delivered as a new message to the specified recipient) or this original version may be a replacement message of the initially provided modified version of the message (e.g., initially provided modified message is deleted from mailbox of the specified recipient of the message and replaced with the original version). In some embodiments, the content of the message that was previously prevented from being accessed is included a new message sent to the specified recipient of the message.

[00201] If at 1210 it is determined that the second risk analysis results in a determination that the message does not meet the second criteria, at 1214 content of the message that was prevented from being accessed by the specified recipient remains not accessible by the specified recipient. In some embodiments, the message is deleted or quarantined. For example, after a period of time of message not meeting the second criteria and/or if it is determined during the second risk analysis that the message is potentially hazardous to a specified recipient of the message, the message is automatically deleted or quarantined to prevent access by the specified recipient to the entire

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message. In some embodiments, a notification is provided to an administrator. For example, the administrator is provided a warning about the message failing the second risk analysis.

[00202] Figure 13A is a flowchart illustrating an embodiment of a process for detecting misrecognition of a sender of a message by a recipient of the message. The process of Figure 13A may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. In some embodiments, at least a portion of the process of Figure 13A is performed in one or more steps of the process of Figure 2. In some embodiments, at least a portion of the process of Figure 13A is performed in one or more steps of the process of Figure 12. For example, at least a portion of the process of Figure 13A is performed in performing the first and/or second risk analysis of the process of Figure 12.

[00203] At 1302, a message is identified as suspicious. For example, it is identified in 1008 that a sender of the message is similar to a trusted contact based on a measure of similarity of a sender of the contact with a trusted contact of a particular identified recipient of the message. An example of a trusted contact is a contact that has been previously identified by the recipient (e.g., included in an address book of the recipient) or is a contact with whom the recipient has had at least a minimum amount of positive engagement (e.g., having exchanged emails at least twice, and at least two weeks apart) without a recent "negative engagement" (e.g., recipient has not recently marked a message from the contact as spam). In some embodiments, the message is identified as suspicious if a sender of the message has not previously sent a message to a recipient identified in the message. In some embodiments, the message is identified as suspicious if a recipient identified in the message has not previously sent a message to the sender of the message. In some embodiments, the message is identified as suspicious if a spam detector, a virus detector, and/or a malware detector has detected that the message includes a spam, virus, or malware.

[00204] In some embodiments, by basing the whether the message is suspicious on knowledge about trusted contacts of the specified recipient of the message, a message is only classified as suspicious and risky based on the likelihood that the recipient will confuse the sender with a trusted contact specific to the recipient. Otherwise, the risk may be marginal if the recipient does not know or trust the sender of the message since the sender is likely not impersonating someone that the recipient already knows. Thus a message is particularly dangerous if it is not from a trusted party, but the recipient thinks it is. In contrast, if the recipient knows that an email from an untrusted party is from an untrusted party, he or she is not as much at risk as he or she is not likely to feel compelled to comply with the requests or instructions in the message

[00205] At 1304, the sender of the message is automatically classified. In some

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embodiments, classifying the sender includes identifying a classification/category of the sender. For example, a relationship classification/category of the sender with respect to the specified recipient of the message is automatically determined based on a property of an identifier of the sender (e.g., domain), previous message history between the sender and recipient, and/or other list or database (e.g., database of business contacts of the recipient). Examples of the classification of the sender include a college, a business partner, a friend/acquaintance, or unknown.

[00206] For example, if the sender is associated with the same domain as the recipient, then the sender is classified as a colleague classification. This classification may also be used if the email address of the sender is a known personal email address of a user with a colleague message address. This personal address may be determined using manual registration of such addresses by the account owner, as well as by identification of message traffic indicative of a work account being related to a personal account, such as having closely related display names and extensive forwarding of material from one account to the other. If the sender is a service provider or a client of an entity associated with the recipient, then the sender is classified as a business partner classification. This type of classification may be identified by detection of a sufficient volume of message traffic over time between the sender and the recipient, or from a database/list of recorded business contacts/relationships. In some embodiments, the sender is classified as a friend/acquaintance classification for a given sufficient volume of message traffic over time between the sender and the recipient but cannot be classified as a colleague or a business partner. If the sender cannot be classified as a colleague, business partner, or friend/acquaintance, the sender is classified as known/stranger.

[00207] In some embodiments, the sender of the message is automatically classified based on a list of trusted contacts tracked for the recipient (e.g., tracked using the process of Figure 7). For example, a trusted contact in the stored list of trusted contacts may be associated with a classification identifier provided by a user and/or automatically determined. An identifier of the sender of the email may be utilized to locate a corresponding entry in the stored list of trusted contacts to identify its classification.

[00208] At 1306, a manual classification of the sender of the message is requested from the specified recipient of the message. For example, before the message is fully provided to the recipient, a classification of the sender of the message is requested from the user in order to verify the recipient's believed classification of the sender as compared to the automatically determined classification. In some embodiments, the message is modified to change, remove, or obfuscate (e.g., remove attachment, remove hyperlinks, hide phone numbers, only retain a beginning portion

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of contents of the message and hide ending portion of the message, etc.) at least a portion of the message to prevent the recipient from having full access to the message prior to verification of the recipient's knowledge about the sender of the message. In some embodiments, the message is modified to include selection choices corresponding to the classification options (e.g., different selectable HTML hyperlinks included in the message and selection of a particular hyperlink option sends a request to the unique address of the hyperlink that can be detected by a server to identify which classification option was selected based on the unique address of the request corresponding to the selection option). In some embodiments, if a recipient replies to the message to the sender prior to providing the classification, the reply message is held/quarantined at a mail server until it is determined that it is safe to send the message. Another classification option is to identify the sender as a spammer or malware attacker. Selection of this classification may result in the removal of the email and blocking of future messages from the sender.

[00209] Figure 13B shows an example of a modified message requesting manual classification of the sender of the message. Message 1320 includes contents of the original message 1322 as well as added selected choices 1324 that requests the recipient to classify the sender of the message.

[00210] Returning to Figure 13A, at 1308, based on the response to the manual classification request, a security action is performed, if applicable. In some embodiments, if the manual classification response does not match the automatically determined classification, a security action is performed to warn the recipient about the mismatch and/or prevent the user from fully accessing or replying to the message. For example, the message may be deleted and replaced with a version of the message that has been modified (e.g., subject, sender display name, sender address, reply to address, and/or content of the message removed or modified with a warning indicator). In another example, the message may be deleted and quarantined for additional review by the recipient and/or an administrator. In some embodiments, in the event the sender of the message was correctly classified manually by the recipient and the automatic classification was incorrect, an opportunity is provided to add the sender of the message to the list of trusted contacts for the recipient and/or add an identifier of the sender (e.g., email address and display name) to an existing contact (e.g., as a secondary email address) in the list of trusted contacts. The sender may be added to the list of trusted contacts by the recipient, an administrator, or by the sender (e.g., by requiring the user to prove access to an account of an existing trusted contact).

[00211] Figure 14A is a flowchart illustrating an embodiment of a process for requiring a sender of a message to verify an identity of the sender. The process of Figure 14A may be at least

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in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. In some embodiments, at least a portion of the process of Figure 14A is performed in filtering the message in 1006 and/or 1010 of Figure 10. In some embodiments, at least a portion of the process of Figure 14A is performed in one or more steps of the process of Figure 12. For example, at least a portion of the process of Figure 14A is performed in performing the first and/or second risk analysis of the process of Figure 12. At least a portion of the process of Figure 14A may be performed in one or more steps of the process of Figure 2. For example, it is performed as a security action in 206 of Figure 2.

[00212] At 1402, a message is identified as suspicious. For example, it is identified in 1008 that a sender of the message is similar to a trusted contact based on a measure of similarity of a sender of the contact with a trusted contact of a particular identified recipient of the message. An example of a trusted contact is a contact that has been previously identified by the recipient (e.g., included in an address book of the recipient) or is a contact with whom the recipient has had at least a minimum amount of positive engagement (e.g., having exchanged emails at least twice, and at least two weeks apart) without a recent "negative engagement" (e.g., recipient has not recently marked a message from the contact as spam). In some embodiments, the message is identified as suspicious if a sender of the message has not previously sent a message to a recipient identified in the message. In some embodiments, the message is identified as suspicious if a recipient identified in the message has not previously sent a message to the sender of the message. In some embodiments, the message is identified as suspicious if a spam detector, a virus detector, and/or a malware detector has detected that the message includes a spam, virus, or malware.

[00213] At 1404, the message is prevented from being fully accessible by the specified recipient of the message. For example, at least a portion of the message is modified or removed. In another example, the message is quarantined and not delivered to the recipient.

[00214] At 1406, an automatic reply to the message is sent requesting verification of an identity of the sender of the message.

[00215] This verification attempt may be utilized to identify good emails from accounts that are not trusted, but which are nevertheless associated with trusted persons. For example, if one executive's name is John Adams, and another executive receives an email from a John Adams -- but not the same account as to which she has a trust relationship -- then this is a potentially deceptive email -- but also an email that is potentially from another account (such as the personal account) of the trusted person. The reply message includes the message "Your email triggered an

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alert. Have you sent emails to the recipient using another email address? If so, please click here. Otherwise, click here." The first hyperlink (associated with the first occurrence of "here") would lead to a website where the visitor enters his or her "other" email address (e.g., trusted contact address), and a verification email is sent to that address. That verification email contains a challenge value, such as a secret string of alphanumeric characters, that the recipient has to copy and paste into the site where the email address was entered. The second hyperlink takes the user to a site where he or she is offered to solve a CAPTCHA, associate a phone number (e.g., by sending an SMS challenge value to the phone number), or perform another action that attackers are typically unwilling to perform.

[00216] Figure 14B shows an example of an automatic reply message requesting verification of an identity of the sender of the message. Message 1420 informs the user that the sender's message has been quarantined and will not be delivered unless identity of the sender is established. Message 1420 instructs the sender to forward the automatic reply message to a second message account (e.g., account of trusted contact) that the sender has previously used to communicate with the recipient and using the second account, forward again the forwarded message to a verification system for verification of the possession of the second account.

[00217] Returning to Figure 14A, the automatic reply to the message may be utilized to detect spoofing attempts. For example, the automatic reply is sent to a system of the sender to request verification that the sender identified in the message actually sent the message. For example, at least two installations of message security systems, where a first installation is associated with a first entity and a second installation is associated with a second entity, the second system identifies receipt of an email originating with a sender associated with the first system. The second system then sends an inquiry to the first system, where the inquiry contains information related to the email. The first system determines whether the email associated with the inquiry was sent from the indicated apparent sender, and generates a response to the second system. If the second system receives a negative response, then the email is not delivered to the intended recipient, or if it has already been delivered, then it is either removed from the inbox or a notification is sent to the recipient, warning the recipient of the email. In addition, a notification may be sent to an administrator associated with the second system. In some embodiments, a notification is also sent to an admin associated with the first system. If, on the other hand, the response to the inquiry is a positive response, then the email is delivered to the recipient. If an email has more than one recipient within the second system, then it is delivered to each such recipient. Here, the first and second systems may access emails in different ways. For example, the

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first system may correspond to an outbound collector of emails and the second system to an OAUTH access of one or more email boxes. The first system may also be an appliance controlling or relaying emails, or be an OAUTH-enabled method to access the various mailboxes (including the sent folder) of one or more users. In some embodiments, all communications between the two security systems are encrypted and authenticated.

[00218] At 1408, if the sender has provided a valid identity in response to the automatic reply in 1406, the message is allowed to be fully accessible by the specified recipient. For example, if the user has provided an established position of an alternate trusted account that can be trusted (e.g., account of trusted contact) or has otherwise provided or proved an identity of the sender, the message is allowed to be fully accessible. Making the message fully accessible may include allowing the message to be delivered and accessed by the recipient with all of its original content. This may also cause the sender (e.g., sender email address) to be whitelisted or associated with an increased trust value (e.g., add to trusted contacts). In some embodiments, the provided full access message includes a warning, bringing to the attention of the recipient that this is an email from a potential stranger.

[00219] If the sender does not provide a valid identity in response to the automatic reply in 906, the message may remain unable to be fully accessible by the specified recipient of the message. In some embodiments, the message is indicated to an administrator and/or deleted.

[00220] In some embodiments, if the reply to the address of the message is identified or unknown to be unattended (e.g., not monitored by a recipient user), the message is provided to the recipient in a modified form and/or with a warning.

[00221] Figure 15 is a flowchart illustrating an embodiment of a process for determining a change in historical reputation of a sender of a message. The process of Figure 15 may be at least in part implemented on analysis server 102, gateway 110, and/or message server 106 of Figure 1. In some embodiments, at least a portion of the process of Figure 15 is performed in filtering the message in 1006 and/or 1010 of Figure 10. In some embodiments, at least a portion of the process of Figure 15 is performed in one or more steps of the process of Figure 12. For example, at least a portion of the process of Figure 15 is performed in performing the first and/or second risk analysis of the process of Figure 12. At least a portion of the process of Figure 15 may be performed in 204, 304, and/or 314 of the processes of Figures 2-3B.

[00222] At 1502, a long term measure of reputation associated with a sender of a message is

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determined. The long term measure of reputation may be for a specific address and/or domain of the sender. For example, long term measure of reputation is determined based on the amount of historical message traffic between the sender (or network domain of sender) and the recipient (or network domain of recipient). Large amounts of traffic may correspond to a high long term measure of reputation, unless there is a sufficient portion of the traffic that is flagged as undesirable (e.g., being spam, including virus/malware, etc.). Additionally, a long time period of traffic may correspond to a high long term measure of reputation, unless a sufficient portion is flagged as being undesirable. To the extent that it is available, a large open rate (e.g., the recipient opened the message) or a high response rate (e.g., whether replying to message or selecting links in message) also may correspond to a high long term measure of reputation, unless a sufficient portion is flagged as being undesirable. An example of a "sufficient" portion may mean that a fixed portion of the traffic, such as 2%. The long term measure of reputation may capture historical message traffic within several recent months. In some embodiments, when determining a long term measure of reputation for a domain, individual long term measures of reputation for accounts of the domain may be aggregated to determine the long term measure of reputation for the domain.

[00223] At 1504, a recent short term measure of reputation associated with the sender of the message is determined. The recent short term measure of reputation may be for a specific address and/or domain of the sender. The recent short term measure of reputation is determined using the same/similar factors as the long term measure of reputation but within a smaller time window. For example, the recent short term measure of reputation may capture historical message traffic within a day.

[00224] The recent short term measure of reputation may be low if a large portion (e.g., 5% of traffic within the time window) of message traffic between the sender (or network domain of sender) and the recipient (or network domain of recipient) is associated with complaints, spam detection, the detection of unwanted URLs, or unwanted attachments. An unwanted URL/attachment is one that is judged likely to be associated with risk, e.g., using a blacklist or an anti-virus scan. Complaints may correspond to users reporting an email as spam or phish, or placing it in a spam folder. Complaints can either be local (only a very small number of users, such as less than 1% of recipients, report the message) or pervasive (a greater portion of users report the email, e.g., more than 1%).

[00225] At 1506, changes in the recent short term measure with respect to the long term measure of reputation are detected and utilized to determine whether and/or how to filter the message. For example, if the sender is associated with a low (bad) long term measure of reputation

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(e.g., below a threshold) and a low (bad) recent short term measure (e.g., below another threshold), the message from the sender is identified as suspicious and filtered (e.g., blocked and/or modified with a warning). In some embodiments, if the sender is associated with a high (good) long term measure of reputation (e.g., above a first threshold) but low (bad) recent short term measure (e.g., below a second threshold), the message from the sender is identified as likely taken over by a malicious attacker. For example, the message may be filtered (e.g., blocked and/or modified with a warning), may require manual review by an administrator, or require an action by the sender (e.g., require sender to respond to a challenge) prior allowing delivery of the message (e.g., modified message with warning).

[00226] In some embodiments, let Ri be a reputation associated with a receiver, and for concreteness, assume that this corresponds to a numeric value between 0 and 1, inclusive. Let Bi be a recent short term measure of reputation associated with an email E received by the same recipient. For concreteness, this is also a value between 0 and 1, inclusive. Here, i is a number corresponding to the recipient. Further, let G be the long term measure of reputation associated with the email E, and may be a number between 0 and 100, for example. The value SUM(Bi * Ri)/G is computed, where SUM corresponds to adding the entries associated with all recipients of E. If SUM(Bi * Ri)/G > t1, where t1 is a first threshold, then a first action is taken. This action may be to block emails from the sender of E, remove E from the inbox of all recipients, and determine whether any of the users who appear to have opened E have had their computers corrupted or credentials stolen. This can be determined by asking the user, by scanning the user's machine, or by reviewing logs of incoming/outgoing traffic to the user's machine, where this review is preferably automated. Further, the action may involve increasing Ri by 10% for each user who filed a response Bi indicative of a threat. If SUM(Bi * Ri)/G < t2, where t2<t1 then the reputation Ri of each user who filed a response Bi indicative of a threat is decreased, e.g., by 5%. If the number of users filing a response Bi is indicative of a threat within a time T of receipt of the email E, then the email is considered to be associated with pervasive badness, otherwise local badness.

[00227] Although the foregoing embodiments have been described in some detail for purposes of clarity of understanding, the invention is not limited to the details provided. There are many alternative ways of implementing the invention. The disclosed embodiments are illustrative and not restrictive.

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CLAIMS

1. A method, comprising:

receiving information of an electronic message to be delivered to an intended recipient;

determining for an original resource identifier included in the electronic message, a corresponding alternative resource identifier that can be at least in part used to obtain the original resource identifier and obtain context information associated with the electronic message;

replacing the original resource identifier included in the electronic message with the alternative resource identifier to generate a modified electronic message; and

allowing the modified electronic message with the alternative resource identifier to be delivered to the intended recipient instead of the electronic message with the original resource identifier, wherein a request made using the alternative resource identifier in the modified message triggers a security action based at least in part on the context information associated with the electronic message.

2. The method of claim 1, wherein the electronic message is an email received at one of the following devices: a mail transfer agent device, a mail relay device, a gateway device, a cloud security device, or a local security appliance.

3. The method of claim 1, wherein the original resource identifier is an URL hyperlink included in a body content of the electronic message.

4. The method of claim 1, wherein the corresponding alternative resource identifier includes a domain name associated with a security service, wherein the domain name associated with the security service is not included in the original resource identifier.

5. The method of claim 1, wherein determining the corresponding alternative resource identifier includes determining a handle value corresponding to at least the original resource identifier and including the handle value in the corresponding alternative resource identifier.

6. The method of claim 5, wherein determining the corresponding alternative resource identifier includes storing at least a portion of the context information associated with the electronic message in a database entry that corresponds to the handle value.

7. The method of claim 1, wherein determining the corresponding alternative resource identifier includes encrypting at least the original resource identifier to generate an encrypted value and including the encrypted value in the corresponding alternative resource identifier.

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8. The method of claim 7, wherein the encrypted value is generated by encrypting the original resource identifier and at least a portion of the context information associated with the electronic message.

9. The method of claim 1, wherein determining the corresponding alternative resource identifier includes determining a security classification associated with the electronic message and generating the corresponding alternative resource identifier based on the security classification associated with the electronic message.

10. The method of claim 1, wherein the context information associated with the electronic message includes one or more of the following: an identifier of a sender of the electronic message, an identifier of the intended recipient of the electronic message, a classification or security risk analysis result associated with the sender of the electronic message, a classification or security risk analysis result associated with the intended recipient of the electronic message, a classification or security risk analysis result associated with message content of the electronic message, a classification or security risk analysis result associated with the original resource identifier, at least a portion of a metadata of the electronic message, at least a portion of the message content of the electronic message.

11. The method of claim 1, wherein each resource identifier of a plurality of resource identifiers included in the electronic message has been replaced with a corresponding alternative resource identifier to generate the modified electronic message.

12. The method of claim 1, wherein the modified electronic message includes an unmodified resource identifier.

13. The method of claim 1, wherein in response to the request made using the alternative resource identifier in the modified message, the original resource identifier and the context information associated with the electronic message are obtained using at least a portion of the alternative resource identifier.

14. The method of claim 1, wherein in response to the request made using the alternative resource identifier in the modified message, a security risk associated with the original resource identifier is determined using the context information associated with the electronic message and content referenced by the original resource identifier.

15. The method of claim 14, wherein performing the security action includes determining that the security risk is below a threshold criterion, obtaining content referenced by the original resource identifier and providing the obtained content in response to the request made using the alternative

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resource identifier.

16. The method of claim 14, wherein performing the security action includes determining that the security risk is below a threshold criterion and in response to the request made using the alternative resource identifier, providing a redirection response specifying the original resource identifier.

17. The method of claim 14, wherein performing the security action includes determining that the security risk is meets a threshold criteria and performing one or more of the following: blocking access to content referenced by the original resource identifier, providing a security warning in response to the request made using the alternative resource identifier, providing a modified version of the content referenced by the original resource identifier with modified functionality, or logging an event of the request made using the alternative resource identifier.

18. The method of claim 14, wherein the security action is performed in response to determining that the security risk does not meets a first threshold criterion but meets a second threshold criterion.

19. A system, comprising:

a communication interface configured to receive information of an electronic message to be delivered to an intended recipient;

a processor coupled with the communication interface and configured to:

determine for an original resource identifier included in the electronic message, a corresponding alternative resource identifier that can be at least in part used to obtain the original resource identifier and obtain context information associated with the electronic message;

replace the original resource identifier included in the electronic message with the alternative resource identifier to generate a modified electronic message; and

allow the modified electronic message with the alternative resource identifier to be delivered to the intended recipient instead of the electronic message with the original resource identifier, wherein a request made using the alternative resource identifier in the modified message triggers a security action based at least in part on the context information associated with the electronic message.

20. A computer program product, the computer program product being embodied in a non-transitory computer readable storage medium and comprising computer instructions for:

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receiving information of an electronic message to be delivered to an intended recipient;

determining for an original resource identifier included in the electronic message, a corresponding alternative resource identifier that can be at least in part used to obtain the original resource identifier and obtain context information associated with the electronic message;

replacing the original resource identifier included in the electronic message with the alternative resource identifier to generate a modified electronic message; and

allowing the modified electronic message with the alternative resource identifier to be delivered to the intended recipient instead of the electronic message with the original resource identifier, wherein a request made using the alternative resource identifier in the modified message triggers a security action based at least in part on the context information associated with the electronic message.

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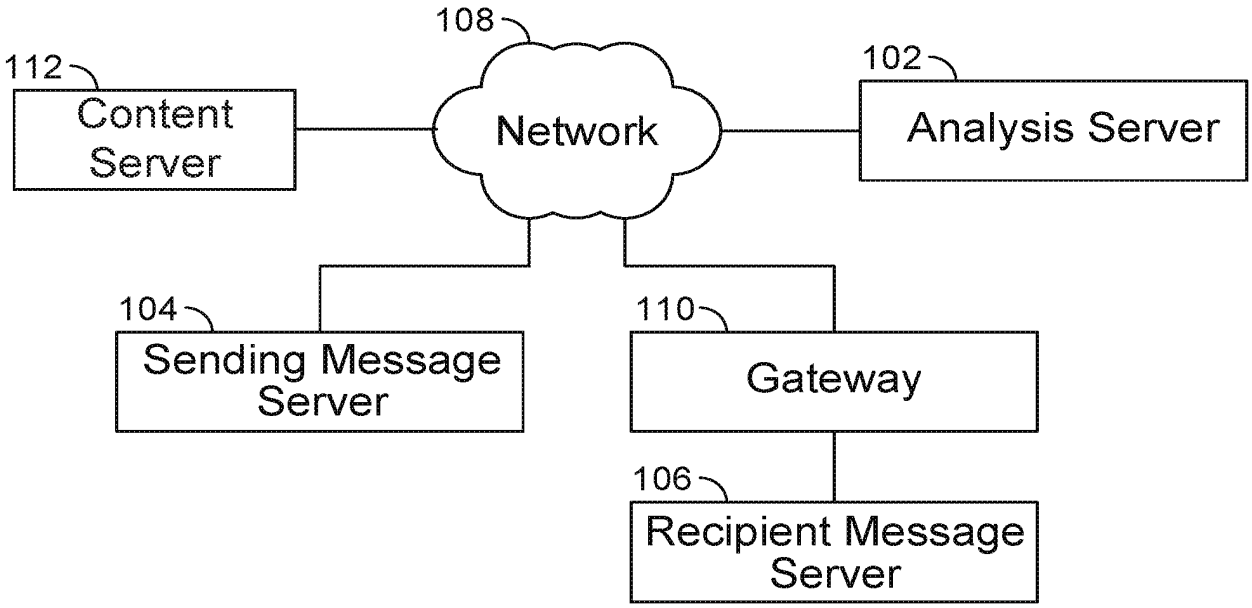
108
112
Content Server
Network
102
Analysis Server
104
Sending Message Server
110
Gateway
106
Recipient Message Server

FIG. 1

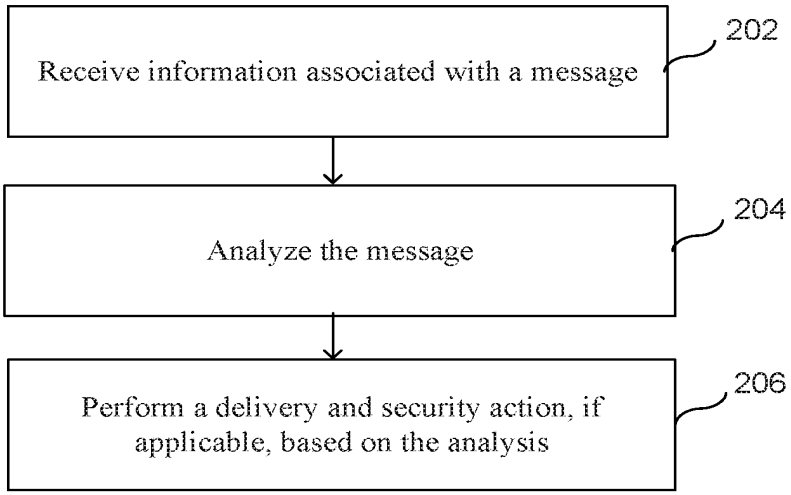
Receive information associated with a message
202
Analyze the message
204
Perform a delivery and security action, if applicable, based on the analysis
206

FIG. 2

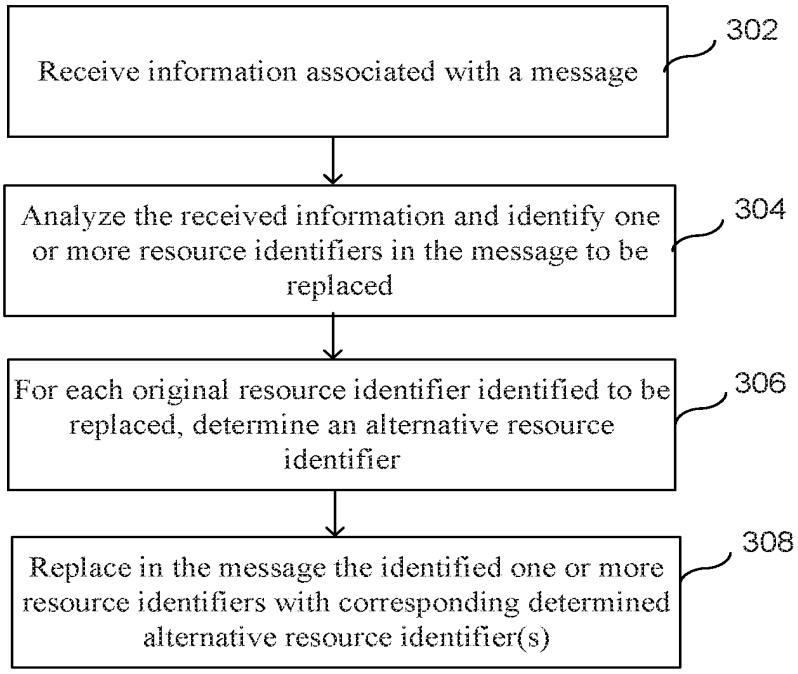
Receive information associated with a message
302
Analyze the received information and identify one or more resource identifiers in the message to be replaced
304
For each original resource identifier identified to be replaced, determine an alternative resource identifier
306
Replace in the message the identified one or more resource identifiers with corresponding determined alternative resource identifier(s)
308

FIG. 3A

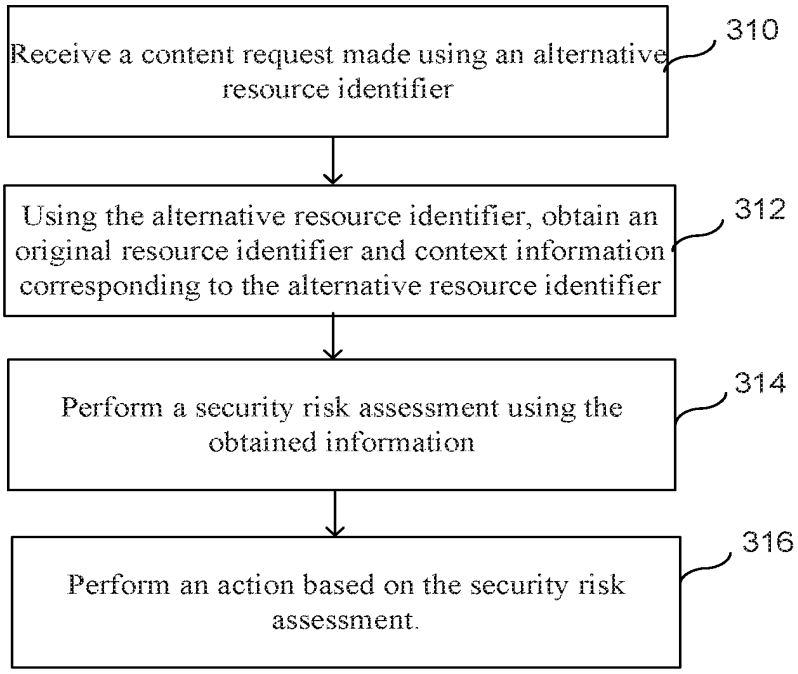
Receive a content request made using an alternative resource identifier
310
Using the alternative resource identifier, obtain an original resource identifier and context information corresponding to the alternative resource identifier
312
Perform a security risk assessment using the obtained information
314
Perform an action based on the security risk assessment.
316

FIG. 3B

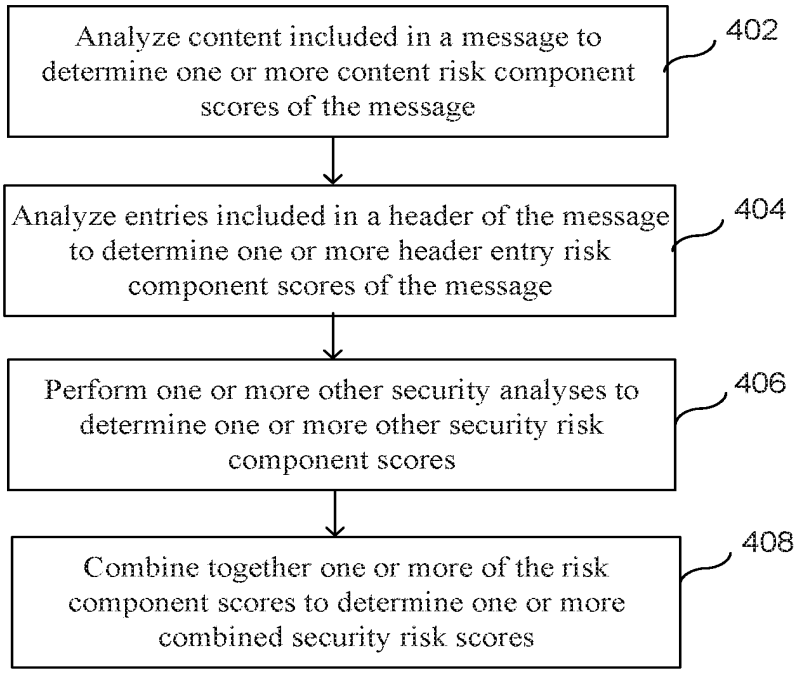
Analyze content included in a message to determine one or more content risk component scores of the message
402
Analyze entries included in a header of the message to determine one or more header entry risk component scores of the message
404
Perform one or more other security analyses to determine one or more other security risk component scores
406
Combine together one or more of the risk component scores to determine one or more combined security risk scores
408

FIG. 4

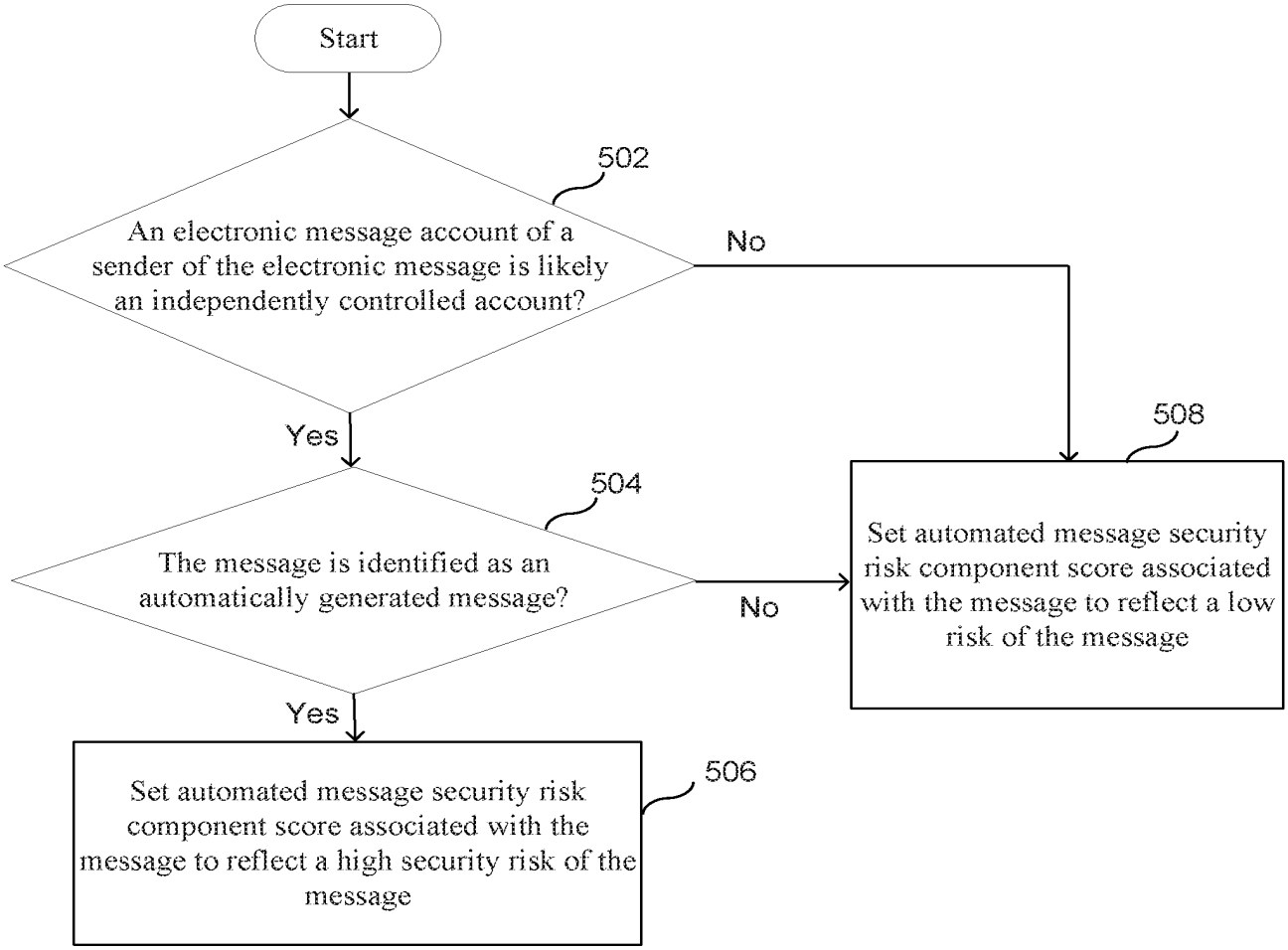
Start
502
An electronic message account of a sender of the electronic message is likely an independently controlled account?
No
Yes
504
The message is identified as an automatically generated message?
No
508
Set automated message security risk component score associated with the message to reflect a low risk of the message
Yes
Set automated message security risk component score associated with the message to reflect a high security risk of the message
506

FIG. 5

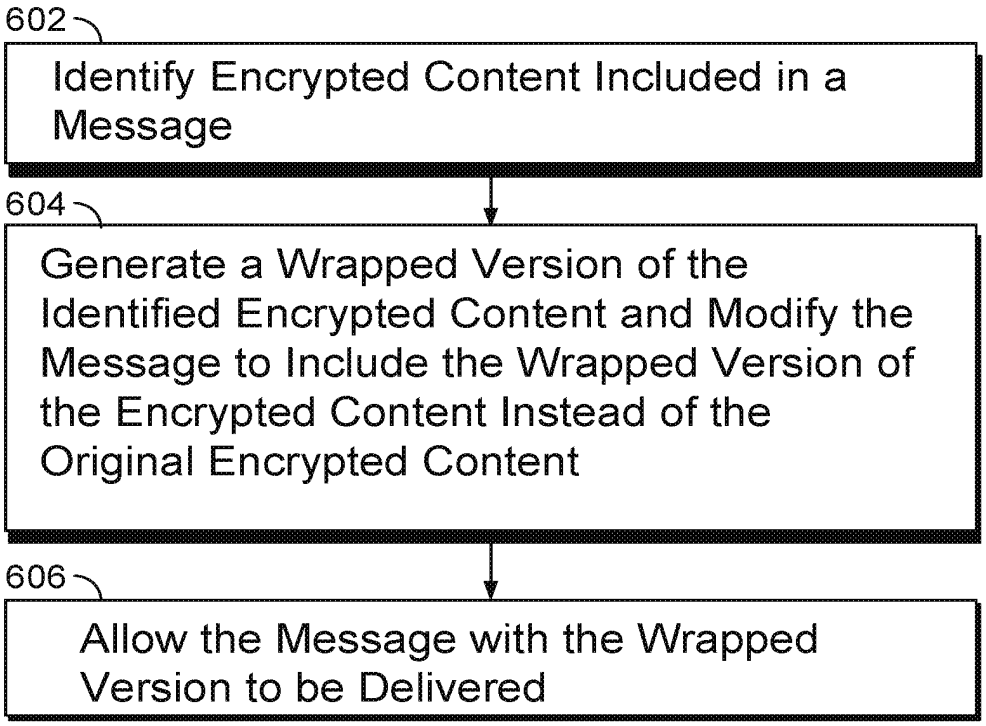
602
Identify Encrypted Content Included in a Message
604
Generate a Wrapped Version of the Identified Encrypted Content and Modify the Message to Include the Wrapped Version of the Encrypted Content Instead of the Original Encrypted Content
606
Allow the Message with the Wrapped Version to be Delivered

FIG. 6

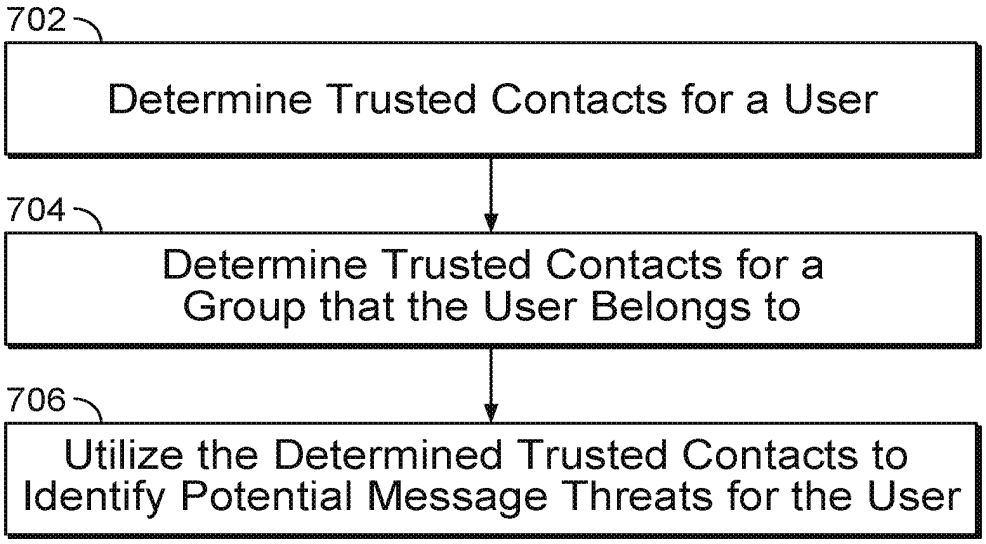
702
Determine Trusted Contacts for a User
704
Determine Trusted Contacts for a Group that the User Belongs to
706
Utilize the Determined Trusted Contacts to Identify Potential Message Threats for the User

FIG. 7

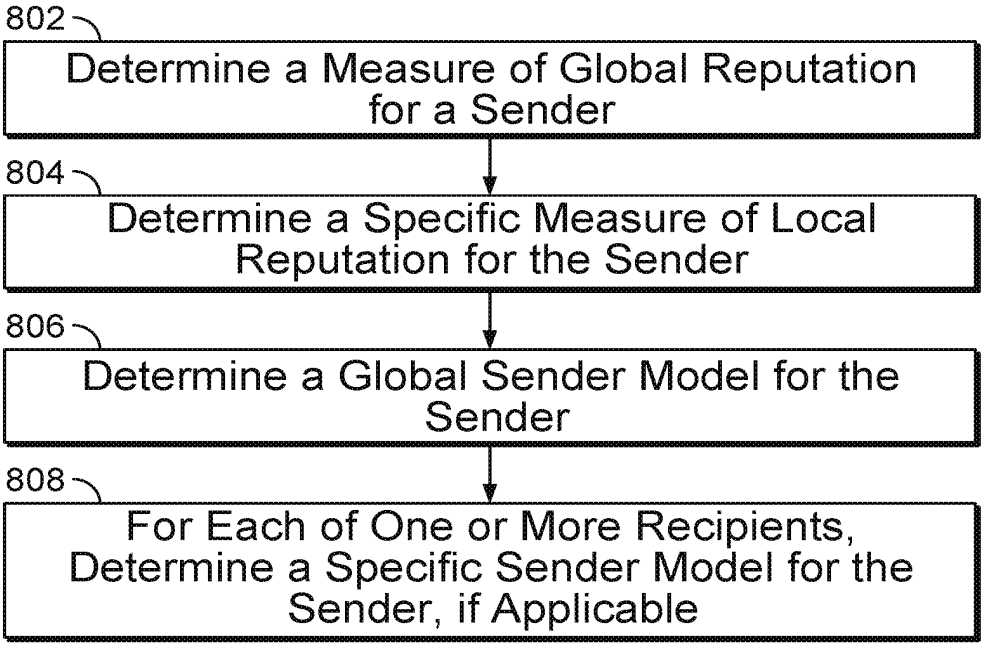
802
Determine a Measure of Global Reputation for a Sender
804
Determine a Specific Measure of Local Reputation for the Sender
806
Determine a Global Sender Model for the Sender
808
For Each of One or More Recipients, Determine a Specific Sender Model for the Sender, if Applicable

FIG. 8

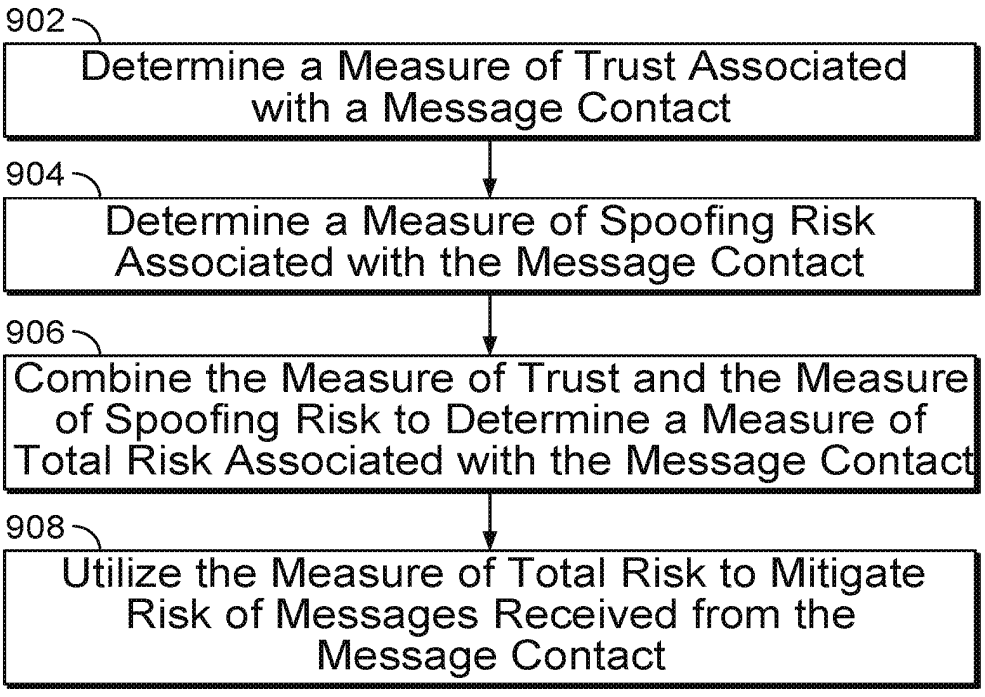
902
Determine a Measure of Trust Associated with a Message Contact
904
Determine a Measure of Spoofing Risk Associated with the Message Contact
906
Combine the Measure of Trust and the Measure of Spoofing Risk to Determine a Measure of Total Risk Associated with the Message Contact
908
Utilize the Measure of Total Risk to Mitigate Risk of Messages Received from the Message Contact

FIG. 9

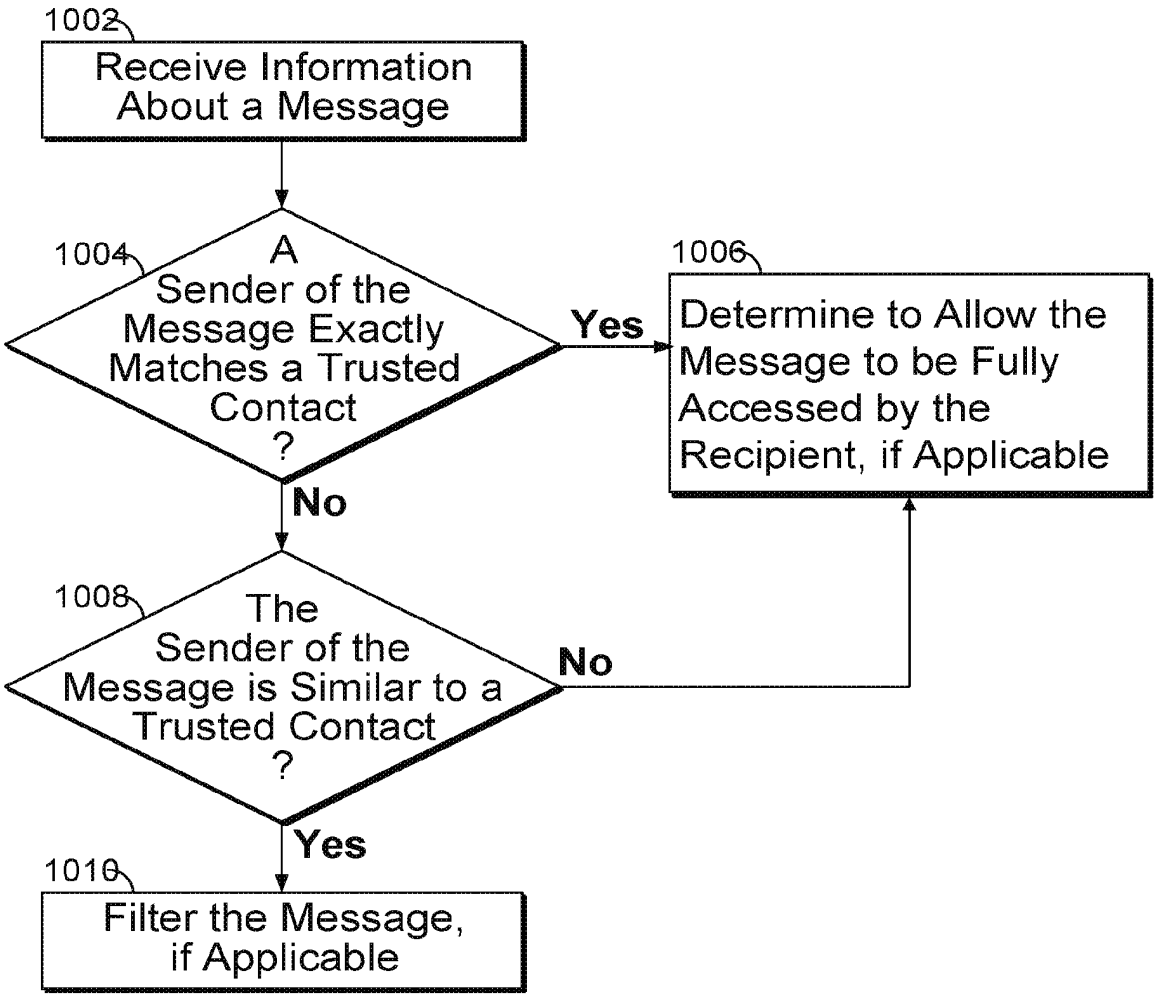
1002
Receive Information About a Message
1004
A Sender of the Message Exactly Matches a Trusted Contact ?
Yes
1006
Determine to Allow the Message to be Fully Accessed by the Recipient, if Applicable
No
1008
The Sender of the Message is Similar to a Trusted Contact ?
No
Yes
1010
Filter the Message, if Applicable

FIG. 10

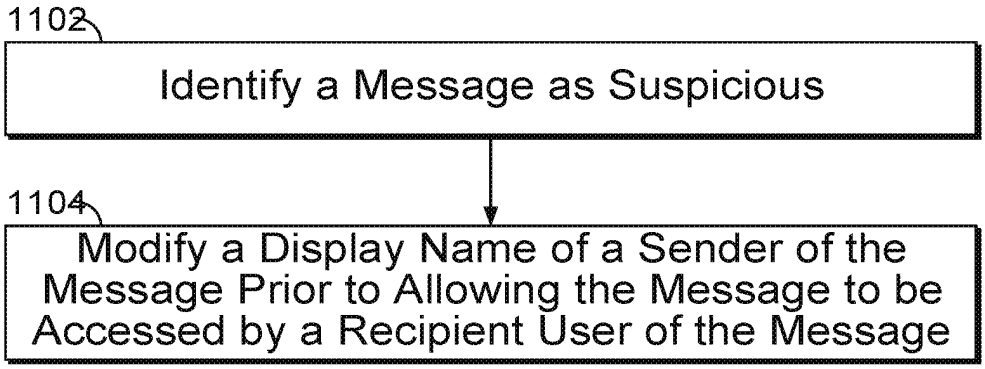

FIG. 11A

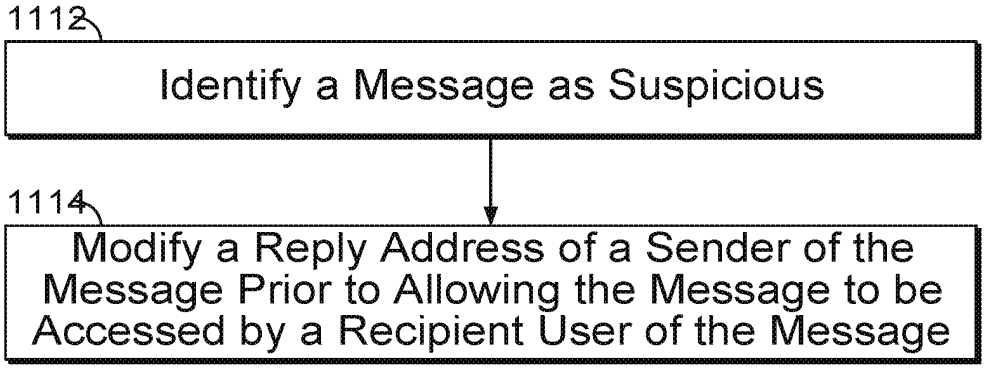

FIG. 11B

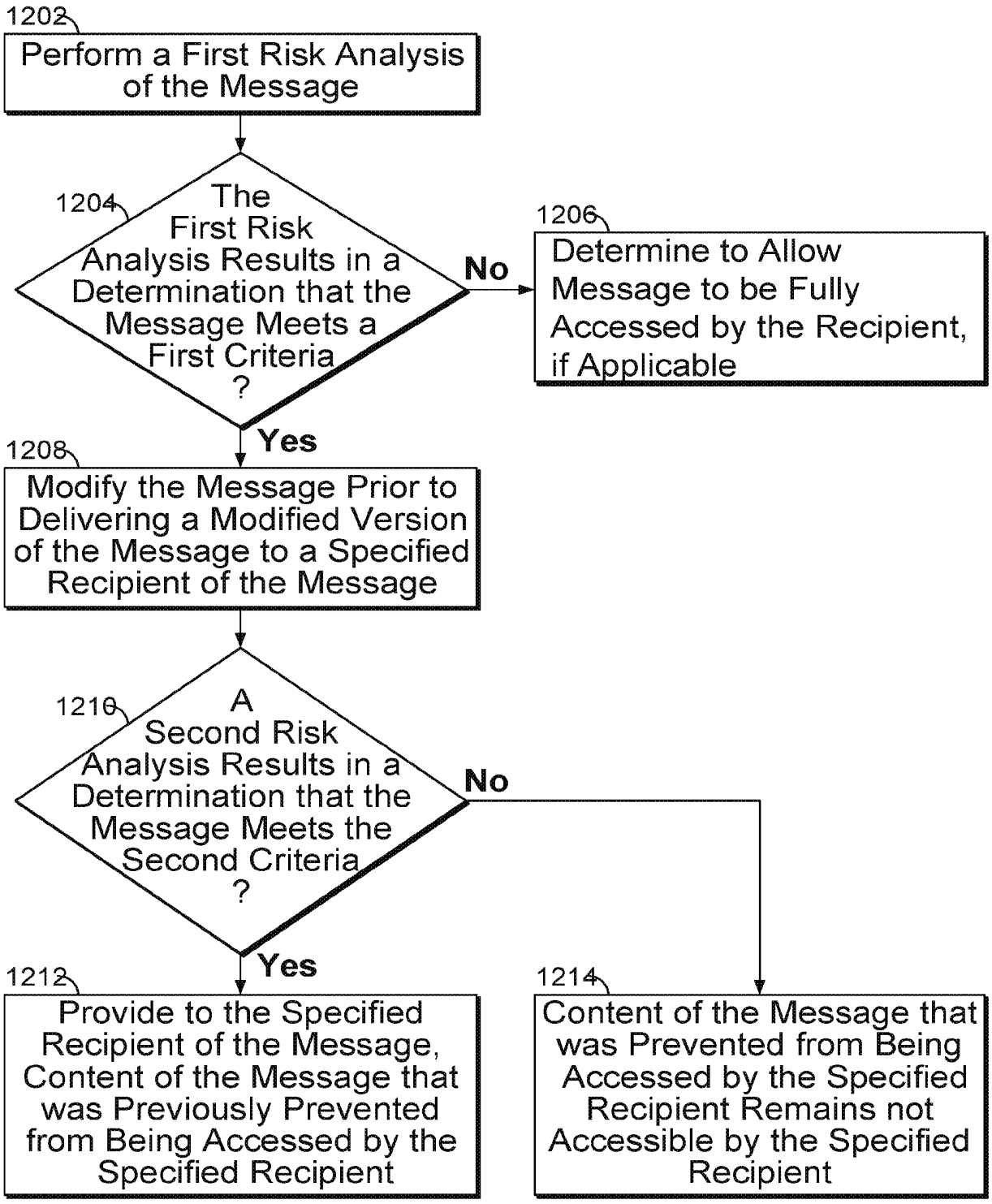
1202
Perform a First Risk Analysis of the Message
1204
The First Risk Analysis Results in a Determination that the Message Meets a First Criteria ?
No
1206
Determine to Allow Message to be Fully Accessed by the Recipient, if Applicable
Yes
1208
Modify the Message Prior to Delivering a Modified Version of the Message to a Specified Recipient of the Message
1210
A Second Risk Analysis Results in a Determination that the Message Meets the Second Criteria ?
No
Yes
1212
Provide to the Specified Recipient of the Message, Content of the Message that was Previously Prevented from Being Accessed by the Specified Recipient
1214
Content of the Message that was Prevented from Being Accessed by the Specified Recipient Remains not Accessible by the Specified Recipient

FIG. 12

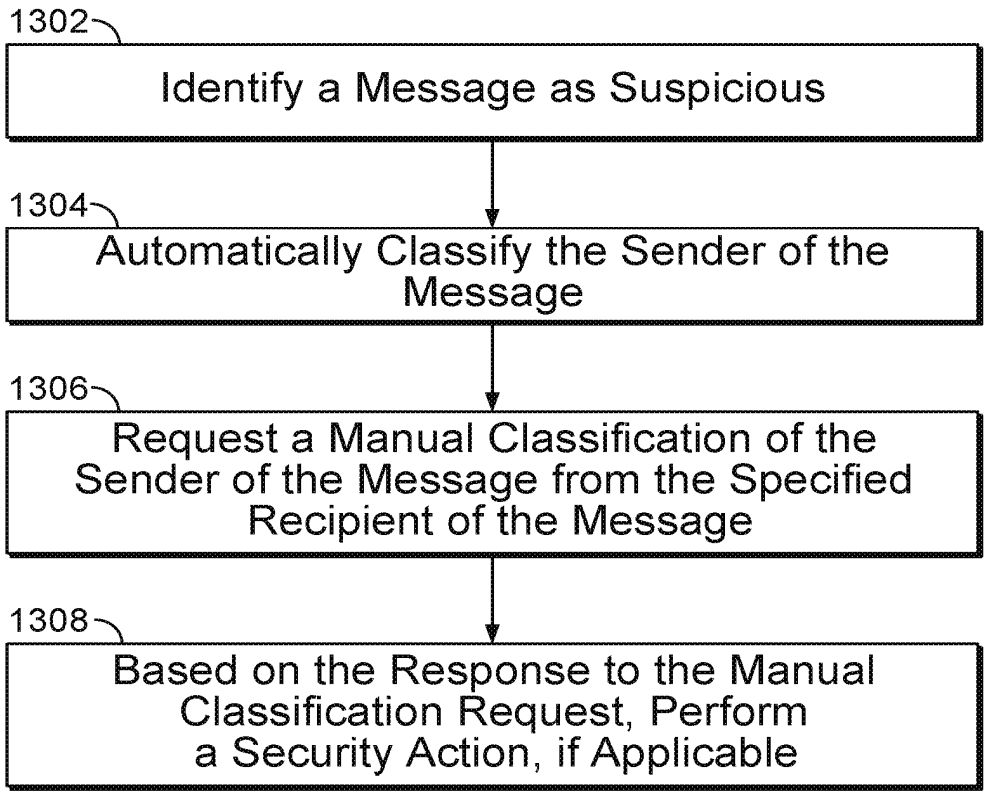
1302
Identify a Message as Suspicious
1304
Automatically Classify the Sender of the Message
1306
Request a Manual Classification of the Sender of the Message from the Specified Recipient of the Message
1308
Based on the Response to the Manual Classification Request, Perform a Security Action, if Applicable

FIG. 13A

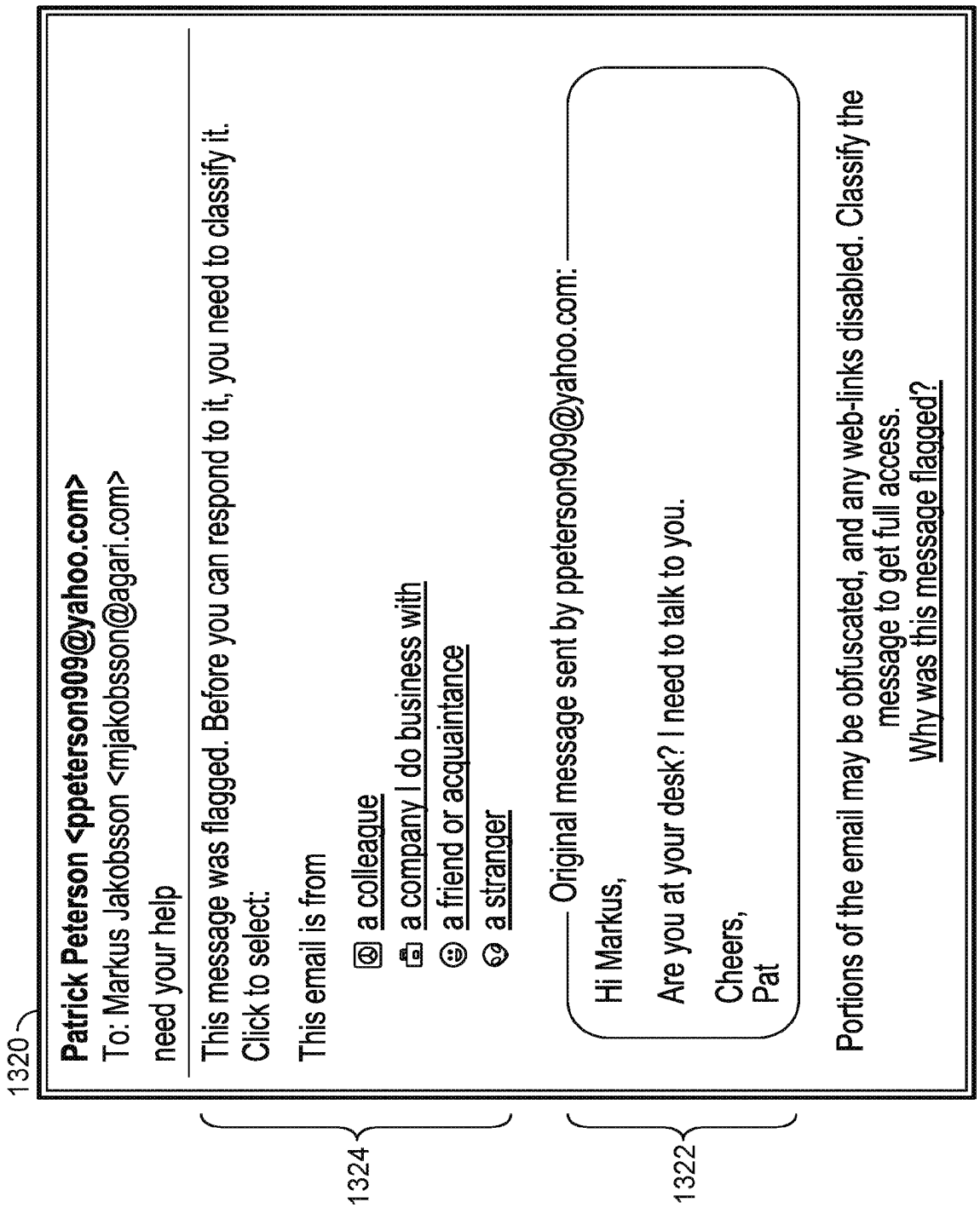
1320
Patrick Peterson <ppeterson909@yahoo.com>
To: Markus Jakobsson <mjakobsson@agari.com>
need your help
This message was flagged. Before you can respond to it, you need to classify it.
Click to select:
This email is from
a colleague
a company I do business with
a friend or acquaintance
a stranger
1324
Original message sent by ppeterson909@yahoo.com:
Hi Markus,
Are you at your desk? I need to talk to you.
Cheers,
Pat
1322
Portions of the email may be obfuscated, and any web-links disabled. Classify the message to get full access.
Why was this message flagged?

FIG. 13B

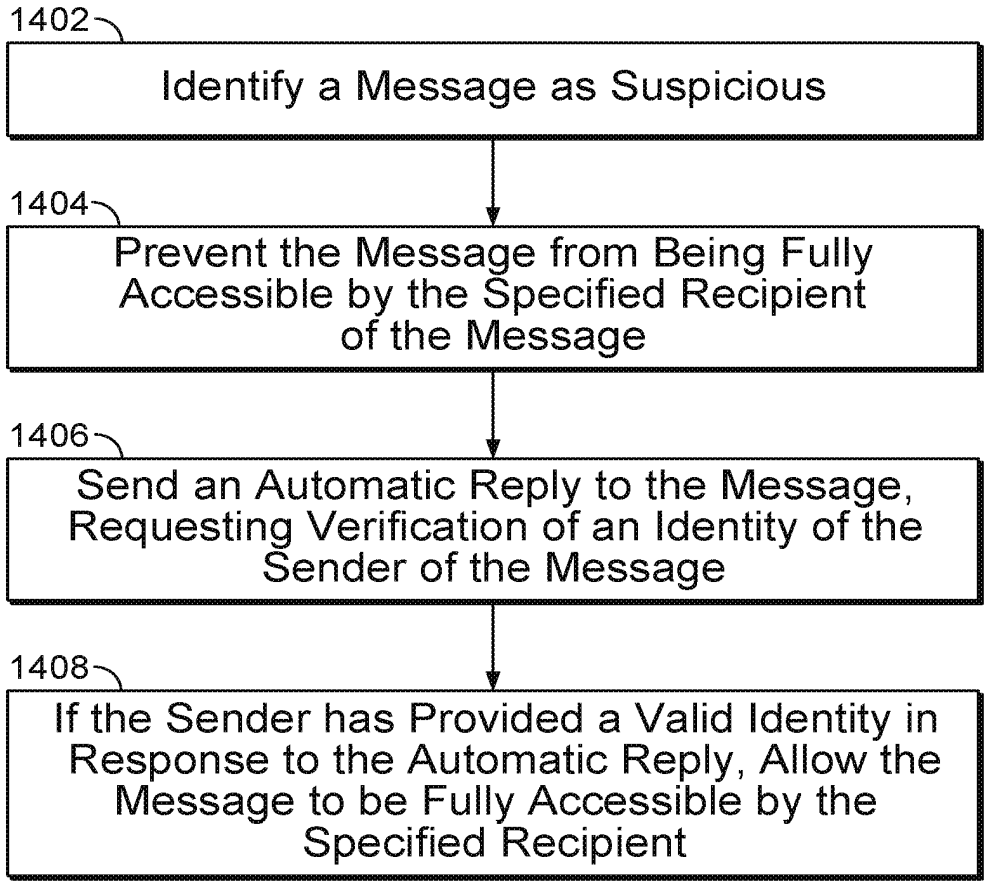
1402
Identify a Message as Suspicious
1404
Prevent the Message from Being Fully Accessible by the Specified Recipient of the Message
1406
Send an Automatic Reply to the Message, Requesting Verification of an Identity of the Sender of the Message
1408
If the Sender has Provided a Valid Identity in Response to the Automatic Reply, Allow the Message to be Fully Accessible by the Specified Recipient

FIG. 14A

1420
Markus Jakobsson <mjakobsson@agari.com>
Today at 1:50 PM
MJ
To: ppeterson14014@yahoo.com
Reply-To: noreply@agari.com
Automated response - your message has been quarantined
Hi Patrick Peterson,
You recently sent a message to Markus Jakobsson <mjakobsson@agari.com>. The message has been placed in quarantine.
It is possible that you normally communicate with Markus jakobsson <mjakobsson@agari.com> using another email address that is whitelisted by the security system.
If you think that is so, then here is what you must do to also whitelist your email address ppeterson14014@yahoo.com
1. Forward this message in its entirety to the email address you normally use to communicate with Markus Jakobsson <mjakobsson@agari.com>.
2. Log in to that email account, find your forwarded message, and forward it again to whitelist@agari.com from that account.
3. You will then receive a confirmation email, and your message will be removed from quarantine and delivered.
4. You will only have to do this once for this email account, and not for each email you send.
Thanks, and have a good day!
The Agari Team
Security code GF696L88.

FIG. 14B

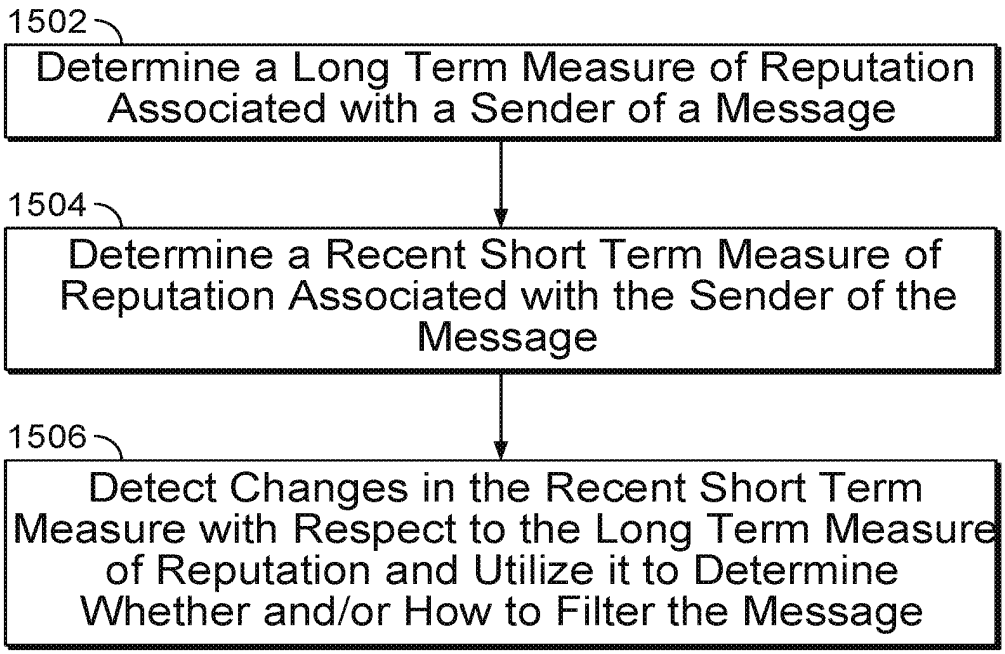
1502
Determine a Long Term Measure of Reputation Associated with a Sender of a Message
1504
Determine a Recent Short Term Measure of Reputation Associated with the Sender of the Message
1506
Detect Changes in the Recent Short Term Measure with Respect to the Long Term Measure of Reputation and Utilize it to Determine Whether and/or How to Filter the Message

FIG. 15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2018/032985

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 21/55; H04L 12/58; H04L 29/06 (2018.01)
CPC - H04L 63/1441; G06F 21/55; H04L 51/12 (2018.05)

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
See Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 709/206; 709/224; 726/2 (keyword delimited)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2015/0381653 A1 (PROOFPOINT, INC.) 31 December 2015 (31.12.2015) entire document	1-6, 9-20 --- 7, 8
Y	US 2007/0214495 A1 (ROYER et al) 13 September 2007 (13.09.2007) entire document	7, 8
A	US 2014/0259158 A1 (BANK OF AMERICA CORPORATION) 11 September 2014 (11.09.2014) entire document	1-20
A	US 7,809,796 B1 (BLOCH et al) 05 October 2010 (05.10.2010) entire document	1-20
A	US 2017/0005961 A1 (MCAFEE, INC.) 05 January 2017 (05.01.2017) entire document	1-20

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
16 July 2018	27 JUL 2018
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450 Facsimile No. 571-273-8300	Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (January 2015)

Electronic Acknowledgement Receipt

EFS ID:	38385521
Application Number:	16180373
International Application Number:	
Confirmation Number:	3758
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Customer Number:	21912
Filer:	Yeu-Ting George Cheng/Monique Huang
Filer Authorized By:	Yeu-Ting George Cheng
Attorney Docket Number:	MJAKP016C1
Receipt Date:	23-JAN-2020
Filing Date:	05-NOV-2018
Time Stamp:	19:58:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$120
RAM confirmation Number	E20201MJ59317793
Deposit Account	500685
Authorized User	Monique Huang
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 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	Information Disclosure Statement (IDS) Form (SB08)	MJAKP016C1_IDS_07.pdf	1053319 b7630f0f950b552bf65518b72e3aff4e7072dd24	no	4
Warnings:					
Information:					
2	Foreign Reference	WO2018213457A1.pdf	4214954 ede906e1342f48624518b448a0dd89f1facc88c7	no	97
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30722 4fdde64a77f4e29c66ea16a5d496240f3361fb28	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	5298995		

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.

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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 contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	9154514		2015-10-06	PRAKASH GAGAN	
	2	9847973		2017-12-19	JAKOBSSON BJORN MARKUS	
	3	9906554		2018-02-27	HIGBEE AARON	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20060153380		2006-07-13	GERTNER DMITRY A	
	2	20060168024		2006-07-27	MEHR JOHN D	
	3	20080098237		2008-04-24	DUNG TRUNG T	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

	4	20150156154		2015-06-04	RUSSELL DANIEL M	
	5	20170078321		2017-03-16	MAYLOR JACKIE	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2018213457	WO		2018-11-22	MARKUS BJORN JAKOBSSON		

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2020-01-23
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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 the Freedom of Information Act requires disclosure of these record s.

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 inspections 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.

Electronic Patent Application Fee Transmittal

Application Number:	16180373
Filing Date:	05-Nov-2018
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Filer:	Yeu-Ting George Cheng/Monique Huang
Attorney Docket Number:	MJAKP016C1

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($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	2806	1	120	120
		Total in USD ($)		**120**

Electronic Acknowledgement Receipt

EFS ID:	38531716
Application Number:	16180373
International Application Number:	
Confirmation Number:	3758
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Customer Number:	21912
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Filer Authorized By:	Yeu-Ting George Cheng
Attorney Docket Number:	MJAKP016C1
Receipt Date:	07-FEB-2020
Filing Date:	05-NOV-2018
Time Stamp:	19:10:11
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$500
RAM confirmation Number	E202027J10338215
Deposit Account	500685
Authorized User	Elaine Nguyen
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 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	Issue Fee Payment (PTO-85B)	MJAKP016C1_IF_Transmittal.pdf	114313 77d577743e23329658e791c962e2922e062aa7f5	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30517 b3f513b9c243cfe5fe7f57477de3dfd73dfb653a	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	144830		

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.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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)

21912 7590 11/14/2019
VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

Elaine Nguyen	(Typed or printed name)
/Elaine Nguyen/	(Signature)
February 7, 2020	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/180,373	11/05/2018	Bjorn Markus Jakobsson	MJAKP016C1	3758

TITLE OF INVENTION: VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0.00	$0.00	$500	02/14/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
TESHALE, AKELAW	2653	379-088200

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 03-09 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 Van Pelt, Yi & James LLP
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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: RightQuestion, LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Portola Valley, CA

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

4a. Fees submitted: ☑ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

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

☑ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 50-0685

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

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.
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.
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 /Yeu-Ting George Cheng/ Date February 7, 2020

Typed or printed name Yeu-Ting George Cheng Registration No. 69408

PTOL-85 Part B (08-18) Approved for use through 01/31/2020 OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0348

Electronic Patent Application Fee Transmittal

Application Number:	16180373
Filing Date:	05-Nov-2018
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Attorney Docket Number:	MJAKP016C1

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	500	500

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**500**

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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 contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	9154514		2015-10-06	PRAKASH GAGAN	
	2	9847973		2017-12-19	JAKOBSSON BJORN MARKUS	
	3	9906554		2018-02-27	HIGBEE AARON	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20060153380		2006-07-13	GERTNER DMITRY A	
	2	20060168024		2006-07-27	MEHR JOHN D	
	3	20080098237		2008-04-24	DUNG TRUNG T	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.T/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

	4	20150156154		2015-06-04	RUSSELL DANIEL M	
	5	20170078321		2017-03-16	MAYLOR JACKIE	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2018213457	WO		2018-11-22	MARKUS BJORN JAKOBSSON		

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/AKELAW TESHALE/	Date Considered	02/03/2020

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.T/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2020-01-23
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.T/

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 the Freedom of Information Act requires disclosure of these record s.

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 inspections 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.

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/180,373	11/05/2018	Bjorn Markus Jakobsson	MJAKP016C1	3758

21912 7590 02/07/2020
VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

EXAMINER	
TESHALE, AKELAW	

ART UNIT	PAPER NUMBER
2653	

NOTIFICATION DATE	DELIVERY MODE
02/07/2020	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):

usptocorrespondence@ip-patent.com

UNITED STATES DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR/ PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
16/180,373	11/05/2018	Jakobsson, Bjorn Markus	MJAKP016C1

		EXAMINER	
VAN PELT, YI & JAMES LLP 10050 N. FOOTHILL BLVD #200 CUPERTINO, CA 95014		AKELAW A TESHALE	
		ART UNIT	PAPER
		2653	20200203

DATE MAILED: _____

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

Commissioner for Patents

Ids filed 01/23/2020 is reviewed and considered.	
/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	

PTO-90C (Rev.04-03)

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S67	5	((("RightQuestion") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2020/02/03 11:51
S68	242	((("JAKOBSSON") near3 ("Bjorn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/02/03 11:51
S69	242	S67 or S68	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/02/03 11:51
S70	193	("20060153380" | "20060168024" | "20080098237" | "20150156154" | "20170078321" | "9154514" | "9847973" | "9906554" | "20120192258" | "8560962" | "9258314" | "9613341" | "9940482" | "20100235636" | "20130318580" | "20140214895" | "6073142" | "20120311703" | "20170251006" | "20170324767" | "7831522" | "9800589" | "20030225850" | "20050188045" | "20070100944" | "20070276907" | "20080022107" | "20090037350" | "20100198928" | "20100257222" | "20110066687" | "20110145152" | "20110191688" | "20110294478" | "20120136780" | "20120242488" | "20140082726" | "20140258420" | "20140340822" | "20150033343" | "20150100896" | "20150148006" | "20150172233" | "20150216413" | "20150236990" | "20150326510" | "20150334065" | "20150363839" | "20150371212" | "20160037270" | "20160087925" | "20160094566" | "8572184" | "8667074" | "8676155" | "8949353" | "8959163" | "8996042" | "9560506" | "20020138271" | "20020184315" | "20030023736" | "20030229672" | "20030236845" | "20040176072" | "20040177120" | "20040203589" | "20050033810" | "20050060643" | "20050076084" | "20050076240" | "20050080857" | "20050182735" | "20050188023" | "20050198173" | "20050216587" | "20050223076" | "20050235065" | "20050257261" | "20060004772" | "20060015563" | "20060026242" |	US-PGPUB; USPAT	OR	OFF	2020/02/03 11:54

		"20060031306" | "20060053490" | "20060085505" | "20060149821" | "20060168329" | "20060195542" | "20060206713" | "20060224677" | "20060230461" | "20060253597" | "20060259558" | "20060265498" | "20070019235" | "20070027992" | "20070038718" | "20070067465" | "20070086592" | "20070101423" | "20070107053" | "20070130618" | "20070143432" | "20070192169" | "20070198642" | "20070214495" | "20070239639" | "20070271343" | "20070299916" | "20080004049" | "20080046970" | "20080050014" | "20080104235" | "20080141374" | "20080175266" | "20080178288" | "20080235794" | "20080276315" | "20080290154" | "20090064330" | "20090089859" | "20090210708" | "20090228583" | "20090252159" | "20090292781" | "20090319629" | "20100030798" | "20100043071" | "20100070761" | "20100094887" | "20100115040" | "20100145900" | "20100287246" | "20100299399" | "20100313253" | "20110087485" | "20110191847" | "20110271349" | "20120030293" | "20120167233" | "20120227104" | "20120246725" | "20120278694" | "20130067012" | "20130081142" | "20130083129" | "20130128883" | "20130305318" | "20130346528" | "20140230061" | "20140250506" | "20140259158" | "20140366144" | "20150030156" | "20150067833" | "20150081722" | "20150288714" | "20150381653" | "20160014151" | "20160104132" | "20160225897" | "20160269437" | "20170005961" | "20170091274" | "6161130" | "6574658" | "6721784" | "7293063" | "7299261" | "7644274" | "7797752" | "7809795" | "7809796" | "7814545" | "7899213" | "7899866" | "7917655" | "8010614" | "8131655" | "8255572" | "8489689" | "8566938" | "8667069" | "8719940" | "8752172" | "8832202" | "8984640" | "9060057" | "9245115" | "9277049" | "9338287" | "9471714" | "9473437").PN.				
S71	8	("20060153380" | "20060168024" | "20080098237" | "20150156154" | "20170078321" | "9154514" | "9847973" | "9906554").PN.	US-PGPUB; USPAT	OR	OFF	2020/02/03 11:54
S72	193	S70 or S71	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/02/03 12:22
S73	77544	((device or apparatus or endpoint or	US-PGPUB;	OR	ON	2020/02/03

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0358

		terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			12:35
S74	6	S72 and S73	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/02/03 12:37

EAST Search History (Interference)

< This search history is empty>

2/3/2020 2:23:51 PM
C:\Users\ateshale\Documents\EAST\Workspaces\16180373.wsp

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	
	Examiner Name	
	Attorney Docket Number	MJAKP016C1

Change(s) applied to document, /J.K./ 1/10/2020

	99	20150381653		2015-12-31	~~Proofpoint, Inc.~~ Starink et al.	
	100	20160014151		2016-01-14	PRAKASH GAGAN	
	101	20160104132		2016-04-14	ABBATIELLO PIERPAOLO	
	102	20160225897		2016-08-04	SRIDHAR SEETHARAMAN	
	103	20160269437		2016-09-15	MCDOUGAL MONTY D	
	104	20170005961		2017-01-05	~~McAfee, Inc.~~ Liebmann et al.	
	105	20170091274		2017-03-30	GUO SONGTAO	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0360

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	
	Examiner Name	
	Attorney Docket Number	MJAKP016C1

	88	20130128883		2013-05-23	LAWSON JEFFREY G	
	89	20130305318		2013-11-14	DELUCA LISA SEACAT	
	90	20130346528		2013-12-26	SHINDE RAJESH	
	91	20140230061		2014-08-14	HIGBEE AARON	
	92	20140250506		2014-09-04	HALLAM-BAKER PHILLIP MARTIN	
Change(s) applied to document, /J.K./ 1/10/2020	93	20140259158		2014-09-11	~~BANK OF AMERICA CORPORATION~~ Brown et al.	
	94	20140366144		2014-12-11	ALPEROVITCH DMITRI	
	95	20150030156		2015-01-29	PEREZ JOHN S	
	96	20150067833		2015-03-05	VERMA RAKESH	
	97	20150081722		2015-03-19	TERADA TAKEAKI	
	98	20150288714		2015-10-08	EMIGH AARON T	

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/180,373	03/24/2020	10601983	MJAKP016C1	3758

21912 7590 03/04/2020

VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

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 0 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):

Bjorn Markus Jakobsson, Portola Valley, CA;
RightQuestion, LLC, Portola Valley, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

Doc Code: PET.AUTO Document Description: Petition automatically granted by EFS-Web	PTO/SB/140 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**PETITION TO WITHDRAW AN APPLICATION FROM ISSUE AFTER PAYMENT OF THE ISSUE FEE UNDER 37 CFR 1.313(c)**
Application Number	16180373
Filing Date	05-Nov-2018
First Named Inventor	Bjorn Jakobsson
Art Unit	2653
Examiner Name	AKELAW TESHALE
Attorney Docket Number	MJAKP016C1
Title	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA

An application may be withdrawn from issue for further action upon petition by the applicant. To request that the Office withdraw an application from issue, applicant must file a petition under this section including the fee set forth in § 1.17(h) and a showing of good and sufficient reasons why withdrawal of the application from issue is necessary.

APPLICANT HEREBY PETITIONS TO WITHDRAW THIS APPLICATION FROM ISSUE UNDER 37 CFR 1.313(c).

A grantable petition requires the following items:
(1) Petition fee; and
(2) One of the following reasons:
(a) Unpatentability of one or more claims, which must be accompanied by an unequivocal statement that one or more claims are unpatentable, an amendment to such claim or claims, and an explanation as to how the amendment causes such claim or claims to be patentable;
(b) Consideration of a request for continued examination in compliance with § 1.114 (for a utility or plant application only); or
(c) Express abandonment of the application. Such express abandonment may be in favor of a continuing application, but not a CPA under 37 CFR 1.53(d).

Petition Fee

- (•) Small Entity
- ( ) Micro Entity
- ( ) Regular Undiscounted

Reason for withdrawal from issue

◯ One or more claims are unpatentable ◉ Consideration of a request for continued examination (RCE) (List of Required Documents and Fees) ◯ Applicant hereby expressly abandons the instant application (any attorney/agent signing for this reason must have power of attorney pursuant to 37 CFR 1.32(b)).
RCE request,submission, and fee. ☐ I certify, in accordance with 37 CFR 1.4(d)(4) that : The RCE request ,submission, and fee have already been filed in the above-identified application on ☒ Are attached.
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◉ An attorney or agent registered to practice before the Patent and Trademark Office who has been given power of attorney in this application. ◯ An attorney or agent registered to practice before the Patent and Trademark Office, acting in a representative capacity. ◯ A sole inventor ◯ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ◯ A joint inventor; all of whom are signing this e-petition

Signature	/Yeu-Ting George Cheng/
Name	Yeu-Ting George Cheng
Registration Number	69408

Electronic Acknowledgement Receipt

EFS ID:	38848265
Application Number:	16180373
International Application Number:	
Confirmation Number:	3758
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Customer Number:	21912
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Filer Authorized By:	Yeu-Ting George Cheng
Attorney Docket Number:	MJAKP016C1
Receipt Date:	12-MAR-2020
Filing Date:	05-NOV-2018
Time Stamp:	14:53:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$720
RAM confirmation Number	E20203BE53013021
Deposit Account	500685
Authorized User	Elaine Nguyen

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

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 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	Petition automatically granted by EFS	petition-request.pdf	31611 179e8281735a213a6ef2b94f2989421da12ee6bd	no	2
Warnings:					
Information:					
2	Quick Path Information Disclosure Statement	MJAKP016C1_IDS_08_QPIDS.pdf	167224 59b8719bd1b84f9a1d65f3fac828a66e2c80ac32	no	2
Warnings:					
Information:					
3	Request for Continued Examination (RCE)	MJAKP016C1_IDS_08_RCE.pdf	1322981 f65fec0f78c54f2158fe01bbfad99c37b10d4d0b	no	3
Warnings:					
Information:					
4	Quick Path Information Disclosure Statement	MJAKP016C1_IDS_08_SB08.pdf	71913 1c7cb9381a5de31fcc63c84a9d6f30e3a0856a0f	no	4
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	32436 bdb3d1de83177001b097ff4cfba04aba12d39042	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1626165		

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.

Electronic Patent Application Fee Transmittal

Application Number:	16180373
Filing Date:	05-Nov-2018
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Attorney Docket Number:	MJAKP016C1

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
PETITION FEE-37CFR 1.17(H) (GROUP II)	2464	1	70	70
RCE- 1ST REQUEST	2801	1	650	650
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**720**

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Decision Date : March 12, 2020

In re Application of :

Bjorn Jakobsson

DECISION ON PETITION

UNDER CFR 1.313(c)(2)

Application No : 16180373

Filed : 05-Nov-2018

Attorney Docket No : MJAKP016C1

This is an electronic decision on the petition under 37 CFR 1.313(c)(2), filed March 12, 2020 , to withdraw the above-identified application from issue after payment of the issue fee.

The petition is **GRANTED.**

The above-identified application is withdrawn from issue for consideration of a submission under 37 CFR 1.114 (request for continued examination). See 37 CFR 1.313(c)(2).

Petitioner is advised that the issue fee paid in this application cannot be refunded. If, however, this application is again allowed, petitioner may request that it be applied towards the issue fee required by the new Notice of Allowance.

Telephone inquiries concerning this decision should be directed to the Patent Electronic Business Center (EBC) at 866-217-9197.

This application file is being referred to Technology Center AU 2653 for processing of the request for continuing examination under 37 CFR 1.114 .

Office of Petitions

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	16/180,373	Filing Date	2018-11-05	Docket Number (if applicable)	MJAKP016C1	Art Unit	2653
First Named Inventor	Bjorn Markus Jakobsson			Examiner Name	Akelaw Teshale		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8 1995, to any international application that does not comply with the requirements of 35 U.S.C. 371, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV.

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the orde in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☐ Amendment/Reply

☒ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☒ Other QPIDS Transmittal & A Petition to Withdraw from Issue After Payment of the Issue Fee

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 500685

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

EFS - Web 2.1.15

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
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 contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2020-03-12
Name	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is t file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Tim will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions fo 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, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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 informatio 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 the Freedom of Information Act requires disclosure of these records.

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 ma 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 inspections 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.

Electronic Acknowledgement Receipt

EFS ID:	38919546
Application Number:	16180373
International Application Number:	
Confirmation Number:	3758
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Customer Number:	21912
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Filer Authorized By:	Yeu-Ting George Cheng
Attorney Docket Number:	MJAKP016C1
Receipt Date:	19-MAR-2020
Filing Date:	05-NOV-2018
Time Stamp:	20:57:37
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1020
RAM confirmation Number	E20203IK57330711
Deposit Account	500685
Authorized User	Elaine Nguyen

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

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 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	Petition automatically granted by EFS	petition-request.pdf	31613 4c67c350a52a36490cc53284076f722172eb cb4b	no	2
Warnings:					
Information:					
2	Quick Path Information Disclosure Statement	MJAKP016C1_IDS_09_QPIDS. pdf	166977 813d0d802d297900a86a35c92ff4d7bc152f 34d7	no	2
Warnings:					
Information:					
3	Request for Continued Examination (RCE)	MJAKP016C1_IDS_09_RCE.pdf	1322812 6551fe95a14bcf4e2c0f49e3d14194fd7302 86d3	no	3
Warnings:					
Information:					
4	Quick Path Information Disclosure Statement	MJAKP016C1_IDS_09_SB08-1. pdf	71713 b0803b78391e68dccaec5fd1eb0f8c974d0 40c6c	no	4
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	32540 0fa99a2880b82c22a09841a868368f491c81 bb6c	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1625655		

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Decision Date : March 19, 2020

In re Application of :

Bjorn Jakobsson

DECISION ON PETITION

UNDER CFR 1.313(c)(2)

Application No : 16180373

Filed : 05-Nov-2018

Attorney Docket No : MJAKP016C1

This is an electronic decision on the petition under 37 CFR 1.313(c)(2), filed March 19, 2020 , to withdraw the above-identified application from issue after payment of the issue fee.

The petition is **GRANTED.**

The above-identified application is withdrawn from issue for consideration of a submission under 37 CFR 1.114 (request for continued examination). See 37 CFR 1.313(c)(2).

Petitioner is advised that the issue fee paid in this application cannot be refunded. If, however, this application is again allowed, petitioner may request that it be applied towards the issue fee required by the new Notice of Allowance.

Telephone inquiries concerning this decision should be directed to the Patent Electronic Business Center (EBC) at 866-217-9197.

This application file is being referred to Technology Center AU 2653 for processing of the request for continuing examination under 37 CFR 1.114 .

Office of Petitions

Doc Code: PET.AUTO Document Description: Petition automatically granted by EFS-Web	PTO/SB/140 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**PETITION TO WITHDRAW AN APPLICATION FROM ISSUE AFTER PAYMENT OF THE ISSUE FEE UNDER 37 CFR 1.313(c)**
Application Number	16180373
Filing Date	05-Nov-2018
First Named Inventor	Bjorn Jakobsson
Art Unit	2653
Examiner Name	AKELAW TESHALE
Attorney Docket Number	MJAKP016C1
Title	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA

An application may be withdrawn from issue for further action upon petition by the applicant. To request that the Office withdraw an application from issue, applicant must file a petition under this section including the fee set forth in § 1.17(h) and a showing of good and sufficient reasons why withdrawal of the application from issue is necessary.

APPLICANT HEREBY PETITIONS TO WITHDRAW THIS APPLICATION FROM ISSUE UNDER 37 CFR 1.313(c).

A grantable petition requires the following items:
(1) Petition fee; and
(2) One of the following reasons:
(a) Unpatentability of one or more claims, which must be accompanied by an unequivocal statement that one or more claims are unpatentable, an amendment to such claim or claims, and an explanation as to how the amendment causes such claim or claims to be patentable;
(b) Consideration of a request for continued examination in compliance with § 1.114 (for a utility or plant application only); or
(c) Express abandonment of the application. Such express abandonment may be in favor of a continuing application, but not a CPA under 37 CFR 1.53(d).

Petition Fee

◉	Small Entity
○	Micro Entity
○	Regular Undiscounted

Reason for withdrawal from issue

◯ One or more claims are unpatentable ◉ Consideration of a request for continued examination (RCE) (List of Required Documents and Fees) ◯ Applicant hereby expressly abandons the instant application (any attorney/agent signing for this reason must have power of attorney pursuant to 37 CFR 1.32(b)).
RCE request,submission, and fee. ☐ I certify, in accordance with 37 CFR 1.4(d)(4) that : The RCE request ,submission, and fee have already been filed in the above-identified application on ☒ Are attached.
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◉ An attorney or agent registered to practice before the Patent and Trademark Office who has been given power of attorney in this application. ◯ An attorney or agent registered to practice before the Patent and Trademark Office, acting in a representative capacity. ◯ A sole inventor ◯ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ◯ A joint inventor; all of whom are signing this e-petition

Signature	/Yeu-Ting George Cheng/
Name	Yeu-Ting George Cheng
Registration Number	69408

Electronic Patent Application Fee Transmittal

Application Number:	16180373
Filing Date:	05-Nov-2018
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Attorney Docket Number:	MJAKP016C1

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
PETITION FEE-37CFR 1.17(H) (GROUP II)	2464	1	70	70
RCE- 2ND AND SUBSEQUENT REQUEST	2820	1	950	950
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1020**

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-14)
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	16/180,373	Filing Date	2018-11-05	Docket Number (if applicable)	MJAKP016C1	Art Unit	2653
First Named Inventor	Bjorn Markus Jakobsson			Examiner Name	Akelaw Teshale		

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☐ Other _____

☒ Enclosed

☐ Amendment/Reply

☒ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☒ Other QPIDS Transmittal & A Petition to Withdraw from Issue After Payment of the Issue Fee

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

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☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 500685

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-14)
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Signature of Registered U.S. Patent Practitioner			
Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2020-03-19
Name	Yeu-Ting George Cheng	Registration Number	69408

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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.

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United States Patent and Trademark Office

Office of the Chief Financial Officer

Document Code:WFEE

User :70972

Sale Accounting Date:03/20/2020

Sale Item Reference Number	Effective Date
16180373	03/19/2020

Document Number	Fee Code	Fee Code Description	Amount Paid	Payment Method
I20203J008422449	2806	SUBMISSION- INFORMATION DISCLOSURE STMT	$120.00	Deposit Account

Espacenet

Bibliographic data: JP2011100489 (A) — 2011-05-19

USER CONFIRMATION DEVICE AND METHOD, AND PROGRAM

Inventor(s): KATO TAKANARI ± (KATO TAKANARI)

Applicant(s): BANK OF TOKYO MITSUBISHI UFJ ± (BANK OF TOKYO-MITSUBISHI UFJ LTD)

Classification: **- international:** ***G06F15/00; G06F21/20; H04L9/32***
- cooperative:

Application number: JP20110022895 20110204 Global Dossier

Priority number(s): JP20110022895 20110204

Also published as: JP4964338 (B2)

Abstract of JP2011100489 (A)

PROBLEM TO BE SOLVED: To enhance accuracy of user confirmation without impairing convenience of a user. SOLUTION: A user confirmation device includes: an extraction means extracting user agent information set in an HTTP (HyperText Transfer Protocol) header from a packet received from a terminal device; an information management means making a storage means store the user agent information extracted from the packet received from the terminal device operated by each user by the extraction means associatively with user identification information of each user; and a decision means collating the user agent information extracted from the packet received from an optional terminal device by the extraction means with the user agent information stored in the storage means associatively with the user identification information of the user operating the optional terminal device, and deciding whether the user agent information corresponds to the user agent information stored in the storage means to decide whether the user operating the optional terminal device is a valid user. ;COPYRIGHT: (C)2011,JPO&INPIT

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0386

(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2011-100489
(P2011-100489A)
(43)公開日　平成23年5月19日(2011.5.19)

(51)Int.Cl.		F I			テーマコード（参考）
G06F 21/20	(2006.01)	G06F	15/00	330C	5B285
G06F 15/00	(2006.01)	G06F	15/00	ZEC	5J104
H04L 9/32	(2006.01)	H04L	9/00	673A	

審査請求 有　請求項の数 6　ＯＬ　（全 25 頁）

(21)出願番号　特願2011-22895 (P2011-22895)
(22)出願日　平成23年2月4日 (2011.2.4)
(62)分割の表示　特願2010-212465 (P2010-212465)の分割
原出願日　平成18年3月29日 (2006.3.29)

(71)出願人　598049322
株式会社三菱東京ＵＦＪ銀行
東京都千代田区丸の内２丁目７番１号
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特許業務法人高橋・林アンドパートナーズ
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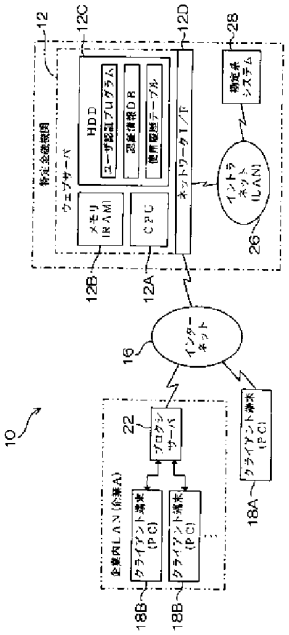
東京都千代田区丸の内２－７－１　株式会社三菱東京ＵＦＪ銀行内

Ｆターム(参考)　5B285 AA01 BA01 BA03 CA02 CA04
CA05 CA12 CA16 CA17 CA32
CB02 CB43 CB45 CB47 CB52
CB55 CB56 CB62 CB73 CB84
DA05 DA06
5J104 AA07 AA16 EA03 EA16 KA01
NA05 NA36 PA07

(54)【発明の名称】ユーザ確認装置、方法及びプログラム

(57)【要約】
【課題】ユーザの利便性を損なうことなくユーザ確認の精度を向上させる。
【解決手段】端末装置より受信したパケットから、HTTPヘッダに設定されているユーザエージェント情報を抽出する抽出手段と、個々のユーザが操作する端末装置より受信したパケットから抽出手段によって各々抽出されたユーザエージェント情報を、個々のユーザのユーザ識別情報と対応付けて記憶手段に各々記憶させる情報管理手段と、任意の端末装置より受信したパケットから抽出手段によって抽出されたユーザエージェント情報を、任意の端末装置を操作しているユーザのユーザ識別情報と対応付けて記憶手段に記憶されているユーザエージェント情報と照合し、記憶手段に記憶されているユーザエージェント情報と対応しているか否かを判定することで、任意の端末装置を操作しているユーザが正当なユーザか否かを判断する判断手段と、を含むユーザ確認装置を提供する。
【選択図】図１



【特許請求の範囲】
【請求項１】
インターネット層のプロトコルとしてIPが適用され、アプリケーション層のプロトコルとしてHTTPが適用されて端末装置より受信したパケットから、当該パケットのHTTPヘッダに設定されているユーザエージェント情報を抽出する抽出手段と、
個々のユーザが操作する端末装置より受信したパケットから前記抽出手段によって各々抽出されたユーザエージェント情報を、前記個々のユーザのユーザ識別情報と対応付けて記憶手段に各々記憶させる情報管理手段と、
任意の端末装置より受信したパケットから前記抽出手段によって抽出されたユーザエージェント情報を、前記任意の端末装置を操作しているユーザのユーザ識別情報と対応付けて前記記憶手段に記憶されているユーザエージェント情報と照合し、前記記憶手段に記憶されているユーザエージェント情報と対応しているか否かを判定することで、前記任意の端末装置を操作しているユーザが正当なユーザか否かを判断する判断手段と、
を含むユーザ確認装置。
【請求項２】
前記ユーザエージェント情報は、前記端末装置にインストールされている該端末装置のオペレーティングシステム名及びオペレーティングシステムのバージョン情報のいずれか若しくは両方、前記端末装置にインストールされているブラウザ名及びブラウザのバージョン情報のいずれか若しくは両方、またはオペレーティングシステム及びブラウザのいずれか若しくは両方のパッチ情報から選択される１以上を含むことを特徴とする請求項１記載のユーザ確認装置。
【請求項３】
前記個々のユーザが使用している電子メールアドレスを前記個々のユーザのユーザ識別情報と対応付けて各々管理する電子メールアドレス記憶手段と、
前記判断手段により、前記任意の端末装置を操作しているユーザが正当なユーザでないと判断された場合に、前記判断手段と異なる方法によって前記ユーザが正当なユーザか否かを確認するための所定のウェブページへのリンクが付加された電子メールを、前記ユーザのユーザ識別情報と対応付けて前記電子メールアドレス記憶手段に記憶されている電子メールアドレスへ送信する送信手段と、
を含む請求項１または２に記載のユーザ確認装置。
【請求項４】
請求項１から３いずれかに記載のユーザ確認装置にネットワーク回線を介して接続された端末装置を含むユーザ認証システムであって、
前記端末装置は、該端末装置にインストールされているユーザエージェント情報を、前記ユーザ確認装置に対してパケット送信する際、HTTPヘッダに設定することを特徴とするユーザ認証システム。
【請求項５】
インターネット層のプロトコルとしてIPが適用され、アプリケーション層のプロトコルとしてHTTPが適用されて端末装置より受信したパケットから、当該パケットのHTTPヘッダに設定されているユーザエージェント情報をサーバが抽出し、
個々のユーザが操作する端末装置より受信したパケットから前記抽出されたユーザエージェント情報を、前記個々のユーザのユーザ識別情報と対応付けて前記サーバの記憶手段に前記サーバが各々記憶し、
任意の端末装置より受信したパケットから前記抽出されたユーザエージェント情報を、前記任意の端末装置を操作しているユーザのユーザ識別情報と対応付けて前記記憶手段に記憶されているユーザエージェント情報と照合し、前記記憶手段に記憶されているユーザエージェント情報と対応しているか否かを判定することで、前記任意の端末装置を操作しているユーザが正当なユーザか否かを前記サーバが判断すること、
を含むユーザ確認方法。
【請求項６】

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前記ユーザエージェント情報は、前記端末装置にインストールされている該端末装置のオペレーティングシステム名及びオペレーティングシステムのバージョン情報のいずれか若しくは両方、前記端末装置にインストールされているブラウザ名及びブラウザのバージョン情報のいずれか若しくは両方、またはオペレーティングシステム及びブラウザのいずれか若しくは両方のパッチ情報から選択される１以上を含むことを特徴とする請求項５記載のユーザ確認方法。

【発明の詳細な説明】

【技術分野】

【０００１】

本発明はユーザ確認装置、方法及びプログラムに係り、特に、端末装置を操作しているユーザが正当なユーザか否かを確認するユーザ確認装置、該ユーザ確認装置に適用可能なユーザ確認方法、及び、コンピュータを前記ユーザ確認装置として機能させるためのユーザ確認プログラムに関する。

【背景技術】

【０００２】

予め登録したユーザに対してオンラインで所定のサービスを提供するウェブサイトでは、端末装置を介してウェブサイトにアクセスしてきた利用者にユーザＩＤ及びパスワードを入力させ、入力されたユーザＩＤとパスワードの組合わせが登録されているか否かに基づいて、アクセスしてきた利用者が正当なユーザか否かを確認するユーザ確認方法が採用されることが一般的である。しかし、上記のユーザ確認方法は、仮にユーザＩＤとパスワードが他者へ漏洩してしまった場合に、ユーザＩＤとパスワードを知った者が正当なユーザになりすまして不正にアクセスすることが可能になってしまうという欠点がある。

【０００３】

上記に関連して特許文献１には、ユーザＩＤ及びパスワードに加え、電話交換機から通知された発信者の電話番号が登録ユーザが使用する電話回線の電話番号と一致しているか否かも判定することで、ユーザの認証を行う技術が開示されている。

【０００４】

また特許文献２には、サービスの利用を許容するＩＰアドレス（及びリンク元ＵＲＬ）をＩＤ・パスワードと共にデータベースに保存しておき、ＩＤ・パスワードによる認証に加え、アクセス元ＩＰアドレスがデータベースに登録されているか否か（及び、アクセス信号中にリンク元ＵＲＬが存在している場合は、当該リンク元ＵＲＬがデータベースに登録されているか否か）を判断することで、サービスの利用を許容するか否かを判断する技術が開示されている。

【先行技術文献】

【特許文献】

【０００５】

【特許文献１】特開平２０００－２０９２８４号公報

【特許文献２】特開平２００１－３２５２２９号公報

【発明の概要】

【発明が解決しようとする課題】

【０００６】

特許文献１，２に記載の技術は、電話番号やＩＰアドレスを利用してアクセス元の端末装置が正当な端末装置か否かを判断することで、アクセス元の端末装置を操作しているユーザが正当なユーザか否か（第三者が正当なユーザになりすましていないか否か）を確認している。しかしながら、特許文献１に記載の技術は、電話番号を用いることで端末装置を一意に特定できるという利点を有しているものの、電話交換機を介してネットワークに接続された端末装置以外には適用できないという問題がある。

【０００７】

また、特許文献２に記載の技術で用いられているＩＰアドレスは、グローバルＩＰアドレスが固定的に付与された端末装置であれば常に一定であるものの、このような端末装置

はごく少数であり、殆どの端末装置は、例えばインターネットへのアクセス時に、インターネット・サービス・プロバイダ（Internet service provider：インターネット接続業者、以下単に「プロバイダ」という）が保有している多数のグローバルＩＰアドレスの中から任意のＩＰアドレスが自動的に割り当てされるので、アクセスの都度ＩＰアドレスが相違する。このため、特許文献２に記載の技術のように、ＩＰアドレスが一致しているか否かに基づいてユーザの確認や認証を行った場合、正当なユーザによるアクセスを不正アクセスと誤判断したり、正当でないユーザを正当なユーザと誤判断する恐れがある。

【０００８】

また、なりすましを防止してセキュリティ性を向上させる技術として、ユーザＩＤとパスワードに基づくユーザ認証に先立ち、電子証明書を利用して端末装置の認証を行う技術も知られている。この技術を適用すれば、仮にユーザＩＤとパスワードが他者へ漏洩してしまったとしても、ユーザＩＤとパスワードを知った者が正規の電子証明書がインストールされた端末装置を操作しない限りは不正を防止できる。但し、この技術を適用するためには、端末装置に電子証明書をインストールするという煩雑な作業を行う必要があり、ユーザの負担が大きいという問題がある。

【０００９】

本発明は上記事実を考慮して成されたもので、ユーザの利便性を損なうことなくユーザ確認の精度を向上させることができるユーザ確認装置、ユーザ確認方法及びユーザ確認プログラムを得ることが目的である。

【課題を解決するための手段】

【００１０】

端末装置との通信におけるアプリケーション層のプロトコルとしてＨＴＴＰ(HyperText Transfer Protocol)を適用した場合、端末装置から受信するパケットにはＨＴＴＰヘッダが付加されるが、このＨＴＴＰヘッダにはユーザエージェント（User-Agent）情報が含まれている。ユーザエージェント情報は、ＨＴＴＰプロトコル上でフォーマット等が規定されておらず、任意の文字列を設定可能とされている。例えば端末装置がＰＣ（Personal Computer：パーソナル・コンピュータ）等のコンピュータであり、当該コンピュータからパケットを送信するアプリケーションがブラウザ（browser：閲覧ソフト）である場合、ブラウザのデフォルトの設定では、ユーザエージェント情報として、当該コンピュータ上で動作しているＯＳ（オペレーティング・システム：Operating System）のバージョン等を表す情報と、ブラウザのバージョン等を表す情報を含む情報が設定される。また、コンピュータを操作するユーザによっては、ユーザエージェント情報として所望の文字列が送信されるように、ブラウザ等の設定が予め変更される場合もある。

【００１１】

デフォルトの設定のブラウザによって設定されるユーザエージェント情報には、ＯＳやブラウザのバージョン以外に、ＯＳやブラウザにパッチがどこまで当たっているかといった情報も含まれているので、デフォルトの設定のブラウザによってユーザエージェント情報が設定される場合、同一のユーザエージェント情報を送信する端末装置は存在するものの、個々の端末装置が送信するユーザエージェント情報の相違度は高い。また、ユーザエージェント情報は、ＯＳやブラウザに新たなパッチが当てられたり、バージョンアップや入れ替えが行われれば内容が変更されるが、ＯＳやブラウザに新たなパッチを当てられたり、ＯＳやブラウザのバージョンアップや入れ替えが行われて内容が変更される頻度は非常に低いので、個々の端末装置から送信されるユーザエージェント情報はおよそ一定とみなすことができる。また、ユーザエージェント情報として所望の文字列が送信されるようにユーザによって予め設定された場合、個々の端末装置が送信するユーザエージェント情報の相違度は更に高くなる。

【００１２】

本願発明者は上記事実に着目し、或るユーザが操作する端末装置から以前に受信したパケットのＨＴＴＰヘッダに設定されているユーザエージェント情報全体を記憶しておき、同一と推定されるユーザが操作する端末装置から受信したパケットのＨＴＴＰヘッダに設

定されているユーザエージェント情報全体を、記憶しているユーザエージェント情報全体と照合することで、ユーザエージェント情報のフォーマットや内容が事前に変更設定されていたとしても、これを検知することなく、今回受信したパケットを送信した端末装置が、以前受信したパケットを送信した端末装置と同一か否かを判定することができ、ユーザ確認の精度を向上させることができることに想到して本発明を成すに至った。

【００１３】

上記に基づき第１の発明に係るユーザ確認装置は、インターネット層のプロトコルとしてＩＰが適用され、アプリケーション層のプロトコルとしてＨＴＴＰが適用されて端末装置より受信したパケットから、当該パケットのＨＴＴＰヘッダに設定されているユーザエージェント情報全体を抽出すると共に、前記パケットからアクセス元ＩＰアドレスを抽出する抽出手段と、個々のユーザが操作する端末装置より受信したパケットから前記抽出手段によって各々抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体を、前記個々のユーザのユーザ識別情報と対応付けて記憶手段に各々記憶させる情報管理手段と、任意の端末装置より受信したパケットから前記抽出手段によって抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体を、前記任意の端末装置を操作しているユーザのユーザ識別情報と対応付けて前記記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と照合し、前記記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と対応しているか否かを各々判定することで、前記任意の端末装置を操作しているユーザが正当なユーザか否かを判断する判断手段と、を含み、前記判断手段は、前記受信したパケットから抽出されたアクセス元ＩＰアドレスについては、前記記憶手段に記憶されているアクセス元ＩＰアドレスとの所定ビット単位の一致率が閾値以上か否かを判定することで、前記受信したパケットから抽出されたアクセス元ＩＰアドレスが前記記憶手段に記憶されているアクセス元ＩＰアドレスと対応しているか否かを判定し、前記受信したパケットから抽出されたユーザエージェント情報全体については、前記記憶手段に記憶されているユーザエージェント情報全体と同一か否かを判定することで、前記受信したパケットから抽出されたユーザエージェント情報全体が前記記憶手段に記憶されているユーザエージェント情報と対応しているか否かを判定することを特徴としている。

【００１４】

第１の発明は、インターネット層のプロトコルとしてＩＰ（Internet Protocol）が適用され、アプリケーション層のプロトコルとしてＨＴＴＰが適用されて端末装置より受信したパケットから、当該パケットのＨＴＴＰヘッダに設定されているユーザエージェント情報全体を抽出すると共に、前記パケットからアクセス元ＩＰアドレスを抽出する抽出手段を備えており、情報管理手段は、個々のユーザが操作する端末装置より受信したパケットから抽出手段によって各々抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体を、個々のユーザのユーザ識別情報と対応付けて記憶手段に各々記憶させる。なお、ユーザ識別情報としては、例えば端末装置を操作する個々のユーザによって入力されたユーザＩＤや、このユーザＩＤから一意に定まる他の識別情報を適用することができる。また、ユーザエージェント情報全体は記憶手段にそのまま記憶させてもよいが、ハッシュ関数を用いる方法等の公知の暗号化方法を適用して暗号化した後に記憶手段に記憶させるようにした方がセキュリティ上好ましい。

【００１５】

また、第１の発明に係る判断手段は、任意の端末装置より受信したパケットから抽出手段によって抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体を、任意の端末装置を操作しているユーザのユーザ識別情報と対応付けて記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と照合し、記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と対応しているか否かを各々判定することで、任意の端末装置を操作しているユーザが正当なユーザか否かを判断する。

【００１６】

前述のように、個々の端末装置から送信されるユーザエージェント情報はおよそ一定とみなすことができる。アプリケーション層のプロトコルとしてＨＴＴＰが適用された場合、端末装置より受信したパケットのＨＴＴＰヘッダには必ずユーザエージェント情報が設定されているので、ユーザエージェント情報全体を利用したユーザ（端末装置）の確認は、電話交換機を介してネットワークに接続された端末装置以外には適用できない特許文献１に記載の技術よりも汎用性が高く、アクセスの都度変化する可能性があるＩＰアドレスのみを用いる技術よりも確認の精度が高く、端末装置に電子証明書をインストールする等の煩雑な作業も不要である。また、ユーザエージェント情報全体を照合することで、例えば、ユーザエージェント情報として所望の文字列が送信されるようにユーザによってユーザエージェント情報が変更設定された等のように、ユーザエージェント情報のフォーマットや内容が事前に変更設定されていたとしても、これを検知することなく、任意の端末装置を操作しているユーザが正当なユーザか否かを判断することができる。

【００１７】

また、個々の端末装置に割り当てされるＩＰアドレスはアクセスの都度相違する可能性があるものの、個々のプロバイダが端末への割り当て用に保有しているＩＰアドレス（グローバルＩＰアドレス）は一定の範囲内でかつ個々のプロバイダ毎に相違しており、個々の端末装置は各々一定のプロバイダを経由してアクセスするので、個々の端末装置がアクセスの都度割り当てされるＩＰアドレスは常に同一ではないものの、例えば上位数ビットは常に一定等のように一致度が高い。

【００１８】

上記に基づき第１の発明では、端末装置より受信したパケットからユーザエージェント情報全体に及びアクセス元ＩＰアドレスを各々抽出し、抽出したアクセス元ＩＰアドレス及びユーザエージェント情報全体をユーザ識別情報と対応付けて記憶手段に各々記憶させておき、任意の端末装置より受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が、任意の端末装置を操作しているユーザのユーザ識別情報全体と対応付けて記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と対応しているか否かを各々判定することで、任意の端末装置を操作しているユーザが正当なユーザか否かを判断している。更に、判断手段は、受信したパケットから抽出されたアクセス元ＩＰアドレスについては、記憶手段に記憶されているアクセス元ＩＰアドレスとの所定ビット単位の一致率が閾値以上か否かを判定することで、受信したパケットから抽出されたアクセス元ＩＰアドレスが記憶手段に記憶されているアクセス元ＩＰアドレスと対応しているか否かを判定し、受信したパケットから抽出されたユーザエージェント情報全体については、記憶手段に記憶されているユーザエージェント情報全体と同一か否かを判定することで、受信したパケットから抽出されたユーザエージェント情報全体が記憶手段に記憶されているユーザエージェント情報全体と対応しているか否かを判定するように構成されている。これにより、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が、記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と対応しているか否かを正確に判定することができ、今回パケットを受信した端末装置が、同一のユーザによって過去に使用された端末装置か否かに基づいて、今回パケットを受信した端末装置を操作しているユーザが正当なユーザか否かを判断することができ、ユーザの利便性を損なうことなくユーザ確認の精度を向上させることができる。

【００１９】

また、第２の発明は、第１の発明において、個々のユーザが各々不定の端末装置からアクセスすることを許容するために、情報管理手段は、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と照合された結果、判断手段により、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と対応していないと判定された場合に、受信したパケットから抽出されたアクセス元Ｉ

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Ｐアドレス及びユーザエージェント情報全体をユーザ識別情報と対応付けて記憶手段に追加記憶させ、判断手段は、任意の端末装置を操作しているユーザのユーザ識別情報と対応付けられたアクセス元ＩＰアドレス及びユーザエージェント情報全体が記憶手段に複数組記憶されている場合、任意の端末装置より受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体を、複数組記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と各々照合することで、任意の端末装置を操作しているユーザが正当なユーザか否かを判断することを特徴としている。

【００２０】

第２の発明では、個々のユーザが過去に使用していない新たな端末装置を介してアクセスしてきた場合、判断手段により、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が、記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と判定され、正当なユーザでないと判断されることになるが、この場合、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が、情報管理手段によってユーザ識別情報と対応付けて記憶手段に追加記憶される。そして判断手段は、端末装置を操作しているユーザのユーザ識別情報と対応付けられたアクセス元ＩＰアドレス及びユーザエージェント情報全体が記憶手段に複数組記憶されている場合に、任意の端末装置より受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体を、複数組記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と各々照合することで、任意の端末装置を操作しているユーザが正当なユーザか否かを判断するので、上記の新たな端末装置を介しての次回以降のアクセスでは正当なユーザと判断されることになる。

【００２１】

このように、第２の発明では、個々のユーザが、例えば自宅に設置された端末装置や職場に設置された端末装置等の複数の端末装置のうちの所望の端末装置を用いてアクセスすることも可能となる。なお、個々のユーザが各々不定の端末装置からアクセスすることを許容した場合であっても、個々のユーザが使用する端末装置の数は限られていることが殆どであるので、毎回新たな端末装置を介してアクセスが行われることで、正当なユーザでないと毎回判断されることは極めて稀である。

【００２２】

なお、第２の発明において、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と対応していないと判定された場合、情報管理手段は、パケット送信元の端末装置を操作しているユーザが、判断手段と異なる方法によって正当なユーザであることが確認されたときにのみ、アクセス元ＩＰアドレス及びユーザエージェント情報全体を記憶手段に追加記憶させるようにしてもよい。

【００２３】

また、第２の発明において、判断手段は、例えば第３の発明として記載したように、任意の端末装置を操作しているユーザのユーザ識別情報と対応付けられたアクセス元ＩＰアドレス及びユーザエージェント情報全体が記憶手段に複数組記憶されている場合、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が、記憶手段に記憶されている複数組のアクセス元ＩＰアドレス及びユーザエージェント情報全体のうちの少なくとも１組のアクセス元ＩＰアドレス及びユーザエージェント情報全体と各々対応していると判定した場合に、任意の端末装置を操作しているユーザが正当なユーザであると判断するように構成することができる。これにより、正当なユーザが複数台の端末装置を選択的に用いてアクセスを行う等の場合にも、正当なユーザを精度良く判断することができる。

【００２４】

また、第２の発明において、判断手段は、例えば第４の発明として記載したように、任意の端末装置を操作しているユーザのユーザ識別情報と対応付けられたアクセス元ＩＰアドレス及びユーザエージェント情報全体が記憶手段に複数組記憶されている場合、複数組

のアクセス元ＩＰアドレス及びユーザエージェント情報全体の中に、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体と各々対応していると判定したアクセス元ＩＰアドレス及びユーザエージェント情報全体の組が存在していなかった場合に、任意の端末装置を操作しているユーザが正当なユーザでないと判断するように構成することができる。これにより、正当なユーザでない第三者がアクセスしてきた場合にも、過去のアクセスと比較してアクセス元ＩＰアドレス及びユーザエージェント情報全体の少なくとも一方が各々異なることに基づいて正当なユーザでないと判断することができ、正当なユーザでない第三者を精度良く判断することができる。

【００２５】

なお、第４の発明において、パケット送信元の端末装置を操作しているユーザが正当なユーザであっても、例えば多数台の端末装置の中から毎回異なる端末装置を用いてアクセスしている場合や、一定の端末装置を用いてアクセスしているものの、アクセスに用いている端末装置がノート型ＰＣ等の携帯型の端末装置であり、毎回異なるホットスポット（HOTSPOT：公衆無線ＬＡＮを利用可能な場所）を利用してアクセスしている場合等のように、利用環境が特殊である場合には、記憶手段に記憶されている複数組のアクセス元ＩＰアドレス及びユーザエージェント情報全体の中に、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体と各々対応していると判定したアクセス元ＩＰアドレス及びユーザエージェント情報全体の組が存在していないことで、正当なユーザでないと判断されるという不都合が生ずる。

【００２６】

上記を考慮すると、第４の発明において、例えば第５の発明として記載したように、情報管理手段は、判断手段によって正当なユーザでないと判断されたユーザが、判断手段によるユーザ確認と異なる確認方法によって正当なユーザであると判断されたことが通知された場合、所定の識別情報をユーザのユーザ識別情報と対応付けて記憶手段に各々記憶させ、判断手段は、任意の端末装置を操作しているユーザのユーザ識別情報と対応付けられて記憶手段に所定の識別情報が記憶されており、かつ、複数組のアクセス元ＩＰアドレス及びユーザエージェント情報全体の中に、受信したパケットから抽出されたアクセス元ＩＰアドレスと対応していると判定したアクセス元ＩＰアドレス及びユーザエージェント情報全体の組が複数存在しているか、又は、受信したパケットから抽出されたユーザエージェント情報全体と対応していると判定したアクセス元ＩＰアドレス及びユーザエージェント情報全体の組が複数存在している場合に、任意の端末装置を操作しているユーザが正当なユーザであると判断するように構成することが好ましい。

【００２７】

第５の発明では、判断手段によって正当なユーザでないと判断されたユーザが、判断手段によるユーザ確認と異なる確認方法によって正当なユーザであると判断されたことが通知された場合、当該ユーザの利用環境が特殊であるとみなして、所定の識別情報をユーザのユーザ識別情報と対応付けて記憶手段に各々記憶させる。そして、記憶手段に所定の識別情報が記憶されているユーザについては、複数組のアクセス元ＩＰアドレス及びユーザエージェント情報の中に、受信したパケットから抽出されたアクセス元ＩＰアドレスと対応していると判定したアクセス元ＩＰアドレス及びユーザエージェント情報全体の組が複数存在しているか、又は、受信したパケットから抽出されたユーザエージェント情報全体と対応していると判定したアクセス元ＩＰアドレス及びユーザエージェント情報全体の組が複数存在している場合に、任意の端末装置を操作しているユーザが正当なユーザであると判断している。

【００２８】

これにより、例えば正当なユーザが多数台の端末装置の中から毎回異なる端末装置を用いてアクセスしている等の場合には、記憶されている複数組のアクセス元ＩＰアドレス及びユーザエージェント情報全体の中に、受信したパケットから抽出されたアクセス元ＩＰアドレスと対応していると判定したアクセス元ＩＰアドレス及びユーザエージェント情報全体の組が複数存在していることに基づいて、正当なユーザであると判断することができ

る。また、正当なユーザが携帯型の端末装置を用い、毎回異なるホットスポットを利用してアクセスしている等の場合には、記憶されている複数組のアクセス元ＩＰアドレス及びユーザエージェント情報全体の中に、受信したパケットから抽出されたユーザエージェント情報全体と対応していると判定したアクセス元ＩＰアドレス及びユーザエージェント情報全体の組が複数存在していることに基づいて、正当なユーザであると判断することができる。従って、第５の発明によれば、ユーザの利用環境が特殊である場合にもユーザ確認を精度良く行うことができる。

【００２９】

また、第１の発明において、例えば第６の発明として記載したように、個々のユーザが使用している電子メールアドレスを個々のユーザのユーザ識別情報と対応付けて各々記憶する電子メールアドレス記憶手段と、判断手段により、任意の端末装置を操作しているユーザが正当なユーザでないと判断された場合に、判断手段と異なる方法によって前記ユーザが正当なユーザか否かを確認するための所定のウェブページへのリンクが付加された電子メールを、前記ユーザのユーザ識別情報と対応付けて電子メールアドレス記憶手段に記憶されている電子メールアドレスへ送信する送信手段と、を更に設けることが好ましい。これにより、判断手段によって正当なユーザでないと判断されたユーザが、判断手段と異なる方法によって正当なユーザか否かの確認を受けるための操作が簡単になり、正当なユーザでないと判断されたユーザの負担を軽減することができる。

【００３０】

また、第２の発明において、情報管理手段を、例えば第７の発明として記載したように、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が記憶手段に複数組記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と各々照合された結果、判断手段により、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が記憶手段に複数組記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体の何れとも対応していないと判定され、かつ、任意の端末装置を操作しているユーザのユーザ識別情報と対応付けて記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体の組の数が所定の上限値に達している場合に、前記受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体を、記憶手段に記憶されている複数組のアクセス元ＩＰアドレス及びユーザエージェント情報全体のうち、記憶手段へ記憶させた時期が最も古いアクセス元ＩＰアドレス及びユーザエージェント情報全体の組に上書きして記憶手段に記憶させるように構成してもよい。

【００３１】

これにより、個々のユーザについて、アクセス元ＩＰアドレス及びユーザエージェント情報全体の組が上限値を越えて記憶手段に記憶されることが防止され、記憶手段の記憶容量を節減できると共に、判断手段が、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体と照合するアクセス元ＩＰアドレス及びユーザエージェント情報全体の組の数も上限値以下になるので、判断手段に多大な負荷が加わることも防止することができる。

【００３２】

なお、第７の発明において、判断手段により、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が記憶手段に複数組記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体の何れとも対応していないと判定され、かつ、任意の端末装置を操作しているユーザのユーザ識別情報と対応付けて記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体の組の数が所定の上限値に達している場合、情報管理手段は、パケット送信元の端末装置を操作しているユーザが、判断手段と異なる方法によって正当なユーザであることが確認されたときにのみ、受信したパケットから抽出された新たなアクセス元ＩＰアドレス及びユーザエージェント情報全体を記憶手段に上書き記憶させるようにしてもよい。

【００３３】

一方、第７の発明において、判断手段により、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が記憶手段に複数組記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体の何れとも対応していないと判定され、かつ、任意の端末装置を操作しているユーザのユーザ識別情報と対応付けて記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体の組の数が所定の上限値に達している場合に、情報管理手段が、新たなアクセス元ＩＰアドレス及びユーザエージェント情報全体を無条件に（前述のように、判断手段と異なる方法によって正当なユーザであることが確認されたか否かに拘わらず）上書き記憶させた場合、新たなアクセス元ＩＰアドレス及びユーザエージェント情報全体が不正アクセスに対応する情報であったときには、正当なユーザに対応する情報が上書きされて消去される可能性があるが、この場合、正当なユーザからのアクセスで「正当なユーザでない」と判断されることで、不正アクセスがあったことを検知できるという効果が得られる。

【００３４】

また、第２の発明において、情報管理手段は、例えば第８の発明として記載したように、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が記憶手段に複数組記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と各々照合された結果、判断手段により、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体が記憶手段に複数組記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体のうちアクセス元ＩＰアドレス及びユーザエージェント情報全体の特定の組に対応していると判定された場合に、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体のうちの少なくともユーザエージェント情報全体を、アクセス元ＩＰアドレス及びユーザエージェント情報全体の特定の組に上書きして記憶手段に記憶させることが好ましい。

【００３５】

前述のように、ユーザエージェント情報は、ブラウザ等のアプリケーションのデフォルトの設定が用いられている場合は、ＯＳやブラウザに新たなパッチが当てられたりバージョンアップや入れ替えが行われた場合に内容が変更され、所望の文字列がユーザエージェント情報として送信されるようにユーザによって設定されている場合は、ユーザエージェント情報として送信する文字列を変更する操作がユーザによって行われると内容が変更されるが、内容が一旦変更された後は当分の間内容は変更されない。このため、上記のように、受信したパケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体のうちの少なくともユーザエージェント情報全体を、対応していると判断されたアクセス元ＩＰアドレス及びユーザエージェント情報全体の特定の組に上書きして記憶手段に記憶させることで、少なくともユーザエージェント情報全体については最新の情報が記憶手段に記憶されることになり、以降のユーザ確認の精度を向上させることができる。なお、第８の発明において、受信したパケットから抽出されたアクセス元ＩＰアドレスについても、ユーザエージェント情報全体と共に上書きして記憶させるようにしてもよいことは言うまでもない。

【００３６】

第９の発明に係るユーザ確認方法は、抽出手段が、インターネット層のプロトコルとしてＩＰが適用され、アプリケーション層のプロトコルとしてＨＴＴＰが適用されて端末装置より受信したパケットから、当該パケットのＨＴＴＰヘッダに設定されているユーザエージェント情報全体を抽出すると共に、前記パケットからアクセス元ＩＰアドレスを抽出し、情報管理手段が、個々のユーザが操作する端末装置より受信したパケットから前記抽出手段によって各々抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体を、前記個々のユーザのユーザ識別情報と対応付けて記憶手段に各々記憶させ、判断手段が、任意の端末装置より受信したパケットから前記抽出手段によって抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体を、前記任意の端末装置を操作しているユーザのユーザ識別情報と対応付けて前記記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と照合し、前記記憶手段に記憶されているアクセス

元ＩＰアドレス及びユーザエージェント情報全体と対応しているか否かを各々判定することで、前記任意の端末装置を操作しているユーザが正当なユーザか否かを判断すると共に、前記判断手段が、前記受信したパケットから抽出されたアクセス元ＩＰアドレスについては、前記記憶手段に記憶されているアクセス元ＩＰアドレスとの所定ビット単位の一致率が閾値以上か否かを判定することで、前記受信したパケットから抽出されたアクセス元ＩＰアドレスが前記記憶手段に記憶されているアクセス元ＩＰアドレスと対応しているか否かを判定し、前記受信したパケットから抽出されたユーザエージェント情報全体については、前記記憶手段に記憶されているユーザエージェント情報全体と同一か否かを判定することで、前記受信したパケットから抽出されたユーザエージェント情報全体が前記記憶手段に記憶されているユーザエージェント情報と対応しているか否かを判定することを特徴としているので、第１の発明と同様に、ユーザの利便性を損なうことなくユーザ確認の精度を向上させることができる。

【００３７】

第１０の発明に係るユーザ確認プログラムは、記憶手段を備えたコンピュータを、インターネット層のプロトコルとしてＩＰが適用され、アプリケーション層のプロトコルとしてＨＴＴＰが適用されて端末装置より受信したパケットから、当該パケットのＨＴＴＰヘッダに設定されているユーザエージェント情報全体を抽出すると共に、前記パケットからアクセス元ＩＰアドレスを抽出する抽出手段、個々のユーザが操作する端末装置より受信したパケットから前記抽出手段によって各々抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体を、前記個々のユーザのユーザ識別情報と対応付けて記憶手段に各々記憶させる情報管理手段、及び、任意の端末装置より受信したパケットから前記抽出手段によって抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報全体を、前記任意の端末装置を操作しているユーザのユーザ識別情報と対応付けて前記記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と照合し、前記記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と対応しているか否かを各々判定することで、前記任意の端末装置を操作しているユーザが正当なユーザか否かを判断する判断手段として機能させ、前記判断手段は、前記受信したパケットから抽出されたアクセス元ＩＰアドレスについては、前記記憶手段に記憶されているアクセス元ＩＰアドレスとの所定ビット単位の一致率が閾値以上か否かを判定することで、前記受信したパケットから抽出されたアクセス元ＩＰアドレスが前記記憶手段に記憶されているアクセス元ＩＰアドレスと対応しているか否かを判定し、前記受信したパケットから抽出されたユーザエージェント情報全体については、前記記憶手段に記憶されているユーザエージェント情報全体と同一か否かを判定することで、前記受信したパケットから抽出されたユーザエージェント情報全体が前記記憶手段に記憶されているユーザエージェント情報と対応しているか否かを判定することを特徴としている。

【００３８】

第１０の発明に係るユーザ確認プログラムは、記憶手段を備えたコンピュータを、上記の抽出手段、情報管理手段及び判断手段として機能させるためのプログラムであるので、コンピュータが第１０の発明に係るユーザ確認プログラムを実行することで、前記コンピュータが第１の発明のユーザ確認装置として機能することになり、第１の発明と同様に、ユーザの利便性を損なうことなくユーザ確認の精度を向上させることができる。

【発明の効果】

【００３９】

以上説明したように本発明は、端末装置より受信したパケットからユーザエージェント情報全体及びアクセス元ＩＰアドレスを抽出し、抽出したアクセス元ＩＰアドレス及びユーザエージェント情報全体を個々のユーザのユーザ識別情報と対応付けて記憶手段に各々記憶させ、任意の端末装置より受信したパケットから抽出したアクセス元ＩＰアドレス及びユーザエージェント情報全体を、任意の端末装置を操作しているユーザのユーザ識別情報と対応付けて記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエージェント情報全体と照合し、記憶手段に記憶されているアクセス元ＩＰアドレス及びユーザエー

ジェント情報全体と対応しているか否かを各々判定することで、任意の端末装置を操作しているユーザが正当なユーザか否かを判断すると共に、受信したパケットから抽出されたアクセス元ＩＰアドレスについては、記憶手段に記憶されているアクセス元ＩＰアドレスとの所定ビット単位の一致率が閾値以上か否かを判定することで、受信したパケットから抽出されたアクセス元ＩＰアドレスが前記記憶手段に記憶されているアクセス元ＩＰアドレスと対応しているか否かを判定し、受信したパケットから抽出されたユーザエージェント情報全体については、記憶手段に記憶されているユーザエージェント情報全体と同一か否かを判定することで、受信したパケットから抽出されたユーザエージェント情報全体が前記記憶手段に記憶されているユーザエージェント情報全体と対応しているか否かを判定するので、ユーザの利便性を損なうことなくユーザ確認の精度を向上させることができる、という優れた効果を有する。

【図面の簡単な説明】

【００４０】

【図１】本実施形態に係るコンピュータ・システムの概略構成を示すブロック図である。

【図２】クライアント端末からサーバへのＨＴＴＰデータの送信において、各レイヤでのヘッダの付加及び除去を説明する概念図である。

【図３】アプリケーション・サーバによって行われるユーザ認証処理の内容を示すフローチャートである。

【図４】使用履歴情報の内容を示す概略図である。

【図５】使用履歴情報に基づく認証ＯＫ／ＮＧの判定条件を示す図表である。

【図６】再認証要請メールの一例を示すイメージ図である。

【図７】使用履歴テーブル更新処理の内容を示すフローチャートである。

【図８】確認メールの一例を示すイメージ図である。

【発明を実施するための形態】

【００４１】

以下、図面を参照して本発明の実施形態の一例を詳細に説明する。図１には本実施形態に係るコンピュータ・システム１０が示されている。本実施形態に係るコンピュータ・システム１０は、特定金融機関に設置されたウェブサーバ１２を含んで構成されている。ウェブサーバ１２は、ＣＰＵ１２Ａ、ＲＡＭ等から成るメモリ１２Ｂ、ハードディスクドライブ（ＨＤＤ）１２Ｃ、ネットワークインタフェース（Ｉ／Ｆ）部１２Ｄを備えている。ＨＤＤ１２Ｃには認証情報データベース（ＤＢ）及び使用履歴テーブル（何れも詳細は後述）が記憶されており、本発明に係る記憶手段に対応している。また、ＨＤＤ１２ＣにはＣＰＵ１２Ａが後述するユーザ認証処理を行うためのユーザ認証プログラムがインストールされている。なお、ユーザ認証プログラムは第１０の発明のユーザ確認プログラムに対応しており、ＣＰＵ１２Ａがユーザ認証プログラムを実行することで、ウェブサーバ１２は本発明に係るユーザ確認装置として機能する。

【００４２】

また、ウェブサーバ１２のネットワークＩ／Ｆ部１２Ｄは、多数台のウェブサーバが通信回線を介して相互に接続されて成るコンピュータ・ネットワーク（インターネット）１６に直接接続されており、更に特定金融機関内に設置されたイントラネット（ＬＡＮ）２６にも接続されている。イントラネット２６には勘定系システム２８が接続されている。インターネット１６には、各々ＰＣ等から成る多数台のクライアント端末１８が接続されている。個々のクライアント端末１８にはブラウザがインストールされており、本発明に係る端末装置に対応している。なお、個々のクライアント端末１８のインターネット１６への接続形態は、符号「１８Ａ」を付したクライアント端末のように、インターネット１６に直接接続される（詳しくは図示しないプロバイダを介して接続される）場合もあれば、符号「１８Ｂ」を付したクライアント端末のように、企業内に設置されプロクシサーバ２２を介してインターネット１６に接続される場合もある。

【００４３】

次に本実施形態の作用を説明する。本実施形態に係る特定金融機関は、特定金融機関に

口座を開設しているユーザがオンラインで金融取引を行うことを可能とするサービスとして、ウェブサーバ１２によって運営されるオンライン金融取引用ウェブサイトを利用してユーザからのオンラインでの金融取引の実行指示を受け付けるオンライン金融取引受付サービスを提供している。このオンライン金融取引受付サービスを利用した金融取引では、ユーザがクライアント端末１８を介してオンライン金融取引用ウェブサイトのウェブページを閲覧し、該ウェブページ上で必要な情報を入力することで、ユーザが所望している金融取引の実行を指示するための情報（金融取引指示情報）がクライアント端末１８からウェブサーバ１２へ送信される。そして、この金融取引指示情報がウェブサーバ１２からイントラネット２６に接続された勘定系システム２８等へ転送されることで、金融取引指示情報に基づいてユーザから指示された金融取引が勘定系システム２８等によって実行されるようになっている。

【００４４】

オンライン金融取引受付サービスを利用するユーザは、事前に前記サービスの利用を特定金融機関へ申請する。特定金融機関は、ユーザから前記サービスの利用が申請される毎に前記ユーザへユーザＩＤ（本発明に係るユーザ識別情報に相当）を付与し、付与したユーザＩＤを、ユーザが設定したパスワード（本発明に係る認証情報に相当）及びユーザから通知された電子メールアドレス（ユーザが使用している電子メールアドレス）と共に、ウェブサーバ１２のＨＤＤ１２Ｃに記憶されている認証情報ＤＢに登録する。このように、ＨＤＤ１２Ｃは第６の発明の電子メールアドレス記憶手段に対応している。

【００４５】

次に、ユーザがクライアント端末１８を介してオンライン金融取引用ウェブサイトへのアクセスを指示した際に、クライアント端末１８からウェブサーバ１２へ送信されるパケットについて説明する。なお、インターネット１６経由でのクライアント端末１８とウェブサーバ１２との間の通信では、インターネット層のプロトコルとしてＩＰが適用され、トランスポート層のプロトコルとしてＴＣＰ（Transmission Control Protocol）が適用され、アプリケーション層のプロトコルとしてＨＴＴＰが適用される。オンライン金融取引用ウェブサイトへのアクセスの指示は、クライアント端末１８上でブラウザが起動されている状態で、ユーザがクライアント端末１８の入力装置を操作してオンライン金融取引用ウェブサイトのＵＲＬ(Uniform Resource Locator)を指定する等の操作を行うことによって為される。

【００４６】

オンライン金融取引用ウェブサイトへのアクセスが指示されると、アプリケーション層に対応する処理を行うアプリケーション・プログラムであるブラウザは、指定されたＵＲＬに対応するウェブページの配信をウェブサーバ１２に要求するために必要な情報を設定したＨＴＴＰデータを生成すると共に、当該ＨＴＴＰデータの先頭に、アプリケーション層に対応する情報を設定したＨＴＴＰヘッダを付加する（図２参照）。なお、クライアント端末１８からウェブサーバ１２へ後述する認証要求パケットが送信される場合、ＨＴＴＰデータには、ユーザがクライアント端末１８を介して入力したユーザＩＤやパスワードを含む情報が設定される。また、ＨＴＴＰヘッダに設定される情報にはユーザエージェント情報が含まれており、ブラウザのデフォルトの設定では、このユーザエージェント情報として、クライアント端末１８上で動作しているＯＳやブラウザ自身のバージョン、パッチがどこまで当たっているか等を表す情報が設定される。また、ユーザエージェント情報として任意の文字列を固定的に設定するようにブラウザの設定を変更することも可能であり、このような設定変更が行われていた場合、事前に指定された文字列がユーザエージェント情報として設定される。

【００４７】

また、クライアント端末１８上では、トランスポート層、インターネット層及びネットワークインタフェース層の各レイヤに対応する処理を行う処理モジュールも各々動作しており、図２に示すように、ブラウザによって生成された情報（ＨＴＴＰヘッダを付加したＨＴＴＰデータ）は上位レイヤの処理モジュールから下位レイヤの処理モジュールへ順に

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引き渡され、各レイヤの処理モジュールは各レイヤに対応する処理を行うと共に、引き渡された情報の先頭に、各レイヤに対応する情報を設定したヘッダを付加する処理を順次行う。これにより、クライアント端末１８からは、ネットワークインタフェース層に対応するネットワークヘッダ、インターネット層に対応するＩＰヘッダ、トランスポート層に対応するＴＣＰヘッダ及びアプリケーション層に対応するＨＴＴＰヘッダが各々付加されたＨＴＴＰデータがウェブサーバ１２へパケットとして送信される。

【００４８】

なお、ＩＰヘッダには、インターネット層に対応する処理モジュールにより、インターネット層に対応する情報としてパケットの宛先を示す宛先ＩＰアドレスや送信元ＩＰアドレス（クライアント端末１８に付与されたＩＰアドレス）等の情報が設定され、ＴＣＰヘッダには、トランスポート層に対応する処理モジュールにより、トランスポート層に対応する情報としてＴＣＰポート番号等の情報が設定される。

【００４９】

また、ウェブサーバ１２上でも各レイヤの処理モジュールが各々動作しており、クライアント端末１８からのパケットは下位レイヤの処理モジュールから上位レイヤの処理モジュールへ順に引き渡され、各レイヤの処理モジュールは、引き渡されたパケットの先頭に付加されている各レイヤに対応するヘッダを参照し、当該ヘッダに設定されている情報に基づいて各レイヤに対応する処理を行った後に前記ヘッダを除去する処理を順次行う。これにより、ウェブサーバ１２上で動作するアプリケーション層の処理モジュール（この処理モジュールには、後述するユーザ認証処理を行う処理モジュールも含まれる）には、先頭にＨＴＴＰヘッダのみが付加されたＨＴＴＰデータが引き渡される。

【００５０】

なお、後述するユーザ認証処理では、ウェブサーバ１２がクライアント端末１８から受信したパケットのＩＰヘッダに設定されている送信元ＩＰアドレス（アクセス元ＩＰアドレス）を用いて処理を行うが、ユーザ認証処理を行う処理モジュールがパケットを受け取る時点では既にＩＰヘッダが除去されているので、そのままでは送信元ＩＰアドレスを検知できない。このため、ウェブサーバ１２上で動作するインターネット層の処理モジュールは、クライアント端末１８から受信したパケットのＩＰヘッダに設定されている送信元ＩＰアドレスをＨＴＴＰデータに付加する等の処理を行うことで、アプリケーション層の処理モジュール（ユーザ認証処理を行う処理モジュール）へ送信元ＩＰアドレスを伝達する。

【００５１】

ウェブサーバ１２では、インターネット１６経由でクライアント端末１８から何らかのパケットを受信した場合、ウェブサーバ１２上で動作する所定の処理モジュール（この処理モジュールもアプリケーション層に対応する処理モジュールである）により、ＨＴＴＰデータに所定の情報が設定されているか否か等に基づいて、クライアント端末１８から受信したパケットが認証要求パケットか否かが判定される。

【００５２】

オンライン金融取引用ウェブサイトは、リンクによって互いに関連付けられた多数のウェブページの集合体であり、上記ウェブサイトのホームページからリンクを辿っていくことで、ユーザが実行を所望している金融取引の条件を指定して実行を指示することが可能な金融取引実行指示ページが表示されるが、オンライン金融取引用ウェブサイトのホームページには、ユーザＩＤやパスワードを入力するための入力欄が設けられており、ユーザに対してログイン操作（ユーザＩＤやパスワードの入力）を促すメッセージも表示されている。そして、ユーザがホームページの対応する入力欄にユーザＩＤ及びパスワードを入力して送信を指示すると、ユーザが操作しているクライアント端末１８からＨＴＴＰデータに所定の情報が設定された認証要求パケットが送信される。

【００５３】

所定の処理モジュールは、クライアント端末１８から受信したパケットが認証要求パケットでないと判定した場合、受信したパケットに応じた処理、例えばオンライン金融取引

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用ウェブサイトのホームページのデータを要求元のクライアント端末１８へ配信するためのＨＴＴＰデータを生成し、生成したＨＴＴＰデータにＨＴＴＰヘッダを付加する等の処理を行う。このＨＴＴＰデータ及びＨＴＴＰヘッダは、図２に示すプロセスと逆のプロセスを経てクライアント端末１８へパケットとして送信される。これにより、クライアント端末１８のディスプレイには、クライアント端末１８を介してユーザが配信を要求したウェブページが表示される。

【００５４】

一方、クライアント端末１８から受信したパケットが認証要求パケットであると判定した場合、所定の処理モジュールはユーザ認証処理を行う処理モジュールを起動する。これにより、ＣＰＵ１２Ａによってユーザ認証プログラムが実行され、図３に示すユーザ認証処理が行われる。

【００５５】

このユーザ認証処理では、まずステップ３０において、受信した認証要求パケットのＨＴＴＰデータからユーザＩＤ及びパスワードを抽出し、次のステップ３２において、ステップ３０で抽出したユーザＩＤとパスワードの組合わせが認証情報ＤＢに登録されているか否を検索する認証処理を行う。ステップ３４では、ステップ３２の検索によってユーザＩＤとパスワードの組合わせが認証情報ＤＢから抽出されたか否かに基づいて、ステップ３２の認証処理で認証に成功したか否か判定する。判定が否定された場合はステップ７４へ移行し、起動元の所定の処理モジュールへ認証失敗を通知してユーザ認証処理を終了する。この場合、所定の処理モジュールにより、認証要求パケット送信元のクライアント端末１８のディスプレイに、入力されたユーザＩＤ又はパスワードが誤っている旨を通知するメッセージを表示させる等のエラー処理が行われる。

【００５６】

一方、ステップ３２の認証処理で認証に成功した場合には、ステップ３４の判定が肯定されてステップ３６へ移行し、受信した認証要求パケットのＨＴＴＰデータからアクセス元ＩＰアドレス（送信元ＩＰアドレス）を抽出すると共に、認証要求パケットのＨＴＴＰヘッダからユーザエージェント情報を抽出する。なお、このステップ３６は本発明に係る抽出手段に対応している。また、次のステップ３８では、ＨＤＤ１２Ｃに記憶されている使用履歴テーブルから、先のステップ３０で抽出されたユーザＩＤに対応する使用履歴情報を抽出し、抽出した使用履歴情報をメモリ１２Ｂに記憶させる。

【００５７】

本実施形態に係る使用履歴テーブルは、オンライン金融取引受付サービスの利用を事前に申請しユーザＩＤが付与されている個々のユーザ（正当なユーザ）について、図４に示すような使用履歴情報を記憶するための領域が各々設けられて構成されており、個々のユーザに対応する使用履歴情報記憶領域には、顧客ＩＤ、取引停止フラグ、特殊環境フラグ、照合判定用閾値、インデックスの各情報を設定／登録するための領域が設けられ、更にアクセス元ＩＰアドレス及びユーザエージェント情報を２組登録可能な領域が設けられている。

【００５８】

顧客ＩＤ領域には顧客マスタに登録されている口座番号からハッシュ関数を用いて生成された顧客ＩＤが事前に登録される。また、取引停止フラグは通常ルートでの認証（アクセス元ＩＰアドレス及びユーザエージェント情報に基づく認証）を停止するか否かを表すフラグであり、取引停止フラグ領域には当初、取引停止フラグの初期値である０（通常ルートでの認証有効を意味する）が設定される。また、特殊環境フラグはユーザの利用環境が特殊か否かを表すフラグであり、特殊環境フラグ領域には当初、特殊環境フラグの初期値である０（通常環境を意味する）が設定される。またインデックスidは、使用履歴情報として登録された２組のアクセス元ＩＰアドレス及びユーザエージェント情報(IP0,UA0及びIP1,UA1)のうちの何れが最新かを表す情報であり、インデックス領域には当初、初期値０(IP0,UA0が最新であることを表す)が設定される。また、個々のアクセス元ＩＰアドレス領域及びユーザエージェント情報領域には初期値として空白（情報無し）が各々設定さ

れる。

【００５９】

前述のステップ３８では、先のステップ３０で抽出されたユーザＩＤをキーに顧客マスタ（図示省略）を検索することで、前記ユーザＩＤが付与されたユーザが保有している口座の口座番号を抽出し、抽出した口座番号からハッシュ関数を用いて顧客ＩＤを求め、求めた顧客ＩＤをキーにして使用履歴テーブルを検索することで、ユーザＩＤに対応する使用履歴情報を抽出する。次のステップ４０では、抽出した使用履歴情報のうちの取引停止フラグが１か否か判定する。判定が否定された場合はステップ４２へ移行し、抽出した使用履歴情報にアクセス元ＩＰアドレス及びユーザエージェント情報が１組以上登録されているか否か判定する。

【００６０】

前述のように、使用履歴情報領域のうちのアクセス元ＩＰアドレス領域及びユーザエージェント情報領域には初期値として空白が設定されるが、オンライン金融取引受付サービスの利用を申請したユーザによって、オンライン金融取引用ウェブサイトへのアクセスが１回以上行われると、ステップ３６で認証要求パケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報が使用履歴情報として登録される（詳細は後述）。使用履歴情報としてアクセス元ＩＰアドレス及びユーザエージェント情報が既に登録されている場合はステップ４２の判定が肯定されてステップ４４へ移行し、ステップ３６で認証要求パケットから抽出したアクセス元ＩＰアドレス及びユーザエージェント情報を、使用履歴情報として登録されているアクセス元ＩＰアドレス及びユーザエージェント情報と照合する。

【００６１】

なお、ＩＰアドレスの照合は以下のようにして行われる。すなわち、ＩＰアドレスは４バイトのデータであるが、本実施形態では、アクセス元ＩＰアドレス領域へのアクセス元ＩＰアドレスの登録に際し、１バイト毎にハッシュ関数を用いてハッシュ値が演算され、４個のハッシュ値がアクセス元ＩＰアドレスとして登録される。このため、ステップ３６で抽出したアクセス元ＩＰアドレスについても１バイト毎にハッシュ値を演算し、得られた４個のハッシュ値をアクセス元ＩＰアドレス領域に登録されている４個のハッシュ値と比較し、ハッシュ値単位での一致率を求める。そして、求めた一致率を使用履歴情報として設定されている照合判定用閾値と比較し、一致率が閾値以上の場合は、今回のアクセス元ＩＰアドレスが登録されているＩＰアドレスと「対応している」と判定し、一致率が閾値未満の場合は、今回のアクセス元ＩＰアドレスが登録されているＩＰアドレスと「対応していない」と判定する。

【００６２】

図１に示すクライアント端末１８Ａのように、インターネット１６に直接接続される形態において、クライアント端末１８ＡのＩＰアドレス（グローバルＩＰアドレス）は、プロバイダとの契約により予め固定されている場合と、インターネット１６へ接続する度にプロバイダによって不定のＩＰアドレス（プロバイダが割り当て用に事前に確保している一定範囲内のＩＰアドレスのうちの何れか）が割り当てされる場合がある。また、図１に示すクライアント端末１８Ｂのように、企業内に設置されプロクシサーバ２２を介してインターネット１６に接続される接続形態において、例えば前記企業が独自ドメインを取得し、割り当て用に一定範囲内のＩＰアドレスを事前に確保している場合、クライアント端末１８Ｂから送信されたパケットは、ＩＰヘッダに設定されている送信元ＩＰアドレスが、プロクシサーバ２２によって割り当て用に前記企業が事前に確保している一定範囲内のＩＰアドレスのうちの何れかのＩＰアドレスで上書きされた後にインターネット１６へ送出される。

【００６３】

従って、割り当てされるＩＰアドレスが不定のクライアント端末１８であっても、割り当てされるＩＰアドレスは一定の範囲内に収まっている（上位数バイトは同一である）ので、上記のようにＩＰアドレスの一致率が閾値以上か否かに基づいて、ＩＰアドレスが対

応しているか否かを判定することで、オンライン金融取引用ウェブサイトが以前にアクセスされた際と同一のアクセス元（インターネット１６上でのクライアント端末１８の所在）からオンライン金融取引用ウェブサイトがアクセスされた場合に、ＩＰアドレスが対応していると判定することができる。

【００６４】

なお、ユーザエージェント情報については、今回のユーザエージェント情報が登録されているユーザエージェント情報と同一であれば「対応している」と判定し、今回のユーザエージェント情報が登録されているユーザエージェント情報と同一でなければ「対応していない」と判定する。アクセス元ＩＰアドレス及びユーザエージェント情報の照合で上記の判定を行うことは第１の発明に対応している。また、使用履歴情報としてアクセス元ＩＰアドレス及びユーザエージェント情報が２組登録されている場合には、認証要求パケットから抽出したアクセス元ＩＰアドレス及びユーザエージェント情報を、登録されている２組のアクセス元ＩＰアドレス及びユーザエージェント情報と各々照合する。

【００６５】

次のステップ４６では、ステップ４４におけるアクセス元ＩＰアドレス及びユーザエージェント情報の照合結果に基づいて、認証要求パケット送信元のクライアント端末１８を操作しているユーザに対する認証が「成功」「条件付き成功」「失敗」の何れかに該当するかを判定し、判定結果に応じて分岐する。上記判定は図５に示す判定表に従って行われる。なお、図５における「○」はステップ４４の照合で「対応している」と判定された場合に、「×」は「対応していない」と判定された場合に各々対応している。また、図５における「最新」のアクセス元ＩＰアドレス及びユーザエージェント情報は、使用履歴情報として登録されている２組のアクセス元ＩＰアドレス及びユーザエージェント情報のうち、使用履歴情報のインデックスidが指し示しているアクセス元ＩＰアドレス及びユーザエージェント情報を表し、「以前」のアクセス元ＩＰアドレス及びユーザエージェント情報は、他方のアクセス元ＩＰアドレス及びユーザエージェント情報を表している。また、使用履歴情報として１組のアクセス元ＩＰアドレス及びユーザエージェント情報（「最新」の情報）のみが登録されている場合には、「以前」のアクセス元ＩＰアドレス及びユーザエージェント情報との照合結果が何れも「対応していない」と判定されたものとしてステップ４６の判定が行われる。なお、上記のステップ４４，４６は、後述するステップ６４と共に本発明に係る判断手段（詳しくは第１～５の発明の判断手段）に対応している。

【００６６】

先のステップ４４における照合結果が、「認証要求パケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報が、使用履歴情報として登録されている２組のアクセス元ＩＰアドレス及びユーザエージェント情報のうち、少なくとも１組のアクセス元ＩＰアドレス及びユーザエージェント情報と各々対応している」という条件（便宜上、第１の条件と称する）を満たす結果であった場合、今回のアクセスは、同一のユーザが過去にオンライン金融取引用ウェブサイトをアクセスした際と、アクセス元が同一でかつクライアント端末１８も同一とみなすことができるので、認証要求パケット送信元のクライアント端末１８を操作しているユーザも正当なユーザである可能性が極めて高い。このため、ステップ４６では上記場合に、図５に「認証ＯＫ」と表記して示すように認証が「成功」と判定する。

【００６７】

一方、先のステップ４４における照合結果が、「使用履歴情報として登録されているアクセス元ＩＰアドレス及びユーザエージェント情報の組の中に、認証要求パケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報と各々対応していると判定された組が存在していない」という条件（便宜上、第２の条件と称する）を満たす結果であった場合、今回のアクセスは、同一のユーザが過去にオンライン金融取引用ウェブサイトをアクセスした際と、アクセス元及びクライアント端末１８の少なくとも一方が各々相違しているので、認証要求パケット送信元のクライアント端末１８を操作しているユーザは正当なユーザでない可能性が高い。

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【００６８】
但し、多数のユーザの中には、例えばオンライン金融取引用ウェブサイトのアクセスに利用可能なクライアント端末１８を多数台保有しており、多数台のクライアント端末１８の中から不定のクライアント端末１８を介してオンライン金融取引用ウェブサイトにアクセスしたり（この場合、各回のアクセスでユーザエージェント情報が互いに相違する可能性が高い）、ノート型ＰＣ等の携帯型のクライアント端末１８を用い、毎回異なるホットスポットを利用してオンライン金融取引用ウェブサイトへアクセスする（この場合、各回のアクセスでアクセス元ＩＰアドレスが大きく相違する可能性が高い）等のように、利用環境が特殊なユーザが存在している可能性があり、この種の利用環境が特殊なユーザも上記第２の条件に該当する。

【００６９】
このため、ステップ４６では、ステップ４４における照合結果が「使用履歴情報として登録されている２組のアクセス元ＩＰアドレス及びユーザエージェント情報の両方が、認証要求パケットから抽出されたアクセス元ＩＰアドレスと対応していると判定されるか、又は、認証要求パケットから抽出されたユーザエージェント情報と対応していると判定された」という条件（便宜上、第３の条件と称する）を満たす結果であった場合に、図５に「条件付き認証ＯＫ」と表記して示すように、認証を「条件付き成功」と判定し、ステップ４４における照合結果が前述の第２の条件を満たしかつ上記の第３の条件を満たさない場合に、図５に「認証ＮＧ」と表記して示すように、認証を「失敗」と判定する。

【００７０】
ステップ４６で認証「成功」と判定された場合はステップ４８へ移行し、使用履歴情報の特殊環境フラグが１か否か判定する。判定が否定された場合はステップ５２へ移行し、起動元の所定の処理モジュールへ認証成功を通知する。この場合、所定の処理モジュールにより、正当なユーザであることが確認されたユーザに対してのみ配信する所定のウェブページを、認証要求パケット送信元のクライアント端末１８へ配信する等の処理が行われる。次のステップ５４では、認証要求パケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報が、使用履歴情報として登録されているアクセス元ＩＰアドレス及びユーザエージェント情報のうち、インデックスidが指し示している「最新」のアクセス元ＩＰアドレス及びユーザエージェント情報に各々対応していると判定されたか否か判定する。

【００７１】
判定が肯定された場合はステップ６０へ移行し、認証要求パケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報を、使用履歴情報として登録されている「最新」のアクセス元ＩＰアドレス及びユーザエージェント情報に上書きして登録し、ステップ６２へ移行する。また、ステップ５４の判定が否定された場合はステップ５６へ移行し、認証要求パケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報を、使用履歴情報として登録されている「以前」のアクセス元ＩＰアドレス及びユーザエージェント情報（インデックスidが指し示していないアクセス元ＩＰアドレス及びユーザエージェント情報）に上書きして登録する（なお、上書きされるアクセス元ＩＰアドレス及びユーザエージェント情報が「空白」の場合、ステップ５６における上書き登録は第２の発明の「追加記憶」に相当する）。また、次のステップ５８ではインデックスidのビットを反転させることで、ステップ５６で上書きして登録したアクセス元ＩＰアドレス及びユーザエージェント情報を「最新」へ変更する。

【００７２】
そしてステップ６２では、メモリ１２Ｂ上に記憶している使用履歴情報を使用履歴テーブルに書き戻すことで、使用履歴テーブル上の使用履歴情報を更新し、ユーザ認証処理を終了する。なお、上記のステップ６０，５６のように、認証要求パケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報を、使用履歴情報として登録されているアクセス元ＩＰアドレス及びユーザエージェント情報に上書きして登録することで、同一ユーザについて再度ユーザ認証処理が行われた際の、ステップ４４の照合及びステッ

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プ４６の判定の精度を向上させることができる。なお、上述したステップ５４～ステップ６２は本発明に係る情報管理手段（詳しくは第８の発明の情報管理手段）に対応している。

【００７３】

一方、先のステップ４６で認証が「失敗」と判定された場合はステップ６８へ移行し、使用履歴情報のうちの取引停止フラグに１を設定する。また、ステップ４６で認証が「失敗」と判定された場合にも、認証要求パケット送信元のクライアント端末１８を操作しているユーザが正当なユーザである可能性があり、これを考慮して次のステップ７０では、ステップ３２で抽出したユーザＩＤと対応付けて認証情報ＤＢに記憶されている電子メールアドレスを読み出し、読み出した電子メールアドレスへ再認証要請メールを送信する。例として図６に示すように、この再認証要請メールには、認証要求パケット送信元のクライアント端末１８を操作しているユーザを、通常ルートと異なる認証方法によって正当なユーザか否かを確認するための再認証専用のウェブページへのリンク１００が付加されている。なお、ステップ７０は第６の発明の送信手段に対応している。

【００７４】

次のステップ７２では起動元の所定の処理モジュールへ認証失敗を通知し、ステップ５４へ移行する。これにより、前述のように、認証要求パケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報の使用履歴情報への上書き登録・使用履歴テーブルへの使用履歴情報の書き戻しが行われてユーザ認証処理を終了する。

【００７５】

上記のように、ステップ４６で認証が「失敗」と判定されると取引停止フラグに１が設定されるので、同一ユーザに対してユーザ認証処理が再度実行された場合、ステップ４０の判定が肯定されてステップ７０へ移行することで、通常ルートでの認証（アクセス元ＩＰアドレス及びユーザエージェント情報に基づく認証）は行われず、再認証要請メールが再度送信され（ステップ６８）、起動元の所定の処理モジュールへ認証失敗が再度通知される（ステップ７２）。従って、ステップ４６で認証が「失敗」と判定された前回のユーザ認証処理が、ユーザＩＤ及びパスワードを不正に取得した第三者による不正アクセスによって実行されていた場合、その後、正当なユーザがオンライン金融取引用ウェブサイトにアクセスして認証を受けようとしても認証が「失敗」となってしまうことになるが、その代わりに不正アクセスがあったことを検知することができる。

【００７６】

また、認証要求パケット送信元のクライアント端末１８を操作しているユーザが正当なユーザであるにも拘わらず、前述のようにステップ４６で認証が「失敗」と判定された場合、当該ユーザは先のステップ７０で送信された再認証要請メールを受信し、受信した再認証要請メールに付加されているリンク１００から再認証専用のウェブページにアクセスする操作を行い、クライアント端末１８のディスプレイに表示された再認証専用のウェブページを介して所定の再認証手続きを受ける。この再認証手続きで正当なユーザであることが確認された場合、ユーザ認証処理を行う処理モジュールへ再認証成功が通知される。なお、再認証専用のウェブページにアクセスするためには、再認証要請メールを受信できる環境を有している必要があり、再認証専用のウェブページにアクセスして再認証手続きを受ける人は、その時点で正当なユーザである可能性が非常に高いとみなすことができるので、再認証手続きを比較的簡素な手続きとすることでユーザの負担を軽減することが可能である。

【００７７】

一方、ユーザ認証処理を行う処理モジュールは、再認証成功が通知されると、図７に示す使用履歴テーブル更新処理を行う。すなわち、上記の再認証通知には、再認証手続きによって正当なユーザであることが確認されたユーザのユーザＩＤが情報として付加されており、まずステップ８０では、正当なユーザであることが確認されたユーザのユーザＩＤを抽出・取得する。次のステップ８２では、ステップ８０で取得したユーザＩＤに対応する使用履歴情報を使用履歴テーブルから抽出し、抽出した使用履歴情報をメモリ１２Ｂに

記憶させる。またステップ８４では、抽出した使用履歴情報のうち、取引停止フラグを０に戻すと共に、特殊環境フラグに１を設定する。そして、次のステップ８６で使用履歴情報を使用履歴テーブルへ書き戻し、使用履歴テーブル更新処理を終了する。上記のように取引停止フラグを０に戻すことで、同一ユーザに対してユーザ認証処理が再度実行された場合に、ステップ４０の判定が否定されることで通常ルートでの認証が再開されることになる。なお、ステップ８４は第５の発明の情報管理手段に対応している。

【００７８】

また、先のステップ４６で認証が「条件付き成功」と判定された場合はステップ６４へ移行し、使用履歴情報のうちの特殊環境フラグが１か否か設定する。認証が「条件付き成功」の場合、先に説明したように、認証要求パケット送信元のクライアント端末１８を操作しているユーザは利用環境が特殊なユーザである可能性が高いが、第三者による不正アクセスである可能性も否定できない。このため、本実施形態における「条件付き成功」は、前述の再認証手続きで認証に成功していることを認証成功の条件としており、ステップ６４の判定が否定された場合、すなわち再認証成功が通知されていない場合にはステップ６８へ移行し、前述の再認証要請メールの送信等の処理を行う。

【００７９】

また、ステップ６４の判定が肯定された場合、すなわち再認証成功が通知されて使用履歴テーブル更新処理（図７）を行っている場合にはステップ６６へ移行し、ステップ３２で抽出したユーザＩＤと対応付けて認証情報ＤＢに記憶されている電子メールアドレスを読み出し、読み出した電子メールアドレスへ例として図８に示すような確認メールを送信する。この確認メールには日時等が記載されており、今回のアクセスが万一不正アクセスであった場合にも、正当なユーザが上記の確認メールを受信・参照することで、不正アクセスがあったことを検知することができる。ステップ６６の処理を行うとステップ５２へ移行し、起動元の所定の処理モジュールへ認証成功を通知した後に、ステップ５４以降で認証要求パケットから抽出されたアクセス元ＩＰアドレス及びユーザエージェント情報の使用履歴情報への上書き登録・使用履歴テーブルへの使用履歴情報の書き戻しを行ってユーザ認証処理を終了する。これにより、使用環境が特殊なユーザであっても、正当なユーザと判定することができる。

【００８０】

なお、特殊環境フラグに１が設定されていると、ステップ４６の判定で前述の第３の条件を満足すると認証が「成功」と判定されるので、セキュリティ性が若干低下するという欠点がある。このため、ステップ４６の判定で第１の条件を満足して認証が「成功」と判定された場合、ステップ４８で特殊環境フラグに１が設定されているか否かを判定しており、判定が肯定された場合はステップ５０で特殊環境フラグを０に戻した後にステップ５２へ移行する。これにより、上記の欠点を解消することができる。

【００８１】

最後に、オンライン金融取引受付サービスの利用を申請したユーザが、オンライン金融取引用ウェブサイトへ最初にアクセスした場合について説明する。この場合、使用履歴情報にアクセス元ＩＰアドレス及びユーザエージェント情報が登録されておらず、この状態では通常ルートでの認証が困難であるので、ステップ４２の判定が否定されてステップ６８へ移行し、前述のように取引停止フラグに１を設定すると共に、再認証要請メールの送信等の処理を行うことで、再認証専用のウェブページを介して所定の再認証手続きを受けさせる。この場合も、ステップ６０で使用履歴情報にアクセス元ＩＰアドレス及びユーザエージェント情報が登録されると共に、再認証が成功すれば取引停止フラグが０に戻されるので、次回以降のアクセスでは通常ルートでの認証が行われることになる。

【００８２】

なお、上記では個々のユーザについてアクセス元ＩＰアドレス及びユーザエージェント情報を最大２組登録する場合を説明したが、これに限定されるものではなく、アクセス元ＩＰアドレス及びユーザエージェント情報の組の登録数の上限値を３以上としてもよい。この場合、既に登録されているアクセス元ＩＰアドレス及びユーザエージェント情報の組

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の中に、認証要求パケットから抽出された新たなアクセス元ＩＰアドレス及びユーザエージェント情報と各々対応していると判定された組が存在していなければ、アクセス元ＩＰアドレス及びユーザエージェント情報の組の登録数が上限値に達する迄の間は、新たなアクセス元ＩＰアドレス及びユーザエージェント情報の組を追加登録し、アクセス元ＩＰアドレス及びユーザエージェント情報の登録数が上限値に達した以降は、新たなアクセス元ＩＰアドレス及びユーザエージェント情報の組を、登録した時期が最も古いアクセス元ＩＰアドレス及びユーザエージェント情報の組に上書きして登録するようにすればよい。上記事項は第７の発明に対応している。

【００８３】

また、アクセス元ＩＰアドレス及びユーザエージェント情報の組の登録数に上限を設けなくてもよい。例えば多数台のクライアント端末１８又は多数種のアクセス元（例えば多数箇所のホットスポット）を選択的に用いてアクセスを行う等の特殊な利用環境を考慮し、アクセス元ＩＰアドレス及びユーザエージェント情報の組を上限を設けずに登録する（既に登録されているアクセス元ＩＰアドレス及びユーザエージェント情報の組の中に、認証要求パケットから抽出された新たなアクセス元ＩＰアドレス及びユーザエージェント情報と各々対応していると判定された組があれば、新たなアクセス元ＩＰアドレス及びユーザエージェント情報を前記対応していると判定された組に上書きして登録し、それ以外の場合は新たなアクセス元ＩＰアドレス及びユーザエージェント情報を追加登録する）と共に、登録してからの経過期間の長さが閾値を越えるか、又は、新たなアクセス元ＩＰアドレス及びユーザエージェント情報と対応していないと判定された回数が閾値を越えたアクセス元ＩＰアドレス及びユーザエージェント情報の組を削除するようにしてもよい。この態様では、使用履歴情報が肥大化する可能性があるという欠点がある一方、利用環境が特殊なユーザであってもステップ４６で認証が「成功」と判定することができるので、認証の「条件付き成功」を設ける必要がなくなり、セキュリティ性を更に向上させることができる。

【００８４】

また、上記では本発明に係る端末装置として、ＰＣ等から成るクライアント端末１８を例に説明したが、これに限定されるものではなく、インターネットにアクセスする機能を備えたＰＤＡや携帯電話機等の携帯端末であってもよい。この種の携帯端末は無線通信網に設けられたゲートウェイサーバを介してインターネットに接続されるが、詳しくは、任意のウェブサイトにアクセスするために携帯端末から送信された情報はゲートウェイサーバで一旦受信され、インターネット１６経由での通信に適用されるプロトコル（インターネット層のプロトコル：ＩＰ、トランスポート層のプロトコル：ＴＣＰ、アプリケーション層のプロトコル：ＨＴＴＰ）に準拠したパケットへ変換されると共に、無線通信事業者が割り当て用に事前に確保している一定範囲内のＩＰアドレスのうちの何れかのＩＰアドレスがＩＰヘッダに送信元ＩＰアドレスとして設定され、無線通信事業者名や携帯端末の機種、型番、ブラウザのバージョン等を含む情報がユーザエージェント情報としてＨＴＴＰヘッダに設定された後にインターネット１６へ送出される。なお、無線通信事業者との契約形態によっては、ゲートウェイサーバと特定のウェブサーバとの間が専用線で接続され、特定のウェブサーバ宛のパケットがインターネットを経由せずに専用線経由でゲートウェイサーバから送信される場合もあるが、このような通信形態でもパケットには上記と同様に送信元ＩＰアドレスやユーザエージェント情報が設定される。そして、割り当て用に確保しているＩＰアドレスの範囲は個々の無線通信事業者毎に相違している。従って、端末装置が携帯端末であったとしても、本発明を適用して携帯端末を操作しているユーザが正当なユーザか否かを確認することは可能である。

【００８５】

更に、上記ではオンライン金融取引受付サービスを提供するオンライン金融取引用ウェブサイトにおけるユーザ認証に本発明を適用した態様を説明したが、これに限定されるものではなく、任意のサイトにおけるユーザ認証やユーザ確認に適用可能である。また、上記では、本発明を適用したユーザ認証を、ユーザＩＤ及びパスワードを用いたユーザ認証

と併用していたが、電子メールアドレス等の簡単なユーザ識別情報を事前に登録したユーザから請求がある毎に、一定の情報を配信する情報発信型サービスを提供するウェブサイトであれば、高精度なユーザ確認（認証）は不要であるので、パスワードに基づくユーザ認証を省略し、ユーザによって入力された電子メールアドレス等のユーザ識別情報に基づいて、本発明を適用したユーザ確認（認証）のみを行うようにしてもよい。

【００８６】

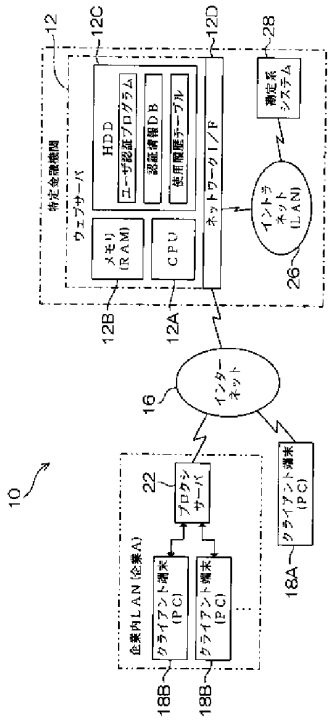
また、上記ではアクセス元ＩＰアドレスとユーザエージェント情報を各々用いてユーザ確認（認証）を行う態様を説明したが、これに限定されるものではなく、例えば個々のユーザに対して電子証明書をインストールしたクライアント端末からのアクセスのみを許可しているウェブサイトのように、個々のユーザに対して一定の端末装置からのアクセスのみを許可している場合には、ユーザエージェント情報のみをユーザ識別情報と対応付けて記憶し、ユーザエージェント情報が登録されているユーザエージェント情報と一致しているか否かに基づいてユーザ確認（認証）を行うようにしてもよい。

【符号の説明】

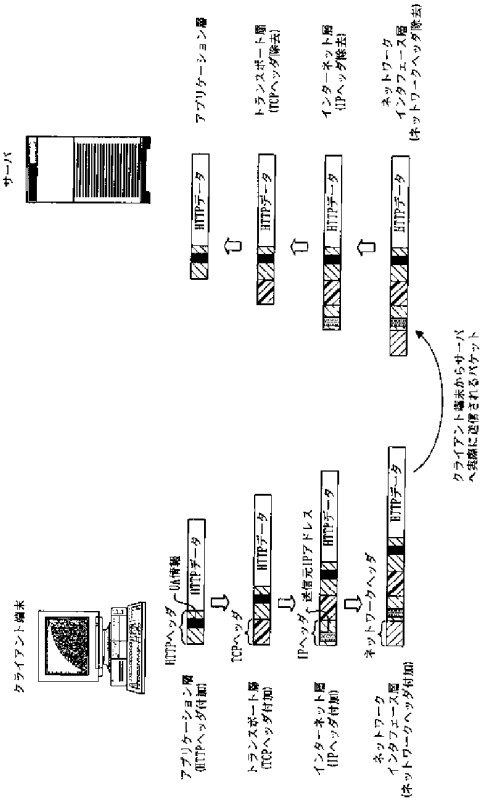
【００８７】

１０　コンピュータ・システム
１２　ウェブサーバ
１２Ｃ　ＨＤＤ
１６　インターネット
１８　クライアント端末

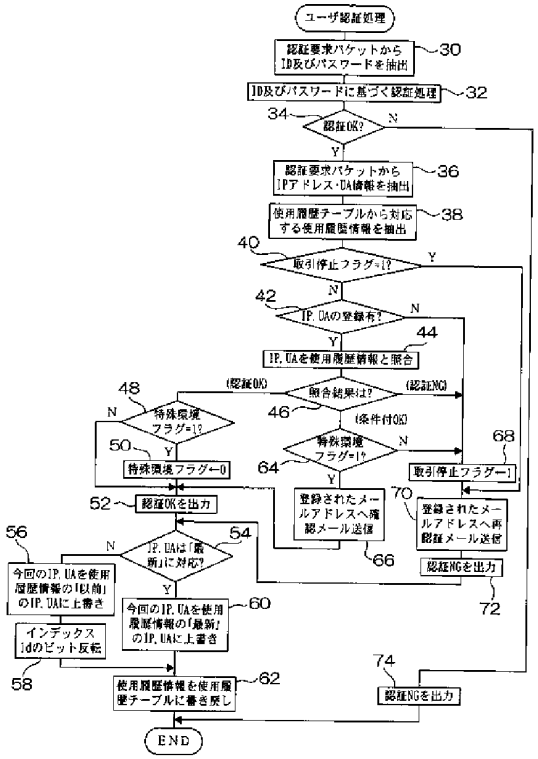
【図１】



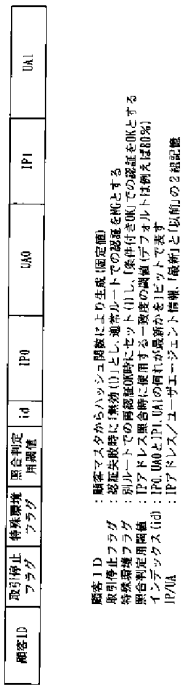
【図２】



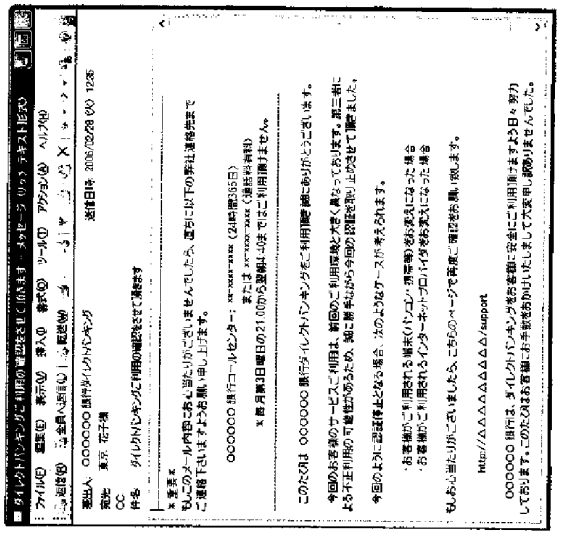
【図３】


ユーザ認証処理
認証要求パケットから ID及びパスワードを抽出
30
ID及びパスワードに基づく認証処理
32
34
認証OK?
N
Y
認証要求パケットから IPアドレス・UA情報を抽出
36
使用履歴テーブルから対応する使用履歴情報を抽出
38
40
取引停止フラグ=1?
Y
N
42
IP, UAの登録有?
N
Y
44
IP, UAを使用履歴情報と照合
48
(認証OK)
照合結果は?
(認証NG)
46
(条件付OK)
N
特殊環境フラグ=1?
50
Y
特殊環境フラグ←0
68
特殊環境フラグ=1?
N
64
Y
取引停止フラグ←1
52
認証OKを出力
70
登録されたメールアドレスへ再認証メール送信
登録されたメールアドレスへ確認メール送信
56
54
IP, UAは「最新」に対応?
N
Y
66
認証NGを出力
72
今回のIP, UAを使用履歴情報の「以前」のIP, UAに上書き
今回のIP, UAを使用履歴情報の「最新」のIP, UAに上書き
60
インデックスidのビット反転
58
使用履歴情報を使用履歴テーブルに書き戻し
62
74
認証NGを出力
END

【図４】


< 使用履歴情報の内容 >
顧客ID
取引停止フラグ
特殊環境フラグ
照合判定用履歴
id
IP0
UA0
IP1
UA1
顧客ID : 顧客マスタからハッシュ関数により生成（固定値）
取引停止フラグ : 認証失敗時に偽物(1)とし、通常ルートでの認証を拒否とする
特殊環境フラグ : 別ルートでの再認証成功時にセット(1)し、条件付きOKでの認証を可とする
照合判定用履歴 : IPアドレス照合時に使用する一致度の識別（デフォルトは最大値255）
インデックス id : IP0, UA0とIP1, UA1の何れが最新かをビットで表す
IP/UA : IPアドレス/ユーザエージェント情報（最新1と1世代前の2履歴記憶

【図６】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ファイル(F) 編集(E) 表示(V) 挿入(I) 書式(O) ツール(T) アクション(A) ヘルプ(H)
差出人 OOOOOO銀行ダイレクトバンキング
送信日時 2006/02/20 (水) 12:36
宛先 東京 花子様
CC
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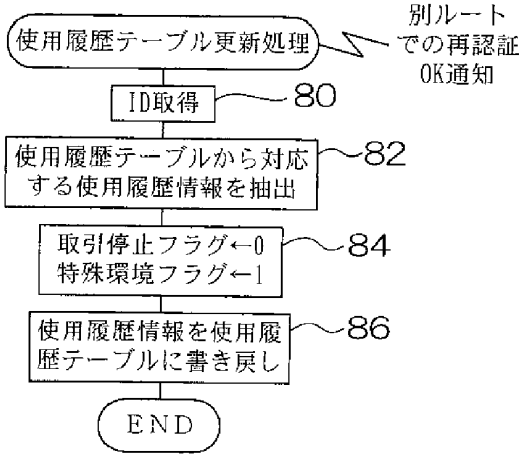
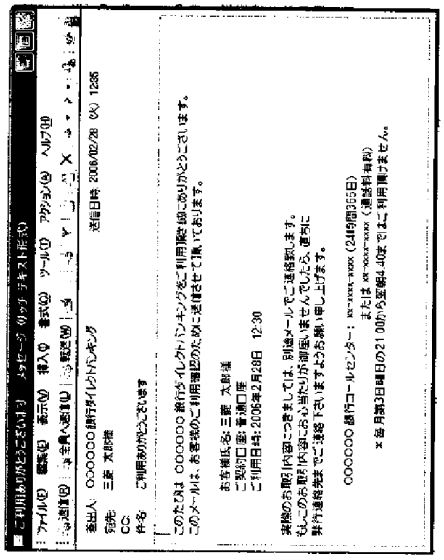
【図７】


使用履歴テーブル更新処理
別ルートでの再認証OK通知
ID取得
80
使用履歴テーブルから対応する使用履歴情報を抽出
82
取引停止フラグ←0
特殊環境フラグ←1
84
使用履歴情報を使用履歴テーブルに書き戻し
86
END

【図８】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メッセージ (リッチ テキスト形式)
ファイル(F) 編集(E) 表示(V) 挿入(I) 書式(O) ツール(T) アクション(A) ヘルプ(H)
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【図５】

〈使用履歴情報に基づく認証OK/NG判定表〉

		「以前」のIP, UAとの照合結果			
		IP=○, UA=○	IP=○, UA=×	IP=×, UA=○	IP=×, UA=×
「最新」のIP, UAとの照合結果	IP=○, UA=○	認証OK	認証OK	認証OK	認証OK
	IP=○, UA=×	認証OK	条件付き認証OK	認証NG	認証NG
	IP=×, UA=○	認証OK	認証NG	条件付き認証OK	認証NG
	IP=×, UA=×	認証OK	認証NG	認証NG	認証NG

但し、IP=○：IPアドレスの一致度が所定値以上
IP=×：IPアドレスの一致度が所定値未満
UA=○：UA情報が一致
UA=×：UA情報が不一致

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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(Not for submission under 37 CFR 1.99)

Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

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	1	8365258		2013-01-29	DISPENSA STEVEN	
	2	10122715		2018-11-06	DISPENSA STEPHEN T	

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	1	20050097320		2005-05-05	GOLAN LIOR	
	2	20060053279		2006-03-09	COUEIGNOUX PHILIPPE J M	
	3	20070136573		2007-06-14	STEINBERG JOSEPH	
	4	20070143407		2007-06-21	AVRITCH PETER S	

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	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

	5	20090260064		2009-10-15	MCDOWELL JOEL RICHARD	
	6	20120253810		2012-10-04	SUTTON TIMOTHY S	
	7	20130104198		2013-04-25	GRIM EVAN TYLER	
	8	20130185775		2013-07-18	DISPENSA STEPHEN T	

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	1	Entrust: "Strong Multifactor Authentication Methods from Entrust IdentityGuard," https://web.archive.org/web/20110825101942/http://www.entrust.com/strong-authentication/authenticators.htm. August 25, 2011	
	2	Entrust: Mobile Authentication and Transaction Verification1,2,3, https://web.archive.org/web/20110814071521/http://www.entrust.com/mobile-security. August 14, 2011	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

	3	Entrust: Proven Transaction Verification on Smartphones & Mobile Devices - Entrust,https://web.archive.org/web/20110918231205/http://www.entrust.com/transaction-verification/index.htm. September 18, 2011
	4	Entrust: WP_Securing_Whats_At_Risk_July08, https://web.archive.org/web/20110809104408/http://download.entrust.com/resources/download.cfm/22313/. August 9, 2011
	5	eSphinx: ("Cyota launches new authentication platform for online banking," https://web.archive.org/web/20050508152420/http://www.cyota.com/news.asp?id=173. May 8, 2005
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	9	eSphinx: "How Does it Work?"; https://web.archive.org/web/20051210112946/http://www.cyota.com/product_7_19.asp. December 10, 2005
	10	eSphinx: "Key Features," https://web.archive.org/web/20051210114904/http://www.cyota.com/product_7_18.asp. December 10, 2005
	11	Green Armor: December 8, 2005 Press Release: "Green Armor Solutions™ Introduces Identity Cues Two Factor™"; http://www.greenarmor.com/Green_Armor_Solutions_News-2005-12-07.shtml
	12	Green Armor: Green Armor Solutions "Identity Cues Products"; https://web.archive.org/web/20060110032814/http://www.greenarmor.com/products.shtml. January 10, 2006
	13	Green Armor: Green Armor Solutions "Identity Cues Two Factor ™ & Two Way Authentication"; https://web.archive.org/web/20060209211113/http:/www.greenarmor.com/DataSheets/Identity%20Cues%20Two%20Factor%20Data%20Sheet.pdf. February 9, 2006

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

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	15	RSA 9697_AATF_SB_0808: "RSA Adaptive Authentication overview solution brief"; https://web.archive.org/web/20101225124323/http://www.rsa.com/products/consumer/sb/9697_AATF_SB_0808.pdf. December 25, 2010
	16	RSA AAAM_SB_0208: "RSA Adaptive Authentication & RSA Access Manager solution brief"; https://web.archive.org/web/20081114221836/http://www.rsa.com/products/consumer/sb/AAAM_SB_0208.pdf. November 14, 2008
	17	Toopher: https://web.archive.org/web/20120430105502/http://toopher.com/. April 30, 2012
	18	Toopher: Toopher Developer Documentation; https://web.archive.org/web/20120523192419/https://www.toopher.com/developers.html. May 23, 2012
	19	U.S. Provisional Patent Application No. 61/551,370 filed October 25, 2011

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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OR

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See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2020-04-03
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

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Privacy Act Statement

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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 the Freedom of Information Act requires disclosure of these record s.

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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.

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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 inspections 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.

Electronic Acknowledgement Receipt

EFS ID:	39055980
Application Number:	16180373
International Application Number:	
Confirmation Number:	3758
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Customer Number:	21912
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Filer Authorized By:	Yeu-Ting George Cheng
Attorney Docket Number:	MJAKP016C1
Receipt Date:	03-APR-2020
Filing Date:	05-NOV-2018
Time Stamp:	13:01:13
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$120
RAM confirmation Number	E202043D01374173
Deposit Account	500685
Authorized User	Elaine Nguyen
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 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	Information Disclosure Statement (IDS) Form (SB08)	MJAKP016C1_IDS_10_SB08.pdf	1057810 6db088cbabfc5ad3822a5aa10874e6d3abb6b495	no	6
Warnings:					
Information:					
2	Foreign Reference	Reference_JP2011100489.pdf	2705904 a0bb26d03f4a8e84cc1434204f9592bf92bf3e8c	no	26
Warnings:					
Information:					
3	Non Patent Literature	1_Entrust1_Strong_Multifactor_Authentication_Methods_from_Entrust_IdentityGuard.pdf	487784 e4dadfa33add82e1c57857559034147bc4c19f3c	no	4
Warnings:					
Information:					
4	Non Patent Literature	2_Entrust2_Mobile_Authentication_and_Transaction_Verification.pdf	300505 c9c7504d3bcf41e5fc5684bcfc13861aea8b2887	no	2
Warnings:					
Information:					
5	Non Patent Literature	3_Entrust4_Proven_Transaction_Verification_on_Smartphones_and_Mobile_Devices.pdf	282158 fef06965e1ef1d824fa49aaaa6527bbd72a9934e	no	2
Warnings:					
Information:					
6	Non Patent Literature	4_Entrust3_WP_Securing_Whats_At_Risk_July08.pdf	5622406 76d79f17dbc8417ed2bc857a2bf40d9602064f93	no	20
Warnings:					
Information:					

7	Non Patent Literature	5_eSphinx4_Cyota_launches_new_authentication_platform_for_online_banking.pdf	135868 53f5b90a86023145d089a6a5ba7b113cebe6c546	no	1
Warnings:					
Information:					
8	Non Patent Literature	6_eSphinx6_Cyota_and_Quova_Reducing_Online_Fraud_with_Cyotas_eVision_Technology.pdf	311165 62c0026a87c10955edd9f332751c7d7efe04decd	no	2
Warnings:					
Information:					
9	Non Patent Literature	7_eSphinx3_Cyota_eSphinx.pdf	236655 5306d98f5ce82dfb3b6a84f2eafd7278adb2b35d	no	2
Warnings:					
Information:					
10	Non Patent Literature	8_eSphinx5_Cyota_releases_eSphinx_online_authentication_package.pdf	221669 a2f6a68ddc70cb9e6ea7ef7076289caf07b656ad	no	2
Warnings:					
Information:					
11	Non Patent Literature	9_eSphinx1_How_Does_it_Work.pdf	220908 e41398b947f983d695caa8b50fd5f7a12281e7bf	no	2
Warnings:					
Information:					
12	Non Patent Literature	10_eSphinx2_Key_Features.pdf	208932 a009b1a3bebdf2b0d06cff7d9d99a1d19bcc6f25	no	2
Warnings:					
Information:					
13	Non Patent Literature	11_Green_Armor_1_December_8_2005_Press_Release.pdf	134478 2f8d9c67ff4cd81e9234059f19689fcf6668f559	no	2
Warnings:					
Information:					

14	Non Patent Literature	12_Green_Armor_2_Green_Armor_Solutions_Identity_Cues_Products.pdf	833810 75cc1682cd0cf48f50d7a4bd5dd17d47bd41e297	no	6
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Information:					
15	Non Patent Literature	13_Green_Armor_3_Green_Armor_Solutions_Identity_Cues_Two_Factor.pdf	184736 9ee2d9b1995b37a673c5729b96f0edd16c91d238	no	2
Warnings:					
Information:					
16	Non Patent Literature	14_RSA1_7035_CONPRO_SB_0711_RSA_Identity_Protection_and_Verification_Suit.pdf	1539929 477e0458dd69fd97ecfa22172e0d0342b1e0a74d	no	9
Warnings:					
Information:					
17	Non Patent Literature	15_RSA2_9697_AATF_SB_0808_RSA_Adaptive_Authentication_overview_solution_brief.pdf	469392 adf57f3d75eed537506065f6cd353973e46aa11f	no	5
Warnings:					
Information:					
18	Non Patent Literature	16_RSA3_AAAM_SB_0208_RSA_Adaptive_Authentication.pdf	543097 50bf0c518a9ccad70833cfadc5384a2178676b3e	no	5
Warnings:					
Information:					
19	Non Patent Literature	17_Ref_Toopher_1.pdf	332798 2d23b0888641687a560995ac1a37dc799cc69c7a	no	2
Warnings:					
Information:					
20	Non Patent Literature	18_Ref_Toopher_2_Toopher_Developer_Documentation.pdf	917930 00442fe4f739938b450a2484599a986e17c79008	no	3
Warnings:					
Information:					

21	Non Patent Literature	19_US_Provisional_Patent_Application_No_61551370.pdf	13174017 e233b5552f426d58d38e537fb4f3f224f9effc61	no	15
Warnings:					
Information:					
22	Fee Worksheet (SB06)	fee-info.pdf	30591 11380c1bea888d8dbd58f99a20cb8dfd41f160d2	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	29952542	

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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

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Electronic Patent Application Fee Transmittal

Application Number:	16180373
Filing Date:	05-Nov-2018
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Attorney Docket Number:	MJAKP016C1

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($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	2806	1	120	120
		Total in USD ($)		**120**

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	**Art Unit**
	AKELAW A TESHALE	2653

CPC						
Symbol					**Type**	**Version**
H04M	/	3	/	42042	F	2013-01-01
H04W	/	4	/	14	I	2013-01-01
H04M	/	3	/	382	I	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	23	
/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	31 March 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20200331

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0425

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	**Art Unit**
	AKELAW A TESHALE	2653

INTERNATIONAL CLASSIFICATION				
CLAIMED				
H04M	/	3	/	42

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 23	
/AKELAW TESHALE/ Primary Examiner, Art Unit 2653 (Primary Examiner)	31 March 2020 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0426

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	**Art Unit**
	AKELAW A TESHALE	2653

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

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	12	10	21	19										
2	2	13	11	22	20										
3	3	14	12	23	21										
4	4	15	13	8	22										
5	5	16	14	9	23										
6	6	17	15												
7	7	18	16												
10	8	19	17												
11	9	20	18												

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	23	
/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	31 March 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office Part of Paper No.: 20200331

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0427

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	9332022		2016-05-03	ASHLEY PETER	

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20100082758		2010-04-01	GOLAN TAL	
	2	20170085584		2017-03-23	GOUTAL SEBASTIEN	

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FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.T/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/AKELAW TESHALE/	Date Considered	03/31/2020

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First Named Inventor	Bjorn Markus Jakobsson
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Examiner Name	Akelaw Teshale
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☐ See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2020-03-19
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

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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 inspections 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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.T/

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	Art Unit
	AKELAW A TESHALE	2653

CPC - Searched*		
Symbol	**Date**	**Examiner**
H04W12/06, H04W12/08, H04W88/02, H04W12/00514, H04W12/12, H04W4/14, H04M3/382,H04M3/42042, H04M3/42042, H04M3/382, H04W4/14	03/31/2020	AT

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	**Date**	**Examiner**
Inventor name search (east)	03/31/2020	AT
east search (US-PGPUB;USPAT;USOCR;FPRS;EPO;JPO; DERWENT;IBM_TDB)	03/31/2020	AT
Please see east search attachment	03/31/2020	AT

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
east interference search		03/31/2020	AT

/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	/AKELAW TESHALE/ Primary Examiner, Art Unit 2653

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0432

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	Art Unit
	AKELAW A TESHALE	2653

/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	/AKELAW TESHALE/ Primary Examiner, Art Unit 2653

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0433

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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 contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20060101334		2006-05-11	LIAO JERRY CHINGHSIEN	
	2	20070136806		2007-06-14	BERMAN REUBEN	
	3	20170195310		2017-07-06	TYLER SIMON PAUL	

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.T/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

If you wish to add additional Foreign Patent Document citation information please click the Add button

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/AKELAW TESHALE/	Date Considered	03/31/2020

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.T/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2020-03-12
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.T/

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 the Freedom of Information Act requires disclosure of these record s.

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.

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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 inspections 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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.T/

Notice of References Cited	Application/Control No. 16/180,373	Applicant(s)/Patent Under Reexamination Jakobsson, Bjorn Markus	
	Examiner AKELAW A TESHALE	Art Unit 2653	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-9060057-B1	06-2015	Danis; Serdar Artun	H04M3/42059	1/1
*	B	US-9277049-B1	03-2016	Danis; Serdar Artun	H04M3/42042	1/1
*	C	US-20130060905-A1	03-2013	Mickens; James	H04L67/025	709/219
*	D	US-8583915-B1	11-2013	Huang; Andrew Shane	H04L63/0869	713/155
*	E	US-20060107323-A1	05-2006	McLean; Ivan Hugh	G06F21/33	726/23
*	F	US-20180160387-A1	06-2018	Chastain; Walter Cooper	H04W12/06	1/1
*	G	US-20150113627-A1	04-2015	CURTIS; William Allen	H04W12/06	726/10
*	H	US-20140245396-A1	08-2014	Oberheide; Jon	H04W12/0608	726/4
*	I	US-20180184289-A1	06-2018	Dudley; William	H04W12/06	1/1
*	J	US-20170331824-A1	11-2017	Pender; Mark A.	H04L63/0892	1/1
*	K	US-20170331816-A1	11-2017	Votaw; Elizabeth S.	H04L63/0838	1/1
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC 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.

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0438

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.
16/180,373	11/05/2018	Bjorn Markus Jakobsson	MJAKP016C1	3758

21912 7590 04/03/2020

VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

EXAMINER	
TESHALE, AKELAW	

ART UNIT	PAPER NUMBER
2653	

NOTIFICATION DATE	DELIVERY MODE
04/03/2020	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):

usptocorrespondence@ip-patent.com

Notice of Allowability	Application No. 16/180,373	Applicant(s) Jakobsson, Bjorn Markus	
	Examiner AKELAW A TESHALE	Art Unit 2653	AIA (FITF) Status Yes

-- 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 03/19/2020.
   ☐ 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 1-23 . 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 _____.

/AKELAW TESHALE/
Primary Examiner, Art Unit 2653

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0440

DETAILED ACTION

Reasons for Allowance

1. **Claims 1-23 are** allowed.

2. The following is an examiner's statement of reasons for allowance: IDS filed on 02/12/2020 and 03/19/2020; and Applicant arguments/ Remarks filed on 10/17/2019 in conjunction with the remarks page 8 have been reviewed by the examiner in view of the prior art of record and it is agreed that the prior art of record does not teach the independent claims 1,8 and 15.

Claims 2-7 and 22-23 are allowed as depending from claim 1.

Claims 9-14 are allowed as depending from claim 8.

Claims 16-21 are allowed as depending from claim 15.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AKELAW A TESHALE whose telephone number is (571)270-5302. The examiner can normally be reached on 9 am -6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571)272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AKELAW TESHALE
Primary Examiner
Art Unit 2653

/AKELAW TESHALE/
Primary Examiner, Art Unit 2653

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	3	"9060057".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 12:33
S2	2	((("RightQuestion") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2019/06/06 12:58
S3	227	((("JAKOBSSON") near3 ("Bjorn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/06/06 12:58
S4	227	S2 or S3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 13:04
S5	444	("20050060643" | "20050198173" | "20050235065" | "20060004772" | "20060149821" | "20060224677" | "20070038718" | "20080141374" | "20080235794" | "20080276315" | "20100094887" | "20120278694" | "20130067012" | "20150030156" | "20160104132" | "20160225897" | "20170005961" | "6721784" | "7899213" | "7899866" | "20090037350" | "20110145152" | "20150216413" | "20160087925" | "8996042" | "20040176072" | "20050182735" | "20050257261" | "20060085505" | "20060195542" | "20060259558" | "20080004049" | "20080046970" | "20080050014" | "20090064330" | "20090228583" | "20100030798" | "20100043071" | "20130083129" | "20140230061" | "20140366144" | "20160014151" | "8255572" | "8832202" | "20140340822" | "20150100896" | "20150371212" | "20160037270" | "8676155" | "20030023736" | "20050223076" | "20060031306" | "20060253597" | "20070086592" | "20070107053" | "20070239639" | "20070271343" | "20100299399" | "20100313253" | "20110087485" | "20110191847" | "20120167233" |	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 13:13

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0443

		"20130081142" | "8667069" | "9277049" | "9473437" | "20070276907" | "20100198928" | "20100257222" | "20110066687" | "20150172233" | "7831522" | "20020184315" | "20030236845" | "20040177120" | "20050033810" | "20070067465" | "20080178288" | "20090210708" | "20090319629" | "20100287246" | "20140250506" | "7293063" | "7644274" | "7797752" | "9060057" | "9245115" | "20070100944" | "20080022107" | "20120242488" | "20150363839" | "20050076084" | "20050216587" | "20060053490" | "20060230461" | "20080104235" | "20080290154" | "20090089859" | "20120227104" | "20130346528" | "7809795" | "8566938" | "8984640" | "9471714" | "20120136780" | "20120311703" | "20020138271" | "20040203589" | "20050076240" | "20060265498" | "20070214495" | "20090292781" | "20120246725" | "20130128883" | "20150067833" | "20150081722" | "20150288714" | "20150381653" | "20160269437" | "6574658" | "8719940" | "8752172" | "20030225850" | "20050188045" | "20110294478" | "20140082726" | "20150148006" | "20160094566" | "8572184" | "8949353" | "8959163" | "20170324767" | "20050188023" | "20060026242" | "20060206713" | "20070027992" | "20070101423" | "20070130618" | "20070143432" | "20080175266" | "20100070761" | "20100145900" | "20110271349" | "20140259158" | "20170091274" | "7299261" | "7917655" | "8131655" | "9338287" | "20110191688" | "20140258420" | "20150334065" | "8667074" | "9560506" | "20030229672" | "20050080857" | "20060015563" | "20060168329" | "20070019235" | "20070192169" | "20070198642" | "20070299916" | "20090252159" | "20100115040" | "20120030293" | "20130305318" | "6161130" | "7809796" | "7814545" | "8010614" | "8489689" | "20150033343" | "20150236990" | "20150326510" | "20170251006" | "9800589").PN.				
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S7	617	S5 or S6	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 13:15
S9	131	S7 and ((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or screen$3 or check$3 or authoriz$3 or authoris$3 or permit$3 or permission))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 13:37
S10	96	S9 and ((server or provider) with (stor$4 or regist$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 13:40
S11	1	"9060057".pn. and spoof$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 14:48
S12	2	"9060057".pn. and authenticat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 14:49
S13	25	S10 and spoof$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 15:07
S15	26	S7 and ((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or authoriz$3 or authoris$3 or permit$3 or permission)) same (deny$4	US-PGPUB; USPAT; USOCR; FPRS;	OR	ON	2019/06/06 15:22

		or block$4 or reject$4or blacklist$4)	EPO; JPO; DERWENT; IBM_TDB			
S16	27	S7 and ((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or authoriz$3 or authoris$3 or permit$3 or permission)) same (deny$4 or block$4 or reject$4 or blacklist$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 15:29
S17	22	S16 and ((server or provider) with (stor$4 or regist$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 15:37
S18	17	S16 and ((server or provider) with (device or apparatus) with (stor$4 or regist$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 15:38
S19	679750	((server or provider) with (device or apparatus) with (stor$4 or regist$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:42
S20	2786792	((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or screen$3 or check$3 or authoriz$3 or authoris$3 or permit$3 or permission))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:44
S22	73224	S19 same ((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or authoriz$3 or authoris$3 or permit$3 or permission))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:45
S23	8917	S22 AND ((H04W12/06 OR H04W12/08 OR H04W88/02 OR H04W12/00514 OR H04W12/12 OR H04W4/14 OR H04M3/382 OR H04M3/42042).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:49
S26	15087	((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or authoriz$3 or authoris$3)) same ((server or provider) with (stor$4 or regist$4)) same (match$4 or compar$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:59
S27	15286	((device or apparatus) near5 (authenticat$3 or verif$5 or validat$3 or	US-PGPUB; USPAT;	OR	ON	2019/06/06 17:01

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0446

		identif$3 or authoriz$3 or authoris$3)) same ((server or provider) with (stor$4 or regist$4)) same (match$4 or compar$4)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S28	2433	S27 AND ((H04W12/06 OR H04W12/08 OR H04W88/02 OR H04W12/00514 OR H04W12/12 OR H04W4/14 OR H04M3/382 OR H04M3/42042).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 17:03
S29	5435	((device or apparatus) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3)) with ((server or provider) with (stor$4 or regist$4)) with (match$4 or compar$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 21:46
S30	444	("20050060643" | "20050198173" | "20050235065" | "20060004772" | "20060149821" | "20060224677" | "20070038718" | "20080141374" | "20080235794" | "20080276315" | "20100094887" | "20120278694" | "20130067012" | "20150030156" | "20160104132" | "20160225897" | "20170005961" | "6721784" | "7899213" | "7899866" | "20090037350" | "20110145152" | "20150216413" | "20160087925" | "8996042" | "20040176072" | "20050182735" | "20050257261" | "20060085505" | "20060195542" | "20060259558" | "20080004049" | "20080046970" | "20080050014" | "20090064330" | "20090228583" | "20100030798" | "20100043071" | "20130083129" | "20140230061" | "20140366144" | "20160014151" | "8255572" | "8832202" | "20140340822" | "20150100896" | "20150371212" | "20160037270" | "8676155" | "20030023736" | "20050223076" | "20060031306" | "20060253597" | "20070086592" | "20070107053" | "20070239639" | "20070271343" | "20100299399" | "20100313253" | "20110087485" | "20110191847" | "20120167233" | "20130081142" | "8667069" | "9277049" | "9473437" | "20070276907" | "20100198928" | "20100257222" | "20110066687" | "20150172233" | "7831522" | "20020184315" | "20030236845" | "20040177120" | "20050033810" | "20070067465" | "20080178288" | "20090210708" | "20090319629" | "20100287246" | "20140250506" | "7293063" | "7644274" | "7797752" | "9060057" | "9245115" | "20070100944" | "20080022107" |	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 21:47

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0447

		"20120242488" | "20150363839" | "20050076084" | "20050216587" | "20060053490" | "20060230461" | "20080104235" | "20080290154" | "20090089859" | "20120227104" | "20130346528" | "7809795" | "8566938" | "8984640" | "9471714" | "20120136780" | "20120311703" | "20020138271" | "20040203589" | "20050076240" | "20060265498" | "20070214495" | "20090292781" | "20120246725" | "20130128883" | "20150067833" | "20150081722" | "20150288714" | "20150381653" | "20160269437" | "6574658" | "8719940" | "8752172" | "20030225850" | "20050188045" | "20110294478" | "20140082726" | "20150148006" | "20160094566" | "8572184" | "8949353" | "8959163" | "20170324767" | "20050188023" | "20060026242" | "20060206713" | "20070027992" | "20070101423" | "20070130618" | "20070143432" | "20080175266" | "20100070761" | "20100145900" | "20110271349" | "20140259158" | "20170091274" | "7299261" | "7917655" | "8131655" | "9338287" | "20110191688" | "20140258420" | "20150334065" | "8667074" | "9560506" | "20030229672" | "20050080857" | "20060015563" | "20060168329" | "20070019235" | "20070192169" | "20070198642" | "20070299916" | "20090252159" | "20100115040" | "20120030293" | "20130305318" | "6161130" | "7809796" | "7814545" | "8010614" | "8489689" | "20150033343" | "20150236990" | "20150326510" | "20170251006" | "9800589").PN.				
S31	292	("20070130618" | "20090252159" | "20090037350" | "20110145152" | "20150216413" | "20160087925" | "8996042" | "20150030156" | "20150381653" | "20140340822" | "20150100896" | "20150371212" | "20160037270" | "8676155" | "9338287" | "20070276907" | "20100198928" | "20100257222" | "20110066687" | "20150172233" | "9277049" | "7809796" | "20070100944" | "20080022107" | "20120242488" | "20150363839" | "20120136780" | "20130128883" | "9060057" | "20070214495" | "20140259158" | "20030225850" | "20050188045" | "20110294478" | "20140082726" | "20150148006" | "20160094566" | "8572184" | "8949353" | "8959163" | "20110191688" | "20140258420" | "20150334065" | "8667074" |	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 21:47

		"9560506" | "20170005961" | "20150033343" | "20150236990" | "20150326510")".PN.'"				
S32	617	S30 or S31	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 21:47
S33	4	S29 and S32	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 21:48
S34	8888	((device or apparatus) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3)) same ((server or provider) with (stor$4 or regist$4)) with (match$4 or compar$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 21:49
S35	4	S32 and S34	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 21:50
S36	4603	S34 same authenticat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 21:53
S38	399	S36 and spoof$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 21:55
S39	1309	S36 same communication	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 22:49
S40	114	S39 and spoof$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 22:50
S41	3	"9060057".pn.	US-PGPUB; USPAT;	OR	OFF	2019/06/07 09:43

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0449

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S43	4	((("RightQuestion") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2019/11/06 07:56
S44	239	((("JAKOBSSON") near3 ("Bjorn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/11/06 07:57
S46	75667	((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:01
S47	473	("20050060643" | "20050198173" | "20050235065" | "20060004772" | "20060149821" | "20060224677" | "20070038718" | "20080141374" | "20080235794" | "20080276315" | "20100094887" | "20120278694" | "20130067012" | "20150030156" | "20160104132" | "20160225897" | "20170005961" | "6721784" | "7899213" | "7899866" | "20090037350" | "20110145152" | "20150216413" | "20160087925" | "8996042" | "9060057" | "20040176072" | "20050182735" | "20050257261" | "20060085505" | "20060195542" | "20060259558" | "20080004049" | "20080046970" | "20080050014" | "20090064330" | "20090228583" | "20100030798" | "20100043071" | "20130083129" | "20140230061" | "20140366144" | "20160014151" | "8255572" | "8832202" | "20140340822" | "20150100896" | "20150371212" | "20160037270" | "8676155" | "6073142" | "20030023736" | "20050223076" | "20060031306" | "20060253597" | "20070086592" | "20070107053" | "20070239639" | "20070271343" | "20100299399" | "20100313253" | "20110087485" | "20110191847" | "20120167233" | "20130081142" | "8667069" | "9277049" | "9473437" | "20070276907" | "20100198928" | "20100257222" | "20110066687" | "20150172233" | "7831522" | "20130318580" | "9258314" | "20020184315" | "20030236845" | "20040177120" | "20050033810" | "20070067465" | "20080178288" | "20090210708" | "20090319629" | "20100287246" | "20140250506" | "7293063" | "7644274" | "7797752" |	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:01

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S48	119	("20070130618" | "20090252159" | "20090037350" | "20110145152" | "20150216413" | "20160087925" | "8996042" | "20150030156" | "20150381653" | "20140340822" | "20150100896" | "20150371212" | "20160037270" | "8676155" | "9338287" | "20070276907" | "20100198928" | "20100257222" | "20110066687" | "20150172233" | "9277049" | "7809796" | "20070100944" | "20080022107" | "20120242488" | "20150363839" | "20120136780" | "20130128883" | "9060057" | "20070214495" | "20140259158" | "20030225850" | "20050188045" | "20110294478" | "20140082726" | "20150148006" |	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:02

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S49	473	S47 or S48	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:02
S51	6	S46 and S49	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:02
S52	239	S43 or S44	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:03
S53	12	S46 and S52	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:03
S55	8366	S46 AND ((H04W12/06 OR H04W12/08 OR H04W88/02 OR H04W12/00514 OR H04W12/12 OR H04W4/14 OR H04M3/382 OR H04M3/42042 or H04M3/42042 or H04M3/382 or H04W4/14).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:18
S56	47456	((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) near5 (enrol$4 or regist$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:19
S57	16325	S56 same (communication$1 OR connection$1 or session or call$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:30
S58	4831	S57 same (service or provider)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2019/11/06 08:33

			DERWENT; IBM_TDB			
S59	429	S58 and ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print or password or passcode or (pass adj code) or (pass adj word) or key))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:37
S60	141	S59 AND ((H04W12/06 OR H04W12/08 OR H04W88/02 OR H04W12/00514 OR H04W12/12 OR H04W4/14 OR H04M3/382 OR H04M3/42042 or H04M3/42042 or H04M3/382 or H04W4/14).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:39
S61	33	S58 same ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print or password or passcode or (pass adj code) or (pass adj word) or key))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 10:51
S62	54	((((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)) same (communication$1 OR connection$1 or session or call$4) same (service or provider) same ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print or password or passcode or (pass adj code) or (pass adj word) or key)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 11:10
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EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0453

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S67	5	((("RightQuestion") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2020/02/03 11:51
S68	242	((("JAKOBSSON") near3 ("Bjorn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/02/03 11:51
S69	242	S67 or S68	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/02/03 11:51
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S72	193	S70 or S71	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/02/03 12:22
S73	77544	((device or apparatus or endpoint or terminal or phone or telephone) near5	US-PGPUB; USPAT;	OR	ON	2020/02/03 12:35

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0456

		(authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S74	6	S72 and S73	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/02/03 12:37
S75	5	((("RightQuestion") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2020/03/31 20:57
S76	251	((("JAKOBSSON") near3 ("Bjorn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/03/31 20:57
S77	251	S75 or S76	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/03/31 20:57
S78	57	((((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)) same (communication$1 OR connection$1 or session or call$4) same (service or provider) same ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print or password or passcode or (pass adj code) or (pass adj word) or key)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/03/31 21:46
S79	20	S78 AND ((H04W12/06 OR H04W12/08 OR H04W88/02 OR H04W12/00514 OR H04W12/12 OR H04W4/14 OR H04M3/382 OR H04M3/42042 or H04M3/42042 or H04M3/382 or H04W4/14).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/03/31 21:51
S80	193	("20060153380" | "20060168024" | "20080098237" | "20150156154" | "20170078321" | "9154514" | "9847973" | "9906554" | "20120192258" | "8560962" | "9258314" | "9613341" | "9940482" | "20100235636" | "20130318580" | "20140214895" | "6073142" | "20120311703" | "20170251006" | "20170324767" | "7831522" | "9800589" | "20030225850" | "20050188045" | "20070100944" | "20070276907" | "20080022107" | "20090037350" | "20100198928" |	US-PGPUB; USPAT	OR	OFF	2020/03/31 22:01

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0457

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		"20150381653" | "20160014151" |					

		"20160104132" | "20160225897" | "20160269437" | "20170005961" | "20170091274" | "6161130" | "6574658" | "6721784" | "7293063" | "7299261" | "7644274" | "7797752" | "7809795" | "7809796" | "7814545" | "7899213" | "7899866" | "7917655" | "8010614" | "8131655" | "8255572" | "8489689" | "8566938" | "8667069" | "8719940" | "8752172" | "8832202" | "8984640" | "9060057" | "9245115" | "9277049" | "9338287" | "9471714" | "9473437").PN.				
S81	78788	((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/03/31 22:01
S82	6	S80 and S81	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/03/31 22:03

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S65	16	((((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)) same (communication$1 OR connection$1 or session or call$4) same (service or provider) same ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3 (authenticat$3 or verif$5 or authoriz$3 or authoris$3 or fingerprint or print))).clm.	US-PGPUB; USPAT	OR	ON	2019/11/06 11:26
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S83	16	((((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or	US-PGPUB;	OR	ON	2020/03/31 22:22

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0460

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EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0461

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	Art Unit
	AKELAW A TESHALE	2653

CPC - Searched*		
Symbol	Date	Examiner
H04W12/06, H04W12/08, H04W88/02, H04W12/00514, H04W12/12, H04W4/14, H04M3/382,H04M3/42042, H04M3/42042, H04M3/382, H04W4/14	04/16/2020	AT

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Inventor name search (east)	04/16/2020	AT
east search (US-PGPUB;USPAT;USOCR;FPRS;EPO;JPO; DERWENT;IBM_TDB)	04/16/2020	AT
Please see east search attachment	04/16/2020	AT

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
east interference search		04/16/2020	AT

/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	/AKELAW TESHALE/ Primary Examiner, Art Unit 2653

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0462

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	Art Unit
	AKELAW A TESHALE	2653

/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	/AKELAW TESHALE/ Primary Examiner, Art Unit 2653

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0463

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8365258		2013-01-29	DISPENSA STEVEN	
	2	10122715		2018-11-06	DISPENSA STEPHEN T	

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	2	20060053279		2006-03-09	COUEIGNOUX PHILIPPE J M	
	3	20070136573		2007-06-14	STEINBERG JOSEPH	
	4	20070143407		2007-06-21	AVRITCH PETER S	

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	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

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	6	20120253810		2012-10-04	SUTTON TIMOTHY S	
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	1	2011100489	JP		2011-05-19	BANK OF TOKYO MITSUBISHI UFJ		

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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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Entrust: "Strong Multifactor Authentication Methods from Entrust IdentityGuard," https://web.archive.org/web/20110825101942/http://www.entrust.com/strong-authentication/authenticators.htm. August 25, 2011	
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	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

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	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

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EXAMINER SIGNATURE

Examiner Signature	/AKELAW TESHALE/	Date Considered	04/16/2020

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2020-04-03
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	5	((("RightQuestion") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2020/04/16 13:21
L2	253	((("JAKOBSSON") near3 ("Bjorn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/04/16 13:22
L3	253	1 or 2	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/04/16 13:22
L4	57	((((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)) same (communication$1 OR connection$1 or session or call$4) same (service or provider) same ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print or password or passcode or (pass adj code) or (pass adj word) or key)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/16 13:22
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S4	227	S2 or S3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 13:04
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S7	617	S5 or S6	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/06/06 13:15

			DERWENT; IBM_TDB			
S9	131	S7 and ((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or screen$3 or check$3 or authoriz$3 or authoris$3 or permit$3 or permission))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 13:37
S10	96	S9 and ((server or provider) with (stor$4 or regist$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 13:40
S11	1	"9060057".pn. and spoof$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 14:48
S12	2	"9060057".pn. and authenticat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 14:49
S13	25	S10 and spoof$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 15:07
S15	26	S7 and ((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or	US-PGPUB; USPAT;	OR	ON	2019/06/06 15:22

		identif$3 or authoriz$3 or authoris$3 or permit$3 or permission)) same (deny$4 or block$4 or reject$4or blacklist$4)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S16	27	S7 and ((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or authoriz$3 or authoris$3 or permit$3 or permission)) same (deny$4 or block$4 or reject$4 or blacklist$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 15:29
S17	22	S16 and ((server or provider) with (stor$4 or regist$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 15:37
S18	17	S16 and ((server or provider) with (device or apparatus) with (stor$4 or regist$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 15:38
S19	679750	((server or provider) with (device or apparatus) with (stor$4 or regist$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:42
S20	2786792	((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or screen$3 or check$3 or authoriz$3 or authoris$3 or permit$3 or permission))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:44

S22	73224	S19 same ((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or authoriz$3 or authoris$3 or permit$3 or permission))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:45
S23	8917	S22 AND ((H04W12/06 OR H04W12/08 OR H04W88/02 OR H04W12/00514 OR H04W12/12 OR H04W4/14 OR H04M3/382 OR H04M3/42042).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:49
S26	15087	((device or apparatus) near5 (authenticat$3 or verif$3 or validat$3 or identif$3 or authoriz$3 or authoris$3)) same ((server or provider) with (stor$4 or regist$4)) same (match$4 or compar$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 16:59
S27	15286	((device or apparatus) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3)) same ((server or provider) with (stor$4 or regist$4)) same (match$4 or compar$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 17:01
S28	2433	S27 AND ((H04W12/06 OR H04W12/08 OR H04W88/02 OR H04W12/00514 OR H04W12/12 OR H04W4/14 OR H04M3/382 OR H04M3/42042).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 17:03
S29	5435	((device or apparatus) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3)) with ((server or provider) with (stor$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2019/06/06 21:46

		or regist$4)) with (match$4 or compar$4)	DERWENT; IBM_TDB			
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S31	292	("20070130618" | "20090252159" | "20090037350" | "20110145152" | "20150216413" | "20160087925" | "8996042" | "20150030156" | "20150381653" | "20140340822" | "20150100896" | "20150371212" | "20160037270" | "8676155" | "9338287" | "20070276907" | "20100198928" | "20100257222" | "20110066687" | "20150172233" | "9277049" | "7809796" | "20070100944" | "20080022107" | "20120242488" | "20150363839" | "20120136780" | "20130128883" | "9060057" | "20070214495" | "20140259158" | "20030225850" | "20050188045" | "20110294478" | "20140082726" | "20150148006" | "20160094566" | "8572184" | "8949353" | "8959163" | "20110191688" | "20140258420" | "20150334065" | "8667074" | "9560506" | "20170005961" | "20150033343" | "20150236990" | "20150326510")".PN.'"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 21:47
S32	617	S30 or S31	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 21:47
S33	4	S29 and S32	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/06 21:48
S34	8888	((device or apparatus) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3)) same ((server or provider) with (stor$4	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	2019/06/06 21:49

		or regist$4)) with (match$4 or compar$4)	JPO; DERWENT; IBM_TDB			
S35	4	S32 and S34	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 21:50
S36	4603	S34 same authenticat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 21:53
S38	399	S36 and spoof$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 21:55
S39	1309	S36 same communication	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 22:49
S40	114	S39 and spoof$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/06 22:50

S41	3	"9060057".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/06/07 09:43
S43	4	((("RightQuestion") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2019/11/06 07:56
S44	239	((("JAKOBSSON") near3 ("Bjorn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/11/06 07:57
S46	75667	((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:01
S47	473	("20050060643" | "20050198173" | "20050235065" | "20060004772" | "20060149821" | "20060224677" | "20070038718" | "20080141374" | "20080235794" | "20080276315" | "20100094887" | "20120278694" | "20130067012" | "20150030156" | "20160104132" | "20160225897" | "20170005961" | "6721784" | "7899213" | "7899866" | "20090037350" | "20110145152" | "20150216413" | "20160087925" | "8996042" | "9060057" | "20040176072" | "20050182735" | "20050257261" | "20060085505" | "20060195542" | "20060259558" | "20080004049" | "20080046970" | "20080050014" | "20090064330" | "20090228583" | "20100030798" | "20100043071" | "20130083129" | "20140230061" | "20140366144" |	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:01

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S48	119	("20070130618" | "20090252159" | "20090037350" | "20110145152" | "20150216413" | "20160087925" | "8996042" | "20150030156" | "20150381653" | "20140340822" | "20150100896" | "20150371212" | "20160037270" | "8676155" | "9338287" | "20070276907" | "20100198928" | "20100257222" | "20110066687" | "20150172233" | "9277049" | "7809796" | "20070100944" | "20080022107" | "20120242488" | "20150363839" | "20120136780" | "20130128883" | "9060057" | "20070214495" | "20140259158" | "20030225850" | "20050188045" | "20110294478" | "20140082726" | "20150148006" | "20160094566" | "8572184" | "8949353" | "8959163" | "20110191688" | "20140258420" | "20150334065" | "8667074" |	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:02

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S49	473	S47 or S48	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:02
S51	6	S46 and S49	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:02
S52	239	S43 or S44	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:03
S53	12	S46 and S52	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:03
S55	8366	S46 AND ((H04W12/06 OR H04W12/08 OR H04W88/02 OR H04W12/00514 OR H04W12/12 OR H04W4/14 OR H04M3/382 OR H04M3/42042 or H04M3/42042 or H04M3/382 or H04W4/14).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:18

S56	47456	((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) near5 (enrol$4 or regist$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:19
S57	16325	S56 same (communication$1 OR connection$1 or session or call$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:30
S58	4831	S57 same (service or provider)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:33
S59	429	S58 and ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print or password or passcode or (pass adj code) or (pass adj word) or key))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:37
S60	141	S59 AND ((H04W12/06 OR H04W12/08 OR H04W88/02 OR H04W12/00514 OR H04W12/12 OR H04W4/14 OR H04M3/382 OR H04M3/42042 or H04M3/42042 or H04M3/382 or H04W4/14).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 08:39
S61	33	S58 same ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	2019/11/06 10:51

		(authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print or password or passcode or (pass adj code) or (pass adj word) or key))	JPO; DERWENT; IBM_TDB			
S62	54	((((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)) same (communication$1 OR connection$1 or session or call$4) same (service or provider) same ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print or password or passcode or (pass adj code) or (pass adj word) or key)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 11:10
S63	473	("20050060643" | "20050198173" | "20050235065" | "20060004772" | "20060149821" | "20060224677" | "20070038718" | "20080141374" | "20080235794" | "20080276315" | "20100094887" | "20120278694" | "20130067012" | "20150030156" | "20160104132" | "20160225897" | "20170005961" | "6721784" | "7899213" | "7899866" | "20090037350" | "20110145152" | "20150216413" | "20160087925" | "8996042" | "9060057" | "20040176072" | "20050182735" | "20050257261" | "20060085505" | "20060195542" | "20060259558" | "20080004049" | "20080046970" | "20080050014" | "20090064330" | "20090228583" | "20100030798" | "20100043071" | "20130083129" | "20140230061" | "20140366144" | "20160014151" | "8255572" |	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/06 12:30

		"8832202" | "20140340822" | "20150100896" | "20150371212" | "20160037270" | "8676155" | "6073142" | "20030023736" | "20050223076" | "20060031306" | "20060253597" | "20070086592" | "20070107053" | "20070239639" | "20070271343" | "20100299399" | "20100313253" | "20110087485" | "20110191847" | "20120167233" | "20130081142" | "8667069" | "9277049" | "9473437" | "20070276907" | "20100198928" | "20100257222" | "20110066687" | "20150172233" | "7831522" | "20130318580" | "9258314" | "20020184315" | "20030236845" | "20040177120" | "20050033810" | "20070067465" | "20080178288" | "20090210708" | "20090319629" | "20100287246" | "20140250506" | "7293063" | "7644274" | "7797752" | "9060057" | "9245115" | "20070100944" | "20080022107" | "20120242488" | "20150363839" | "20050076084" | "20050216587" | "20060053490" | "20060230461" | "20080104235" | "20080290154" | "20090089859" | "20120227104" | "20130346528" | "7809795" | "8566938" | "8984640" | "9471714" | "20120136780" | "20120311703" | "20100235636" | "20120192258" | "8560962" | "20020138271" | "20040203589" | "20050076240" | "20060265498" | "20070214495" | "20090292781" | "20120246725" | "20130128883" | "20150067833" | "20150081722" | "20150288714" | "20150381653" | "20160269437" | "6574658" | "8719940" | "8752172" | "20030225850" | "20050188045" | "20110294478" | "20140082726" | "20150148006" | "20160094566" | "8572184" | "8949353" | "8959163" | "20170324767" | "20050188023" |				

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S67	5	((("RightQuestion") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2020/02/03 11:51
S68	242	((("JAKOBSSON") near3 ("Bjorn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/02/03 11:51
S69	242	S67 or S68	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/02/03 11:51
S70	193	("20060153380" | "20060168024" | "20080098237" | "20150156154" | "20170078321" | "9154514" | "9847973" | "9906554" | "20120192258" | "8560962" | "9258314" | "9613341" | "9940482" |	US-PGPUB; USPAT	OR	OFF	2020/02/03 11:54

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S71	8	("20060153380" | "20060168024" | "20080098237" | "20150156154" | "20170078321" | "9154514" | "9847973" | "9906554").PN.	US-PGPUB; USPAT	OR	OFF	2020/02/03 11:54

S72	193	S70 or S71	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/02/03 12:22
S73	77544	((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/02/03 12:35
S74	6	S72 and S73	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/02/03 12:37
S75	5	((("RightQuestion") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2020/03/31 20:57
S76	251	((("JAKOBSSON") near3 ("Bjorn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/03/31 20:57
S77	251	S75 or S76	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/03/31 20:57
S78	57	((((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)) same (communication$1 OR	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2020/03/31 21:46

		connection$1 or session or call$4) same (service or provider) same ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print or password or passcode or (pass adj code) or (pass adj word) or key)))	DERWENT; IBM_TDB			
S79	20	S78 AND ((H04W12/06 OR H04W12/08 OR H04W88/02 OR H04W12/00514 OR H04W12/12 OR H04W4/14 OR H04M3/382 OR H04M3/42042 or H04M3/42042 or H04M3/382 or H04W4/14).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/03/31 21:51
S80	193	("20060153380" | "20060168024" | "20080098237" | "20150156154" | "20170078321" | "9154514" | "9847973" | "9906554" | "20120192258" | "8560962" | "9258314" | "9613341" | "9940482" | "20100235636" | "20130318580" | "20140214895" | "6073142" | "20120311703" | "20170251006" | "20170324767" | "7831522" | "9800589" | "20030225850" | "20050188045" | "20070100944" | "20070276907" | "20080022107" | "20090037350" | "20100198928" | "20100257222" | "20110066687" | "20110145152" | "20110191688" | "20110294478" | "20120136780" | "20120242488" | "20140082726" | "20140258420" | "20140340822" | "20150033343" | "20150100896" | "20150148006" | "20150172233" | "20150216413" | "20150236990" | "20150326510" | "20150334065" | "20150363839" | "20150371212" | "20160037270" | "20160087925" | "20160094566" | "8572184" |	US-PGPUB; USPAT	OR	OFF	2020/03/31 22:01

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S81	78788	((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/03/31 22:01
S82	6	S80 and S81	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/03/31 22:03
S84	5	((("RIGHTQUESTION") near3 ("LLC"))).AS,AANM.	USPAT	OR	OFF	2020/04/12 22:55
S85	252	((("JAKOBSSON") near3 ("Bjorn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/04/12 22:55

S86	252	S84 or S85	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/12 22:56

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L11	16	((((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)) same (communication$1 OR connection$1 or session or call$4) same (service or provider) same ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3 (authenticat$3 or verif$5 or authoriz$3 or authoris$3 or fingerprint or print))).clm.	US-PGPUB; USPAT	OR	ON	2020/04/16 14:30
S65	16	((((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)) same (communication$1 OR connection$1 or session or call$4) same (service or provider) same ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3 (authenticat$3 or verif$5 or authoriz$3 or authoris$3 or fingerprint or print))).clm.	US-PGPUB; USPAT	OR	ON	2019/11/06 11:26
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S83	16	((((device or apparatus or endpoint or terminal or phone or telephone) near5 (authenticat$3 or verif$5 or validat$3 or identif$3 or authoriz$3 or authoris$3 or fingerprint or print)) with (enrol$4 or regist$4)) same (communication$1 OR connection$1 or session or call$4) same (service or provider) same ((request$4 or ask$4 or prompt$4) near3 (addational or supplement$4 or another or second$4 or more or other or alternat$4) near3 (authenticat$3 or verif$5 or authoriz$3 or authoris$3 or fingerprint or print))).clm.	US-PGPUB; USPAT	OR	ON	2020/03/31 22:22

4/16/2020 2:34:29 PM
C:\Users\ateshale\Documents\EAST\Workspaces\16180373.wsp

Notice of References Cited	Application/Control No. 16/180,373	Applicant(s)/Patent Under Reexamination Jakobsson, Bjorn Markus	
	Examiner AKELAW A TESHALE	Art Unit 2653	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-9060057-B1	06-2015	Danis; Serdar Artun	H04M3/42059	1/1
*	B	US-9277049-B1	03-2016	Danis; Serdar Artun	H04M3/42042	1/1
*	C	US-20130060905-A1	03-2013	Mickens; James	H04L67/025	709/219
*	D	US-8583915-B1	11-2013	Huang; Andrew Shane	H04L63/0869	713/155
*	E	US-20060107323-A1	05-2006	McLean; Ivan Hugh	H04L63/1416	726/23
*	F	US-20180160387-A1	06-2018	Chastain; Walter Cooper	H04W12/06	1/1
*	G	US-20150113627-A1	04-2015	CURTIS; William Allen	H04L63/06	726/10
*	H	US-20140245396-A1	08-2014	Oberheide; Jon	H04W12/06	726/4
*	I	US-20180184289-A1	06-2018	Dudley; William	H04W8/26	1/1
*	J	US-20170331824-A1	11-2017	Pender; Mark A.	H04L63/0892	1/1
*	K	US-20170331816-A1	11-2017	Votaw; Elizabeth S.	G06F21/34	1/1
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC 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.

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0502

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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P.O. Box 1450
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/180,373	11/05/2018	Bjorn Markus Jakobsson	MJAKP016C1	3758

21912 7590 04/22/2020

VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

EXAMINER	
TESHALE, AKELAW	

ART UNIT	PAPER NUMBER
2653	

NOTIFICATION DATE	DELIVERY MODE
04/22/2020	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):

usptocorrespondence@ip-patent.com

Notice of Allowability	Application No. 16/180,373	Applicant(s) Jakobsson, Bjorn Markus	
	Examiner AKELAW A TESHALE	Art Unit 2653	AIA (FITF) Status Yes

-- 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 04/06/2020.
   ☐ 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 1-23 . 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 _____.

/AKELAW TESHALE/
Primary Examiner, Art Unit 2653

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0504

DETAILED ACTION

Reasons for Allowance

1. **Claims 1-23 are** allowed.

2. The following is an examiner's statement of reasons for allowance: ID filed on 04/02/2020 and Applicant arguments/ Remarks filed on 10/17/2019 in conjunction with the remarks page 8 have been reviewed by the examiner in view of the prior art of record and it is agreed that the prior art of record does not teach the independent claims 1,8 and 15.

Claims 2-7 and 22-23 are allowed as depending from claim 1.

Claims 9-14 are allowed as depending from claim 8.

Claims 16-21 are allowed as depending from claim 15.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AKELAW A TESHALE whose telephone number is (571)270-5302. The examiner can normally be reached on 9 am -6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571)272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AKELAW TESHALE
Primary Examiner
Art Unit 2653

/AKELAW TESHALE/
Primary Examiner, Art Unit 2653

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	**Art Unit**
	AKELAW A TESHALE	2653

CPC						
Symbol					**Type**	**Version**
H04M	/	3	/	42042	F	2013-01-01
H04W	/	4	/	14	I	2013-01-01
H04M	/	3	/	382	I	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	23	
/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	16 April 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20200412

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0507

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	**Art Unit**
	AKELAW A TESHALE	2653

INTERNATIONAL CLASSIFICATION				
CLAIMED				
H04M	/	3	/	42

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	23	
/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	16 April 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0508

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	**Art Unit**
	AKELAW A TESHALE	2653

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

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	12	10	21	19										
2	2	13	11	22	20										
3	3	14	12	23	21										
4	4	15	13	8	22										
5	5	16	14	9	23										
6	6	17	15												
7	7	18	16												
10	8	19	17												
11	9	20	18												

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	23	
/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	16 April 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office Part of Paper No.: 20200412

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0509

Doc Code: QPIDS.REQ
Document Description: Quick Path Information Disclosure Statement

PTO/SB/09 (08-14)

CERTIFICATION AND REQUEST FOR CONSIDERATION OF AN INFORMATION DISCLOSURE STATEMENT FILED AFTER PAYMENT OF THE ISSUE FEE UNDER THE QPIDS PILOT PROGRAM

Non-Provisional Application Number: 16/180,373	Filing Date: November 05, 2018
First Named Inventor: Bjorn Markus Jakobsson	Title of Invention: VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA

THE UNDERSIGNED HEREBY CERTIFIES AND REQUESTS THE FOLLOWING FOR THE ABOVE-IDENTIFIED APPLICATION.

1. Consideration is requested of the information disclosure statement (IDS) submitted herewith, which is being filed after payment of the issue fee.
2. Check the box next to the appropriate selection:

   ☐ Each item of information contained in the IDS was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the IDS. See 37 CFR 1.97(e)(1).

   OR

   ☑ No item of information contained in the IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the IDS was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the IDS. See 37 CFR 1.97(e)(2).
3. Please charge the IDS fee set forth in 37 CFR 1.17(p) to Deposit Account No. 500685.
4. A Petition to Withdraw from Issue After Payment of the Issue Fee (37 CFR 1.313(c)(2)), including the petition fee set forth in 37 CFR 1.17(h), is submitted herewith as a **Web-based ePetition**.
   WARNING: Do not submit the petition as a follow-on paper via EFS-Web. Submit the petition as a Web-based ePetition by signing on to EFS-Web as a registered user, selecting the radio button next to "Existing application/patent," and then selecting the radio button next to "ePetition (for automatic processing and immediate grant, if all petitions requirements are met)." Failure to use the Web-based ePetition interface will result in automatic entry of the RCE.
5. A request for continued examination (RCE) under 37 CFR 1.114 and the RCE fee under 37 CFR 1.17(e) are submitted herewith.
6. The RCE will be treated as a "conditional" RCE. In the event the examiner determines that any item of information contained in the IDS necessitates the reopening of prosecution in the application, the undersigned understands that (i) the RCE will be processed and treated as an RCE under 37 CFR 1.114 and therefore (ii) the IDS fee under 37 CFR 1.17(p) will be returned in accordance with 37 CFR 1.97(b)(4). In the event that no item of information in the IDS necessitates reopening prosecution, the undersigned understands that the RCE will not be processed and the RCE fee under 37 CFR 1.17(e) will be returned.
7. This certification and request is being filed as a **Web-based ePetition** and is not accompanied by an amendment to the application. Inclusion of an amendment will result in automatic entry of the RCE.

Signature /Yeu-Ting George Cheng/	Date April 27, 2020
Name (Print/Typed) Yeu-Ting George Cheng	Practitioner Registration Number (If applicable) 69408

Note: *Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required in accordance with 37 CFR 1.33 and 11.18. Please see 37 CFR 1.4(d) for the form of the signature. If necessary, submit multiple forms for more than one signature, see below.**

☑ *Total of 1 forms are submitted.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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.

Electronic Patent Application Fee Transmittal

Application Number:	16180373
Filing Date:	05-Nov-2018
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Attorney Docket Number:	MJAKP016C1

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
PETITION FEE-37CFR 1.17(H) (GROUP II)	2464	1	70	70
RCE- 2ND AND SUBSEQUENT REQUEST	2820	1	950	950
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1020**

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16180373
Filing Date	2018-11-05
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐

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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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

	1	ROBINSON et al., Caching Context Information in Persvasive System, MDS '06: Proceedings of the 3rd International Middleware doctoral Symposium. November 2006, PP 1 (Year: 2006)	☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2020-04-27
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

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

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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 inspections 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.

Doc Code: PET.AUTO Document Description: Petition automatically granted by EFS-Web	PTO/SB/140 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**PETITION TO WITHDRAW AN APPLICATION FROM ISSUE AFTER PAYMENT OF THE ISSUE FEE UNDER 37 CFR 1.313(c)**
Application Number	16180373
Filing Date	05-Nov-2018
First Named Inventor	Bjorn Jakobsson
Art Unit	2653
Examiner Name	AKELAW TESHALE
Attorney Docket Number	MJAKP016C1
Title	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA

An application may be withdrawn from issue for further action upon petition by the applicant. To request that the Office withdraw an application from issue, applicant must file a petition under this section including the fee set forth in § 1.17(h) and a showing of good and sufficient reasons why withdrawal of the application from issue is necessary.

APPLICANT HEREBY PETITIONS TO WITHDRAW THIS APPLICATION FROM ISSUE UNDER 37 CFR 1.313(c).

A grantable petition requires the following items:
(1) Petition fee; and
(2) One of the following reasons:
(a) Unpatentability of one or more claims, which must be accompanied by an unequivocal statement that one or more claims are unpatentable, an amendment to such claim or claims, and an explanation as to how the amendment causes such claim or claims to be patentable;
(b) Consideration of a request for continued examination in compliance with § 1.114 (for a utility or plant application only); or
(c) Express abandonment of the application. Such express abandonment may be in favor of a continuing application, but not a CPA under 37 CFR 1.53(d).

Petition Fee

- (•) Small Entity
- ( ) Micro Entity
- ( ) Regular Undiscounted

Reason for withdrawal from issue

◯ One or more claims are unpatentable ◉ Consideration of a request for continued examination (RCE) (List of Required Documents and Fees) ◯ Applicant hereby expressly abandons the instant application (any attorney/agent signing for this reason must have power of attorney pursuant to 37 CFR 1.32(b)).
RCE request,submission, and fee. ☐ I certify, in accordance with 37 CFR 1.4(d)(4) that : The RCE request ,submission, and fee have already been filed in the above-identified application on ☒ Are attached.
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◉ An attorney or agent registered to practice before the Patent and Trademark Office who has been given power of attorney in this application. ◯ An attorney or agent registered to practice before the Patent and Trademark Office, acting in a representative capacity. ◯ A sole inventor ◯ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ◯ A joint inventor; all of whom are signing this e-petition

Signature	/Yeu-Ting George Cheng/
Name	Yeu-Ting George Cheng
Registration Number	69408

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Decision Date : April 27, 2020

In re Application of :

Bjorn Jakobsson

DECISION ON PETITION
UNDER CFR 1.313(c)(2)

Application No : 16180373

Filed : 05-Nov-2018

Attorney Docket No : MJAKP016C1

This is an electronic decision on the petition under 37 CFR 1.313(c)(2), filed April 27, 2020 , to withdraw the above-identified application from issue after payment of the issue fee.

The petition is **GRANTED.**

The above-identified application is withdrawn from issue for consideration of a submission under 37 CFR 1.114 (request for continued examination). See 37 CFR 1.313(c)(2).

Petitioner is advised that the issue fee paid in this application cannot be refunded. If, however, this application is again allowed, petitioner may request that it be applied towards the issue fee required by the new Notice of Allowance.

Telephone inquiries concerning this decision should be directed to the Patent Electronic Business Center (EBC) at 866-217-9197.

This application file is being referred to Technology Center AU 2653 for processing of the request for continuing examination under 37 CFR 1.114 .

Office of Petitions

Electronic Acknowledgement Receipt

EFS ID:	39278953
Application Number:	16180373
International Application Number:	
Confirmation Number:	3758
Title of Invention:	VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA
First Named Inventor/Applicant Name:	Bjorn Markus Jakobsson
Customer Number:	21912
Filer:	Yeu-Ting George Cheng/Elaine Nguyen
Filer Authorized By:	Yeu-Ting George Cheng
Attorney Docket Number:	MJAKP016C1
Receipt Date:	27-APR-2020
Filing Date:	05-NOV-2018
Time Stamp:	18:19:12
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1020
RAM confirmation Number	E20204QI19076317
Deposit Account	500685
Authorized User	Elaine Nguyen
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 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	Petition automatically granted by EFS	petition-request.pdf	31613 c3dde7596dc3280978568f33d5c9002b7105dad5	no	2
Warnings:					
Information:					
2	Quick Path Information Disclosure Statement	MJAKP016C1_IDS_11_QPIDS.pdf	166976 2d2f96e4ea4830da269e755e187126280455397c	no	2
Warnings:					
Information:					
3	Request for Continued Examination (RCE)	MJAKP016C1_IDS_11_RCE.pdf	1322839 c69e56a81667a642affd141789c50432ae605362	no	3
Warnings:					
Information:					
4	Quick Path Information Disclosure Statement	MJAKP016C1_IDS_11_SB08-1.pdf	68564 bca8ec264fac1189cda5e120629608e9f7ef0c09	no	4
Warnings:					
Information:					
5	Non Patent Literature	ROBINSON_et_al_Caching_Context_Information_in_Persvasive_System.pdf	555421 f25e12383a96556acb486bed83ae1535667ea526	no	6
Warnings:					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	32540 9c5413da545a7cbaa33c10391177c1c8ab2a3716	no	2
Warnings:					
Information:					

Total Files Size (in bytes):	2177953

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.

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
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 contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	16/180,373	Filing Date	2018-11-05	Docket Number (if applicable)	MJAKP016C1	Art Unit	2653
First Named Inventor	Bjorn Markus Jakobsson			Examiner Name	Akelaw Teshale		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8 1995, to any international application that does not comply with the requirements of 35 U.S.C. 371, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV.

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the orde in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☐ Amendment/Reply

☒ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☒ Other QPIDS Transmittal & A Petition to Withdraw from Issue After Payment of the Issue Fee

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 500685

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Signature of Registered U.S. Patent Practitioner			
Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2020-04-27
Name	Yeu-Ting George Cheng	Registration Number	69408

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is t file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Tim will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions fo 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, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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United States Patent and Trademark Office

Office of the Chief Financial Officer

Document Code:WFEE

User :64682

Sale Accounting Date:04/27/2020

Sale Item Reference Number	Effective Date
16180373	04/27/2020

Document Number	Fee Code	Fee Code Description	Amount Paid	Payment Method
I20204QN53108890	2806	SUBMISSION- INFORMATION DISCLOSURE STMT	$120.00	Deposit Account

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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Filing Date	2018-11-05
First Named Inventor	Bjorn Markus Jakobsson
Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐

If you wish to add additional Foreign Patent Document citation information please click the Add button

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.T/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16180373
	Filing Date	2018-11-05
	First Named Inventor	Bjorn Markus Jakobsson
	Art Unit	2653
	Examiner Name	Akelaw Teshale
	Attorney Docket Number	MJAKP016C1

	1	ROBINSON et al., Caching Context Information in Persvasive System, MDS '06: Proceedings of the 3rd International Middleware doctoral Symposium. November 2006, PP 1 (Year: 2006)	☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/AKELAW TESHALE/	Date Considered	04/29/2020

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

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Art Unit	2653
Examiner Name	Akelaw Teshale
Attorney Docket Number	MJAKP016C1

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Signature	/Yeu-Ting George Cheng/	Date (YYYY-MM-DD)	2020-04-27
Name/Print	Yeu-Ting George Cheng	Registration Number	69408

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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 inspections 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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.T/

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	Art Unit
	AKELAW A TESHALE	2653

CPC - Searched*		
Symbol	Date	Examiner
H04W12/06, H04W12/08, H04W88/02, H04W12/00514, H04W12/12, H04W4/14, H04M3/382,H04M3/42042, H04M3/42042, H04M3/382, H04W4/14	04/29/2020	AT

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Inventor name search (east)	04/29/2020	AT
east search (US-PGPUB;USPAT;USOCR;FPRS;EPO;JPO; DERWENT;IBM_TDB)	04/29/2020	AT
Please see east search attachment	04/29/2020	AT

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
east interference search		04/29/2020	AT

/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	/AKELAW TESHALE/ Primary Examiner, Art Unit 2653

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0532

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	Art Unit
	AKELAW A TESHALE	2653

/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	/AKELAW TESHALE/ Primary Examiner, Art Unit 2653

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0533

Notice of References Cited	Application/Control No. 16/180,373	Applicant(s)/Patent Under Reexamination Jakobsson, Bjorn Markus	
	Examiner AKELAW A TESHALE	Art Unit 2653	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-9060057-B1	06-2015	Danis; Serdar Artun	H04M3/42059	1/1
*	B	US-9277049-B1	03-2016	Danis; Serdar Artun	H04M3/42042	1/1
*	C	US-20130060905-A1	03-2013	Mickens; James	H04L67/025	709/219
*	D	US-8583915-B1	11-2013	Huang; Andrew Shane	H04L63/0869	713/155
*	E	US-20060107323-A1	05-2006	McLean; Ivan Hugh	H04L63/1416	726/23
*	F	US-20180160387-A1	06-2018	Chastain; Walter Cooper	H04W12/06	1/1
*	G	US-20150113627-A1	04-2015	CURTIS; William Allen	H04L63/06	726/10
*	H	US-20140245396-A1	08-2014	Oberheide; Jon	H04W12/06	726/4
*	I	US-20180184289-A1	06-2018	Dudley; William	H04W8/26	1/1
*	J	US-20170331824-A1	11-2017	Pender; Mark A.	H04L63/0892	1/1
*	K	US-20170331816-A1	11-2017	Votaw; Elizabeth S.	G06F21/34	1/1
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC 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.

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0534

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	**Art Unit**
	AKELAW A TESHALE	2653

CPC						
Symbol					**Type**	**Version**
H04M	/	3	/	42042	F	2013-01-01
H04W	/	4	/	14	I	2013-01-01
H04M	/	3	/	382	I	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	23	
/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	29 April 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20200429

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0535

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	**Art Unit**
	AKELAW A TESHALE	2653

INTERNATIONAL CLASSIFICATION				
CLAIMED				
H04M	/	3	/	42

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	23	
/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	29 April 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20200429

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0536

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/180,373	Jakobsson, Bjorn Markus
	Examiner	**Art Unit**
	AKELAW A TESHALE	2653

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

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	12	10	21	19										
2	2	13	11	22	20										
3	3	14	12	23	21										
4	4	15	13	8	22										
5	5	16	14	9	23										
6	6	17	15												
7	7	18	16												
10	8	19	17												
11	9	20	18												

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	23	
/AKELAW TESHALE/ Primary Examiner, Art Unit 2653	29 April 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office Part of Paper No.: 20200429

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0537

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.
16/180,373	11/05/2018	Bjorn Markus Jakobsson	MJAKP016C1	3758

21912 7590 05/05/2020

VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

EXAMINER	
TESHALE, AKELAW	

ART UNIT	PAPER NUMBER
2653	

NOTIFICATION DATE	DELIVERY MODE
05/05/2020	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):

usptocorrespondence@ip-patent.com

Notice of Allowability	Application No. 16/180,373	Applicant(s) Jakobsson, Bjorn Markus	
	Examiner AKELAW A TESHALE	Art Unit 2653	AIA (FITF) Status Yes

-- 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 04/27/2020.
   ☐ 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 1-23 . 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 _____.

/AKELAW TESHALE/
Primary Examiner, Art Unit 2653

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0539

DETAILED ACTION

Reasons for Allowance

1. **Claims 1-23 are** allowed.

2. The following is an examiner's statement of reasons for allowance: IDS filed on 04/27/2020; and Applicant arguments/ Remarks filed on 10/17/2019 in conjunction with the remarks page 8 have been reviewed by the examiner in view of the prior art of record and it is agreed that the prior art of record does not teach the independent claims 1, 8 and 15.

Claims 2-7 and 22-23 are allowed as depending from claim 1.

Claims 9-14 are allowed as depending from claim 8.

Claims 16-21 are allowed as depending from claim 15.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AKELAW A TESHALE whose telephone number is (571)270-5302. The examiner can normally be reached on 9 am -6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571)272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AKELAW TESHALE
Primary Examiner
Art Unit 2653

/AKELAW TESHALE/
Primary Examiner, Art Unit 2653

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.
16/180,373	06/02/2020	10674009	MJAKP016C1	3758

21912 7590 05/13/2020

VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

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 0 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):

Bjorn Markus Jakobsson, Portola Valley, CA;
RightQuestion, LLC, Portola Valley, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY.DOCKET NO./TITLE	REQUEST ID
16/180,373	11/05/2018	Bjorn Markus Jakobsson	MJAKP016C1	181546

Acknowledgement of Loss of Entitlement to Entity Status Discount

The entity status change request below filed through Private PAIR on 01/06/2023 has been accepted.

CERTIFICATIONS:

Change of Entity Status:

X Applicant changing to regular undiscounted fee status.

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

This portion must be completed by the signatory or signatories making the entity status change in accordance with 37 CFR 1.4(d)(4).

Signature:	/Yeu-Ting George Cheng/
Name:	Yeu-Ting George Cheng
Registration Number:	69408

Doc Code: MFEE.C.AD
Document Description: Maintenance Fee Address Change

PTO/AIA/47 (11-21)
Approved for use through 11/30/2024. OMB 0651-0016
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no person is required to respond to a collection of information unless it displays a valid OMB control number.

"FEE ADDRESS" INDICATION FORM

Address to:
Mail Stop Maintenance Fee
Director of the United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

-OR-

Fax to:
571-273-6500

INSTRUCTIONS: The issue fee must have been paid for the application(s) listed on this form. In addition, only an address represented by a Customer Number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application.

When to check the first box below: If you have a Customer Number to represent the fee address.

When to check the second box below: If you have no Customer Number representing the desired fee address, in which case a completed Request for Customer Number (PTO/SB/125) must be attached to this form. For more information on Customer Numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

For the following listed application(s), please recognize as the "Fee Address" under the provisions of 37 CFR 1.363 the address associated with:

☑ Customer Number: 34060

OR

☐ The attached Request for Customer Number form (PTO/SB/125)

PATENT NUMBER (if known)	APPLICATION NUMBER
10,674,009	

Completed by (check one):

☐ Applicant/Inventor

☑ Attorney or Agent of record 40014 (Reg. No.)

☐ Assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(c) (Form PTO/AIA/96) is enclosed or was filed on _____ (Date)

/Michael N. Haynes/
Signature

Michael N. Haynes
Typed or printed name

4349729988
Requester's telephone number

14 October 2024
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. If the assignee is a juristic entity, this form must be signed by a patent practitioner (attorney or agent) of record. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted

A Federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with an information collection subject to the requirements of the Paperwork Reduction Act of 1995, unless the information collection has a currently valid OMB Control Number. The OMB Control Number for this information collection is 0651-0016. Public burden for this form is estimated to average 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden to the Chief Administrative Officer, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 or email InformationCollection@uspto.gov. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.** SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013). https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf

Routine uses of the information in this record may include disclosure to: 1) law enforcement, in the event that the system of records indicates a violation or potential violation of law; 2) a Federal, state, local, or international agency, in response to its request; 3) a contractor of the USPTO having need for the information in order to perform a contract; 4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record; 5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record; 6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations; 7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals; 8) 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)); 9) the Office of Personnel Management (OPM) for personnel research purposes; and 9) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

Additional Uses

Additional USPTO uses of the information in this record may include disclosure to: 1) the International Bureau of the World Intellectual Property Organization, if the record is related to an international application filed under the Patent Cooperation Treaty; 2) the public i) after publication of the application pursuant to 35 U.S.C. 122(b), ii) after issuance of a patent pursuant to 35 U.S.C. 151, iii) 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 inspections, or an issued patent, or iv) without publication of the application or patent under the specific circumstances provided for by 37 CFR 1.14(a)(1)(v)-(vii); and/or 3) the National Archives and Records Administration, for inspection of records.
https://www.govinfo.gov/content/pkg/FR-2013-03-29pdf/2013-07341.pdf

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
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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.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: RightQuestion, LLC c/o The INNW Fund

Application No./Patent No.: 14/535,064 Filed/Issue Date: 6 November 2014

Titled: Validating Automatic Number Identification Data

RightQuestion, LLC, a LLC

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 033653, Frame 0778, or for which a copy thereof is attached.

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

   1. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

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This collection of information is required by 37 CFR 3.73(b). 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 1.11 and 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
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STATEMENT UNDER 37 CFR 3.73(c)

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6. From: _____ To: _____

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☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Michael N. Haynes/	14 October 2024
Signature	Date
Michael N. Haynes	40014
Printed or Typed Name	Title or Registration 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.

PTO/AIA/80 (07-12)
Approved for use through 11/30/2014. OMB 0651-0035
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POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒ Practitioners associated with Customer Number: 34060

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☐ The address associated with Customer Number:

OR

☐

Firm or Individual Name			
Address			
City		State	Zip
Country			
Telephone		Email	

Assignee Name and Address: RightQuestion, LLC
c/o The INNW Fund
250 Oak Grove Ave, #202
Menlo Park, CA 94025

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	[signature]	Date	Oct. 11, 2024
Name	Robert Levenson	Telephone	
Title	Secretary, INNW Fund		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. 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 1.11 and 1.14. This collection is estimated to take 3 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
16/180,373	**10/14/2024 10:42:34 AM Z ET**	**MJAKP016C1**

Title of Invention

VALIDATING AUTOMATIC NUMBER IDENTIFICATION DATA

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	10674009
CONFIRMATION #	3758	FILED BY	Kelly Smoker
PATENT CENTER #	67551089	FILING DATE	11/05/2018
CUSTOMER #	21912	FIRST NAMED INVENTOR	Bjorn Markus Jakobsson
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Michael Haynes

Documents

TOTAL DOCUMENTS: 3

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
1281-006_20241014_POA-S.pdf	1	Power of Attorney	180 KB
1281-006_20241014_373 Statement-S.pdf	3	Assignee showing of ownership per 37 CFR 3.73	115 KB
1281-006_20241014_Fee Address Form.pdf	2	Maintenance Fee Address Change	264 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
1281-006_20241014_POA-S.pdf	97A45AE15212B05EAFBDE87F702A274E03E14906C308CF567DEA5A895A9DC6192EA8ED5EE80ACBEA4BF7885F04DEF091

	CDFEDA1910A1851FD5E571C902AE84BC
1281-006_20241014_373 Statement-S.pdf	57601504CCE624B159934ACA36030AB27116014E3A42756885 11DE3EAEA4DCDE6AC28221A10431E4C07653538F4BF554C5 76B90301633137B577FDFA74CE48F7
1281-006_20241014_Fee Address Form.pdf	8CE97EB7888D18D6AFCE2B50DA623381FC3BBECE596370D7 756DFC481A1C55F7C09EA94291FB186E5E9550B53CC06D5A D0FB553D53E29AF9F62C8AE320435B14

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 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.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/180,373	11/05/2018	Bjorn Markus Jakobsson	MJAKP016C1

CONFIRMATION NO. 3758

21912
VAN PELT, YI & JAMES LLP
1 1ST ST, STE 12
LOS ALTOS, CA 94022

POWER OF ATTORNEY NOTICE

OC000000079618593

Date Mailed: 10/22/2024

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/14/2024.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/sltorres/

EX-1002
AT&T SERVICES INC., CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
AND NOKIA OF AMERICA CORPORATION v RIGHTQUESTION, LLC
0552

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/180,373	11/05/2018	Bjorn Markus Jakobsson	MJAKP016C1

CONFIRMATION NO. 3758

34060
MICHAEL N. HAYNES
P.O. Box 460
RUCKERSVILLE, VA 22968

POA ACCEPTANCE LETTER

OC0000000079618613

Date Mailed: 10/22/2024

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/14/2024.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/sltorres/