

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

RIGHTQUESTION, LLC,

Plaintiff,

v.

VERIZON BUSINESS NETWORK  
SERVICES LLC., et al,

Defendants.

Civil Action No.: 2:24-cv-00091-JRG  
(Lead Case)

JURY TRIAL DEMANDED

RIGHTQUESTION, LLC,

Plaintiff,

v.

AT&T CORP., et al,

Defendants.

Civil Action No.: 2:24-cv-00094-JRG  
(Member Case)

JURY TRIAL DEMANDED

**DEFENDANTS' P.R. 3-3, 3-4, AND 3-6(b) AMENDED INVALIDITY CONTENTIONS  
AND SUBJECT MATTER ELIGIBILITY CONTENTIONS**

Pursuant to the Second Amended Docket Control Order (2:24-cv-00091-JRG, Dkt. 45), Defendants Cellco Partnership D/B/A Verizon Wireless, Verizon Business Network Services LLC, Verizon Corporate Services Group Inc., TracFone Wireless, Inc., AT&T Corp., AT&T Mobility LLC, AT&T Mobility II LLC, and AT&T Services, Inc.'s "Defendants") hereby disclose their P.R. 3-3 and 3-4 Amended Invalidation Contentions ("Invalidity Contentions") in view of Plaintiff RightQuestion, LLC, ("RightQuestion") various P.R. 3-1 Disclosure of Asserted Claims and Amended Infringement Contentions (collectively, "Infringement Contentions"), served on October 7, 2024. In the event that RightQuestion is granted leave to amend further its Infringement

Contentions or amends its infringement theories, these Invalidity Contentions may change, and Defendants reserve the right to amend or supplement these Invalidity Contentions.

Defendants contend that each of the Asserted Claims (as defined below) by RightQuestion is invalid under 35 U.S.C. §§ 102, 103, and/or 112 for at least the reasons provided below.<sup>1</sup>

## **I. INTRODUCTORY STATEMENT**

Defendants base their Invalidity Contentions on their current knowledge and understanding of the Asserted Claims and review of prior art, as of the date of these Invalidity Contentions. Defendants' Invalidity Contentions are made without the benefit of discovery regarding the parties' claim construction contentions, expert discovery, third-party discovery, and claim construction opinion or order by the Court. These Invalidity Contentions are provided without prejudice to Defendants' right to revise, amend, correct, supplement, modify, or clarify their Invalidity Contentions.

Defendants also base their Invalidity Contentions on their current knowledge and understanding of the Asserted Claims in view of RightQuestion's Infringement Contentions. Defendants reserve all of their rights both to seek leave to amend or supplement and to amend or supplement these contentions if RightQuestion supplements or amends its infringement contentions or otherwise responds to address any deficiency.

Defendants incorporate by reference all other bases for invalidity identified in Defendants' Answers, Initial Disclosures, and interrogatory responses in this matter, and the prosecution and/or any post-grant reviews (*e.g.*, any *Inter Partes* Reviews) of the Asserted Patents or related patents and/or patent applications, including but not limited to statements made by both the patent

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<sup>1</sup> All Asserted Patents have a priority dates prior to November 7, 2013. Accordingly, all references to 35 U.S.C. §102 refer to the AIA version of that statute defining prior art.

applicant and patent examiners, and references cited therein. Defendants further incorporate by reference all admissions regarding the Asserted Patents including, but not limited to, admissions in the specification of the Asserted Patents, and the prosecution or post-grant review of the Asserted Patents and related patents and/or patent applications. Defendants further incorporate any and all invalidity contentions previously served or subsequently served in any related litigation, or served in any prior litigation involving the Asserted Patents and related patents (collectively, the “Other Actions”). Defendants further reserve the right to assert that the Asserted Claims are invalid in the event that Defendants obtain evidence that the named inventor of the Asserted Patents did not invent (either alone or in conjunction with other parties) the subject matter claimed in the Asserted Patents.

Defendants’ identification in the prior art of claim elements recited in the preamble of any claims is not intended to indicate that any such preamble is limiting. All such disclosures are made only to the extent the preamble is determined to be limiting.

As described above, Defendants also intend to diligently seek discovery from third parties to demonstrate the inventions were known or used by others, in public use and/or on-sale, and/or otherwise available to the public. Defendants may therefore modify, amend, and/or supplement these Invalidity Contentions if and when further information becomes available.

Nothing in these Invalidity Contentions should be treated as an admission that any of Defendants’ accused instrumentalities meet any limitation of the Asserted Claims. Defendants deny infringing the Asserted Claims. To the extent that any prior art reference identified by Defendants contains a claim element that is the same as or similar to an element in an accused instrumentality, based on a claim construction inferred from RightQuestion’s Infringement Contentions, inclusion of that reference in Defendants’ Invalidity Contentions is not a waiver by

Defendants of any claim construction or non-infringement position, nor is it an admission or suggestion by Defendants that any accused instrumentality satisfies the limitations of the Asserted Claims under a proper construction of those claims.

Subject to the foregoing statements and qualifications, Defendants provide the following disclosures.

## **II. ASSERTED PATENTS AND CLAIMS**

RightQuestion served Infringement Contentions alleging infringement of the following patents and claims (collectively, the “Asserted Patents” and “Asserted Claims”):

- Claims 1-23 of U.S. Patent No. 10,674,009 (the “’009 patent”);
- Claims 1-28 of U.S. Patent No. 11,005,989 (the “’989 patent”); and
- Claims 1-19 of U.S. Patent No. 11,856,132 (the “’132 patent”).

These Invalidity Contentions address only the Asserted Claims specifically set forth in RightQuestion’s Infringement Contentions. Nevertheless, Defendants do not concede that the claims that RightQuestion has not asserted are valid, and Defendants reserve all rights to amend these contentions if RightQuestion asserts additional claims and/or patents. Furthermore, given the number of claims asserted by RightQuestion and generalized infringement contentions, Defendants reserve the right to seek amplified and narrowed infringement contentions and accordingly reserve the right to amend and supplement their invalidity contentions.

### **A. Effective Dates**

RightQuestion asserted under P.R. 3-1(e) that each of the Asserted Patents are entitled to a priority date of November 17, 2013.

Defendants investigation concerning RightQuestion’s claimed priority dates is ongoing. Defendants contend that new matter was potentially added to the specification of the Asserted Patents through later-filed applications disclosing new matter that was incorporated into the

Asserted Claims. Defendants thus reserve the right to rely on prior art dated after RightQuestion's claimed priority date and supplement these contentions accordingly to the extent RightQuestion fails to prove entitlement to its asserted priority dates for any Asserted Claim. To the extent RightQuestion in the future seeks and is granted leave to amend its disclosures in an attempt to establish an earlier effective date, Defendants reserve the right to amend these contentions in response, including by disclosing additional prior art or earlier versions or evidence of the prior art disclosed herein.

### **III. Claim Construction**

The Court has not construed the Asserted Claims. Defendants map the prior art references to the Asserted Claims based on RightQuestion's apparent constructions, to the extent understood, of the Asserted Claims as advanced in RightQuestion's Infringement Contentions. However, nothing stated in this document or accompanying claim charts should be treated as an admission or suggestion that RightQuestion's apparent claim constructions are correct, or that any claim terms of the Asserted Claims are not invalid under 35 U.S.C. § 112 for being indefinite, failing to satisfy the written description requirement, or failing to satisfy the enablement requirement. In fact, Defendants specifically deny that RightQuestion's apparent claim constructions are proper.

Depending on the Court's construction of the Asserted Claims of the Asserted Patents, and/or positions that RightQuestion or its expert witness(es) may take concerning claim interpretation, infringement, and/or invalidity issues, the asserted prior art references may be of greater or lesser relevance. Given this uncertainty, the charts may reflect alternative applications of the prior art against the Asserted Claims. Thus, no chart or position taken by Defendants should be construed as an admission or a waiver of any particular construction of any claim term. Defendants also reserve the right to challenge any of the claim terms under 35 U.S.C. § 112,

including by arguing that they are indefinite, not supported by the written description, and/or not enabled.

**IV. P.R. 3-3(a) DISCLOSURES: IDENTIFICATION OF ITEMS OF PRIOR ART**

The following Exhibits (also referred to as Appendices) include claim charts of prior art references that, alone and/or in combination with other references, render the Asserted Claims of the Asserted Patents invalid under § 102 or 103, and further include (directly and/or in combination with the corresponding subparts of Section II.B. of this document) secondary references that would have been obvious to combine with the charted prior art references and motivations for making such combinations.

Exhibit A	U.S. Patent No. 10,674,009 (the “’009 patent)
Exhibit B	U.S. Patent No. 11,005,989 (the “’989 patent”)
Exhibit C	U.S. Patent No. 11,856,132 (the “’132 patent”)

Subject to Defendants’ reservation of rights, Defendants contend that the following prior art patents, printed publications, and systems, alone and/or in combination, anticipate and/or render obvious the Asserted Claims of the Asserted Patents.

As noted above, however, discovery is ongoing, and Defendants’ prior art investigation and third party discovery are therefore not yet complete. Accordingly, Defendants reserve the right to present additional items of prior art under 35 U.S.C. § 102 and/or § 103 located during the course of discovery or further investigation. For example, Defendants expect to issue subpoenas to third parties believed to have knowledge, documentation, and/or corroborating evidence concerning some of the prior art listed in this and the following sections and/or additional prior art. These third parties include, without limitation, the authors, inventors, or assignees of the references listed in these disclosures.

While the categories of art (patents/applications, non-patent publications, and systems) below are organized by asserted patent number, because of the overlapping nature of the asserted patents, Defendants identify each reference in each category as art applicable to each of the asserted patents.

**A. Prior Art Patents and Published Patent Applications**

Defendants disclose the following patents and patent applications publications:

**1. The '009 Patent**

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>2</sup></b>
KR20060096784	Korea	September 13, 2006
U.S. 20100150328	U.S.	June 17, 2010
U.S. 20120144198	U.S.	June 7, 2012
WO2009132668	PCT	November 5, 2009
U.S. 20120084203	U.S.	April 5, 2012
U.S. 20050190904	U.S.	September 1, 2005
U.S. 20090270073	U.S.	October 29, 2009
U.S. 6327347	U.S.	December 4, 2001
U.S. 20080084975	U.S.	April 10, 2008
KR20120061022	Korea	June 12, 2012
U.S. 20150095986	U.S.	April 2, 2015
U.S. 6324271	U.S.	November 27, 2001
U.S. 20080198991	U.S.	August 21, 2008
U.S. 20090217039	U.S.	August 27, 2009
U.S. 20100319063	U.S.	December 16, 2010
U.S. 20120307993	U.S.	December 6, 2012
U.S. 20090046839	U.S.	February 19, 2009
U.S. 20110085650	U.S.	April 14, 2011
U.S. 6338140	U.S.	January 8, 2002
U.S. 20130035104	U.S.	February 7, 2013
U.S. 20110026699	U.S.	February 3, 2011

<sup>2</sup> The dates in this column are the latest dates on which the patents or publications were publicly available. Defendants reserve the right to identify earlier dates should such dates be ascertained through discovery.

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>2</sup></b>
U.S. 20060031315	U.S.	February 9, 2006
U.S. 20120311329	U.S.	December 6, 2012
U.S. 20080037785	U.S.	February 14, 2008
U.S. 8150005	U.S.	April 3, 2012
U.S. 8737624	U.S.	May 27, 2014
U.S. 5841865	U.S.	November 24, 1998
U.S. 10880732	U.S.	December 29, 2020
U.S. 2013166914	U.S.	June 27, 2013
U.S. 20110116612	U.S.	May 19, 2011
U.S. 9247427	U.S.	January 26, 2016
U.S. 20080037785	U.S.	February 14, 2008
U.S. 8737624	U.S.	May 27, 2014
U.S. 6496571	U.S.	December 17, 2002
U.S. 8364131	U.S.	May 17, 2009
U.S. 20080137828	U.S.	June 17, 2008
U.S. 20090022155	U.S.	January 22, 2009
U.S. 7437558	U.S.	October 14, 2008
U.S. 6219793	U.S.	April 17, 2001
U.S. 20030108160	U.S.	June 12, 2003
WO2018213457	PCT	November 22, 2018
U.S. 10122715	U.S.	November 6, 2018
U.S. 20180184289	U.S.	June 28, 2018
U.S. 20180160387	U.S.	June 7, 2018
U.S. 9940482	U.S.	April 10, 2018
U.S. 9906554	U.S.	February 27, 2018
U.S. 9847973	U.S.	December 19, 2017
U.S. 20170331816	U.S.	November 16, 2017
U.S. 20170331824	U.S.	November 16, 2017
U.S. 20170324767	U.S.	November 9, 2017
U.S. 9800589	U.S.	October 24, 2017
U.S. 20170251006	U.S.	August 31, 2017
U.S. 20170195310	U.S.	July 6, 2017
U.S. 9613341	U.S.	April 4, 2017
U.S. 20170091274	U.S.	March 30, 2017

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>2</sup></b>
U.S. 20170085584	U.S.	March 23, 2017
U.S. 20170078321	U.S.	March 16, 2017
U.S. 9560506	U.S.	January 31, 2017
U.S. 20170005961	U.S.	January 5, 2017
U.S. 9471714	U.S.	October 18, 2016
U.S. 9473437	U.S.	October 18, 2016
U.S. 20160269437	U.S.	September 15, 2016
U.S. 20160225897	U.S.	August 4, 2016
U.S. 9338287	U.S.	May 10, 2016
U.S. 9332022	U.S.	May 3, 2016
U.S. 20160104132	U.S.	April 14, 2016
U.S. 20160094566	U.S.	March 31, 2016
U.S. 20160087925	U.S.	March 24, 2016
U.S. 9277049	U.S.	March 1, 2016
U.S. 9258314	U.S.	February 9, 2016
U.S. 20160037270	U.S.	February 4, 2016
U.S. 9245115	U.S.	January 26, 2016
U.S. 20160014151	U.S.	January 14, 2016
U.S. 20150381653	U.S.	December 31, 2015
U.S. 20150371212	U.S.	December 24, 2015
U.S. 20150363839	U.S.	December 17, 2015
U.S. 20150334065	U.S.	November 19, 2015
U.S. 20150326510	U.S.	November 12, 2015
U.S. 20150288714	U.S.	October 8, 2015
U.S. 9154514	U.S.	October 6, 2015
U.S. 20150236990	U.S.	August 20, 2015
U.S. 20150216413	U.S.	August 6, 2015
U.S. 20150172233	U.S.	June 18, 2015
U.S. 9060057	U.S.	June 16, 2015
U.S. 20150156154	U.S.	June 4, 2015
U.S. 20150148006	U.S.	May 28, 2015
U.S. 20150113627	U.S.	April 23, 2015
U.S. 20150100896	U.S.	April 9, 2015
U.S. 8996042	U.S.	March 31, 2015

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>2</sup></b>
U.S. 20150081722	U.S.	March 19, 2015
U.S. 8984640	U.S.	March 17, 2015
U.S. 20150067833	U.S.	March 5, 2015
U.S. 8959163	U.S.	February 17, 2015
U.S. 8949353	U.S.	February 3, 2015
U.S. 20150030156	U.S.	January 29, 2015
U.S. 20150033343	U.S.	January 29, 2015
U.S. 20140366144	U.S.	December 11, 2014
U.S. 20140340822	U.S.	November 20, 2014
U.S. 20140258420	U.S.	September 11, 2014
U.S. 20140259158	U.S.	September 11, 2014
U.S. 8832202	U.S.	September 9, 2014
U.S. 20140250506	U.S.	September 4, 2014
U.S. 20140245396	U.S.	August 28, 2014
U.S. 20140230061	U.S.	August 14, 2014
U.S. 20140214895	U.S.	July 31, 2014
U.S. 8752172	U.S.	June 10, 2014
U.S. 8719940	U.S.	May 6, 2014
U.S. 20140082726	U.S.	March 20, 2014
U.S. 8676155	U.S.	March 18, 2014
U.S. 8667069	U.S.	March 4, 2014
U.S. 8667074	U.S.	March 4, 2014
U.S. 20130346528	U.S.	December 26, 2013
U.S. 20130318580	U.S.	November 28, 2013
U.S. 20130305318	U.S.	November 14, 2013
U.S. 8583915	U.S.	November 12, 2013
U.S. 8572184	U.S.	October 29, 2013
U.S. 8566938	U.S.	October 22, 2013
U.S. 8560962	U.S.	October 15, 2013
U.S. 20130185775	U.S.	July 18, 2013
U.S. 8489689	U.S.	July 16, 2013
U.S. 20130128883	U.S.	May 23, 2013
U.S. 20130104198	U.S.	April 25, 2013
U.S. 20130083129	U.S.	April 4, 2013

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>2</sup></b>
U.S. 20130081142	U.S.	March 28, 2013
U.S. 20130067012	U.S.	March 14, 2013
U.S. 20130060905	U.S.	March 7, 2013
U.S. 8365258	U.S.	January 29, 2013
U.S. 20120311703	U.S.	December 6, 2012
U.S. 20120278694	U.S.	November 1, 2012
U.S. 20120253810	U.S.	October 4, 2012
U.S. 20120242488	U.S.	September 27, 2012
U.S. 20120246725	U.S.	September 27, 2012
U.S. 20120227104	U.S.	September 6, 2012
U.S. 8255572	U.S.	August 28, 2012
U.S. 20120192258	U.S.	July 26, 2012
U.S. 20120167233	U.S.	June 28, 2012
U.S. 20120136780	U.S.	May 31, 2012
U.S. 8131655	U.S.	March 6, 2012
U.S. 20120030293	U.S.	February 2, 2012
U.S. 20110294478	U.S.	December 1, 2011
U.S. 20110271349	U.S.	November 3, 2011
U.S. 8010614	U.S.	August 30, 2011
U.S. 20110191688	U.S.	August 4, 2011
U.S. 20110191847	U.S.	August 4, 2011
U.S. 20110145152	U.S.	June 16, 2011
JP-2011100489-A	Japan	May 19, 2011
U.S. 20110087485	U.S.	April 14, 2011
U.S. 7917655	U.S.	March 29, 2011
U.S. 20110066687	U.S.	March 17, 2011
U.S. 7899213	U.S.	March 1, 2011
U.S. 7899866	U.S.	March 1, 2011
U.S. 20100313253	U.S.	December 9, 2010
U.S. 20100299399	U.S.	November 25, 2010
U.S. 20100287246	U.S.	November 11, 2010
U.S. 7831522	U.S.	November 9, 2010
U.S. 7814545	U.S.	October 12, 2010
U.S. 20100257222	U.S.	October 7, 2010

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>2</sup></b>
U.S. 7809795	U.S.	October 5, 2010
U.S. 7809796	U.S.	October 5, 2010
U.S. 20100235636	U.S.	September 16, 2010
U.S. 7797752	U.S.	September 14, 2010
U.S. 20100198928	U.S.	August 5, 2010
U.S. 20100145900	U.S.	June 10, 2010
U.S. 20100115040	U.S.	May 6, 2010
U.S. 20100094887	U.S.	April 15, 2010
U.S. 20100082758	U.S.	April 1, 2010
U.S. 20100070761	U.S.	March 18, 2010
U.S. 20100043071	U.S.	February 18, 2010
U.S. 20100030798	U.S.	February 4, 2010
U.S. 7644274	U.S.	January 5, 2010
U.S. 20090319629	U.S.	December 24, 2009
U.S. 20090292781	U.S.	November 26, 2009
U.S. 20090260064	U.S.	October 15, 2009
U.S. 20090252159	U.S.	October 8, 2009
U.S. 20090228583	U.S.	September 10, 2009
U.S. 20090210708	U.S.	August 20, 2009
U.S. 20090089859	U.S.	April 2, 2009
U.S. 20090064330	U.S.	March 5, 2009
U.S. 20090037350	U.S.	February 5, 2009
U.S. 20080290154	U.S.	November 27, 2008
U.S. 20080276315	U.S.	November 6, 2008
U.S. 20080235794	U.S.	September 25, 2008
U.S. 20080175266	U.S.	July 24, 2008
U.S. 20080178288	U.S.	July 24, 2008
U.S. 20080141374	U.S.	June 12, 2008
U.S. 20080104235	U.S.	May 1, 2008
U.S. 20080098237	U.S.	April 24, 2008
U.S. 20080050014	U.S.	February 28, 2008
U.S. 20080046970	U.S.	February 21, 2008
U.S. 20080022107	U.S.	January 24, 2008
U.S. 20080004049	U.S.	January 3, 2008

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>2</sup></b>
U.S. 20070299916	U.S.	December 27, 2007
U.S. 20070276907	U.S.	November 29, 2007
U.S. 20070271343	U.S.	November 22, 2007
U.S. 7299261	U.S.	November 20, 2007
U.S. 7293063	U.S.	November 6, 2007
U.S. 20070239639	U.S.	October 11, 2007
U.S. 20070214495	U.S.	September 13, 2007
U.S. 20070198642	U.S.	August 23, 2007
U.S. 20070192169	U.S.	August 16, 2007
U.S. 20070143407	U.S.	June 21, 2007
U.S. 20070143432	U.S.	June 21, 2007
U.S. 20070136573	U.S.	June 14, 2007
U.S. 20070136806	U.S.	June 14, 2007
U.S. 20070130618	U.S.	June 7, 2007
U.S. 20070107053	U.S.	May 10, 2007
U.S. 20070100944	U.S.	May 3, 2007
U.S. 20070101423	U.S.	May 3, 2007
U.S. 20070086592	U.S.	April 19, 2007
U.S. 20070067465	U.S.	March 22, 2007
U.S. 20070038718	U.S.	February 15, 2007
U.S. 20070027992	U.S.	February 1, 2007
U.S. 20070019235	U.S.	January 25, 2007
U.S. 20060265498	U.S.	November 23, 2006
U.S. 20060259558	U.S.	November 16, 2006
U.S. 20060253597	U.S.	November 9, 2006
U.S. 20060230461	U.S.	October 12, 2006
U.S. 20060224677	U.S.	October 5, 2006
U.S. 20060206713	U.S.	September 14, 2006
U.S. 20060195542	U.S.	August 31, 2006
U.S. 20060168024	U.S.	July 27, 2006
U.S. 20060168329	U.S.	July 27, 2006
U.S. 20060153380	U.S.	July 13, 2006
U.S. 20060149821	U.S.	July 6, 2006
U.S. 20060107323	U.S.	May 18, 2006

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>2</sup></b>
U.S. 20060101334	U.S.	May 11, 2006
U.S. 20060085505	U.S.	April 20, 2006
U.S. 20060053279	U.S.	March 9, 2006
U.S. 20060053490	U.S.	March 9, 2006
U.S. 20060031306	U.S.	February 9, 2006
U.S. 20060026242	U.S.	February 2, 2006
U.S. 20060015563	U.S.	January 19, 2006
U.S. 20060004772	U.S.	January 5, 2006
U.S. 20050257261	U.S.	November 17, 2005
U.S. 20050235065	U.S.	October 20, 2005
U.S. 20050223076	U.S.	October 6, 2005
U.S. 20050216587	U.S.	September 29, 2005
U.S. 20050198173	U.S.	September 8, 2005
U.S. 20050188023	U.S.	August 25, 2005
U.S. 20050188045	U.S.	August 25, 2005
U.S. 20050182735	U.S.	August 18, 2005
U.S. 20050097320	U.S.	May 5, 2005
U.S. 20050080857	U.S.	April 14, 2005
U.S. 20050076084	U.S.	April 7, 2005
U.S. 20050076240	U.S.	April 7, 2005
U.S. 20050060643	U.S.	March 17, 2005
U.S. 20050033810	U.S.	February 10, 2005
U.S. 20040203589	U.S.	October 14, 2004
U.S. 20040176072	U.S.	September 9, 2004
U.S. 20040177120	U.S.	September 9, 2004
U.S. 6721784	U.S.	April 13, 2004
U.S. 20030236845	U.S.	December 25, 2003
U.S. 20030229672	U.S.	December 11, 2003
U.S. 20030225850	U.S.	December 4, 2003
U.S. 6574658	U.S.	June 3, 2003
U.S. 20030023736	U.S.	January 30, 2003
U.S. 20020184315	U.S.	December 5, 2002
U.S. 20020138271	U.S.	September 26, 2002
U.S. 6161130-A	U.S.	December 12, 2000

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>2</sup></b>
U.S. 6073142-A	U.S.	June 6, 2000

## 2. The '989 Patent

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>3</sup></b>
KR20060096784	Korea	September 13, 2006
U.S. 20100150328	U.S.	June 17, 2010
U.S. 20120144198	U.S.	June 7, 2012
WO2009132668	PCT	November 5, 2009
U.S. 20120084203	U.S.	April 5, 2012
U.S. 20050190904	U.S.	September 1, 2005
U.S. 20090270073	U.S.	October 29, 2009
U.S. 6327347	U.S.	December 4, 2001
U.S. 20080084975	U.S.	April 10, 2008
KR20120061022	Korea	June 12, 2012
U.S. 20150095986	U.S.	April 2, 2015
U.S. 6324271	U.S.	November 27, 2001
U.S. 20080198991	U.S.	August 21, 2008
U.S. 20090217039	U.S.	August 27, 2009
U.S. 20100319063	U.S.	December 16, 2010
U.S. 20120307993	U.S.	December 6, 2012
U.S. 20090046839	U.S.	February 19, 2009
U.S. 20110085650	U.S.	April 14, 2011
U.S. 6338140	U.S.	January 8, 2002
U.S. 20130035104	U.S.	February 7, 2013
U.S. 20110026699	U.S.	February 3, 2011
U.S. 20060031315	U.S.	February 9, 2006
U.S. 20120311329	U.S.	December 6, 2012
U.S. 20080037785	U.S.	February 14, 2008
U.S. 8150005	U.S.	April 3, 2012
U.S. 8737624	U.S.	May 27, 2014
U.S. 5841865	U.S.	November 24, 1998

<sup>3</sup> The dates in this column are the latest dates on which the patents or publications were publicly available. Defendants reserve the right to identify earlier dates should such dates be ascertained through discovery.

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U.S. 10880732	U.S.	December 29, 2020
U.S. 2013166914	U.S.	June 27, 2013
U.S. 20110116612	U.S.	May 19, 2011
U.S. 9247427	U.S.	January 26, 2016
U.S. 20080037785	U.S.	February 14, 2008
U.S. 8737624	U.S.	May 27, 2014
U.S. 6496571	U.S.	December 17, 2002
U.S. 8364131	U.S.	May 17, 2009
U.S. 20080137828	U.S.	June 17, 2008
U.S. 20090022155	U.S.	January 22, 2009
U.S. 7437558	U.S.	October 14, 2008
U.S. 6219793	U.S.	April 17, 2001
U.S. 20030108160	U.S.	June 12, 2003
WO2018213457	PCT	November 22, 2018
U.S. 10122715	U.S.	November 6, 2018
U.S. 20180184289	U.S.	June 28, 2018
U.S. 20180160387	U.S.	June 7, 2018
U.S. 9940482	U.S.	April 10, 2018
U.S. 9906554	U.S.	February 27, 2018
U.S. 9847973	U.S.	December 19, 2017
U.S. 20170331816	U.S.	November 16, 2017
U.S. 20170331824	U.S.	November 16, 2017
U.S. 20170324767	U.S.	November 9, 2017
U.S. 9800589	U.S.	October 24, 2017
U.S. 20170251006	U.S.	August 31, 2017
U.S. 20170195310	U.S.	July 6, 2017
U.S. 9613341	U.S.	April 4, 2017
U.S. 20170091274	U.S.	March 30, 2017
U.S. 20170085584	U.S.	March 23, 2017
U.S. 20170078321	U.S.	March 16, 2017
U.S. 9560506	U.S.	January 31, 2017
U.S. 20170005961	U.S.	January 5, 2017
U.S. 9471714	U.S.	October 18, 2016
U.S. 9473437	U.S.	October 18, 2016

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>3</sup></b>
U.S. 20160269437	U.S.	September 15, 2016
U.S. 20160225897	U.S.	August 4, 2016
U.S. 9338287	U.S.	May 10, 2016
U.S. 9332022	U.S.	May 3, 2016
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U.S. 20160094566	U.S.	March 31, 2016
U.S. 20160087925	U.S.	March 24, 2016
U.S. 9277049	U.S.	March 1, 2016
U.S. 9258314	U.S.	February 9, 2016
U.S. 20160037270	U.S.	February 4, 2016
U.S. 9245115	U.S.	January 26, 2016
U.S. 20160014151	U.S.	January 14, 2016
U.S. 20150381653	U.S.	December 31, 2015
U.S. 20150371212	U.S.	December 24, 2015
U.S. 20150363839	U.S.	December 17, 2015
U.S. 20150334065	U.S.	November 19, 2015
U.S. 20150326510	U.S.	November 12, 2015
U.S. 20150288714	U.S.	October 8, 2015
U.S. 9154514	U.S.	October 6, 2015
U.S. 20150236990	U.S.	August 20, 2015
U.S. 20150216413	U.S.	August 6, 2015
U.S. 20150172233	U.S.	June 18, 2015
U.S. 9060057	U.S.	June 16, 2015
U.S. 20150156154	U.S.	June 4, 2015
U.S. 20150148006	U.S.	May 28, 2015
U.S. 20150113627	U.S.	April 23, 2015
U.S. 20150100896	U.S.	April 9, 2015
U.S. 8996042	U.S.	March 31, 2015
U.S. 20150081722	U.S.	March 19, 2015
U.S. 8984640	U.S.	March 17, 2015
U.S. 20150067833	U.S.	March 5, 2015
U.S. 8959163	U.S.	February 17, 2015
U.S. 8949353	U.S.	February 3, 2015
U.S. 20150030156	U.S.	January 29, 2015

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>3</sup></b>
U.S. 20150033343	U.S.	January 29, 2015
U.S. 20140366144	U.S.	December 11, 2014
U.S. 20140340822	U.S.	November 20, 2014
U.S. 20140258420	U.S.	September 11, 2014
U.S. 20140259158	U.S.	September 11, 2014
U.S. 8832202	U.S.	September 9, 2014
U.S. 20140250506	U.S.	September 4, 2014
U.S. 20140245396	U.S.	August 28, 2014
U.S. 20140230061	U.S.	August 14, 2014
U.S. 20140214895	U.S.	July 31, 2014
U.S. 8752172	U.S.	June 10, 2014
U.S. 8719940	U.S.	May 6, 2014
U.S. 20140082726	U.S.	March 20, 2014
U.S. 8676155	U.S.	March 18, 2014
U.S. 8667069	U.S.	March 4, 2014
U.S. 8667074	U.S.	March 4, 2014
U.S. 20130346528	U.S.	December 26, 2013
U.S. 20130318580	U.S.	November 28, 2013
U.S. 20130305318	U.S.	November 14, 2013
U.S. 8583915	U.S.	November 12, 2013
U.S. 8572184	U.S.	October 29, 2013
U.S. 8566938	U.S.	October 22, 2013
U.S. 8560962	U.S.	October 15, 2013
U.S. 20130185775	U.S.	July 18, 2013
U.S. 8489689	U.S.	July 16, 2013
U.S. 20130128883	U.S.	May 23, 2013
U.S. 20130104198	U.S.	April 25, 2013
U.S. 20130083129	U.S.	April 4, 2013
U.S. 20130081142	U.S.	March 28, 2013
U.S. 20130067012	U.S.	March 14, 2013
U.S. 20130060905	U.S.	March 7, 2013
U.S. 8365258	U.S.	January 29, 2013
U.S. 20120311703	U.S.	December 6, 2012
U.S. 20120278694	U.S.	November 1, 2012

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>3</sup></b>
U.S. 20120253810	U.S.	October 4, 2012
U.S. 20120242488	U.S.	September 27, 2012
U.S. 20120246725	U.S.	September 27, 2012
U.S. 20120227104	U.S.	September 6, 2012
U.S. 8255572	U.S.	August 28, 2012
U.S. 20120192258	U.S.	July 26, 2012
U.S. 20120167233	U.S.	June 28, 2012
U.S. 20120136780	U.S.	May 31, 2012
U.S. 8131655	U.S.	March 6, 2012
U.S. 20120030293	U.S.	February 2, 2012
U.S. 20110294478	U.S.	December 1, 2011
U.S. 20110271349	U.S.	November 3, 2011
U.S. 8010614	U.S.	August 30, 2011
U.S. 20110191688	U.S.	August 4, 2011
U.S. 20110191847	U.S.	August 4, 2011
U.S. 20110145152	U.S.	June 16, 2011
JP-2011100489-A	Japan	May 19, 2011
U.S. 20110087485	U.S.	April 14, 2011
U.S. 7917655	U.S.	March 29, 2011
U.S. 20110066687	U.S.	March 17, 2011
U.S. 7899213	U.S.	March 1, 2011
U.S. 7899866	U.S.	March 1, 2011
U.S. 20100313253	U.S.	December 9, 2010
U.S. 20100299399	U.S.	November 25, 2010
U.S. 20100287246	U.S.	November 11, 2010
U.S. 7831522	U.S.	November 9, 2010
U.S. 7814545	U.S.	October 12, 2010
U.S. 20100257222	U.S.	October 7, 2010
U.S. 7809795	U.S.	October 5, 2010
U.S. 7809796	U.S.	October 5, 2010
U.S. 20100235636	U.S.	September 16, 2010
U.S. 7797752	U.S.	September 14, 2010
U.S. 20100198928	U.S.	August 5, 2010
U.S. 20100145900	U.S.	June 10, 2010

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>3</sup></b>
U.S. 20100115040	U.S.	May 6, 2010
U.S. 20100094887	U.S.	April 15, 2010
U.S. 20100082758	U.S.	April 1, 2010
U.S. 20100070761	U.S.	March 18, 2010
U.S. 20100043071	U.S.	February 18, 2010
U.S. 20100030798	U.S.	February 4, 2010
U.S. 7644274	U.S.	January 5, 2010
U.S. 20090319629	U.S.	December 24, 2009
U.S. 20090292781	U.S.	November 26, 2009
U.S. 20090260064	U.S.	October 15, 2009
U.S. 20090252159	U.S.	October 8, 2009
U.S. 20090228583	U.S.	September 10, 2009
U.S. 20090210708	U.S.	August 20, 2009
U.S. 20090089859	U.S.	April 2, 2009
U.S. 20090064330	U.S.	March 5, 2009
U.S. 20090037350	U.S.	February 5, 2009
U.S. 20080290154	U.S.	November 27, 2008
U.S. 20080276315	U.S.	November 6, 2008
U.S. 20080235794	U.S.	September 25, 2008
U.S. 20080175266	U.S.	July 24, 2008
U.S. 20080178288	U.S.	July 24, 2008
U.S. 20080141374	U.S.	June 12, 2008
U.S. 20080104235	U.S.	May 1, 2008
U.S. 20080098237	U.S.	April 24, 2008
U.S. 20080050014	U.S.	February 28, 2008
U.S. 20080046970	U.S.	February 21, 2008
U.S. 20080022107	U.S.	January 24, 2008
U.S. 20080004049	U.S.	January 3, 2008
U.S. 20070299916	U.S.	December 27, 2007
U.S. 20070276907	U.S.	November 29, 2007
U.S. 20070271343	U.S.	November 22, 2007
U.S. 7299261	U.S.	November 20, 2007
U.S. 7293063	U.S.	November 6, 2007
U.S. 20070239639	U.S.	October 11, 2007

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>3</sup></b>
U.S. 20070214495	U.S.	September 13, 2007
U.S. 20070198642	U.S.	August 23, 2007
U.S. 20070192169	U.S.	August 16, 2007
U.S. 20070143407	U.S.	June 21, 2007
U.S. 20070143432	U.S.	June 21, 2007
U.S. 20070136573	U.S.	June 14, 2007
U.S. 20070136806	U.S.	June 14, 2007
U.S. 20070130618	U.S.	June 7, 2007
U.S. 20070107053	U.S.	May 10, 2007
U.S. 20070100944	U.S.	May 3, 2007
U.S. 20070101423	U.S.	May 3, 2007
U.S. 20070086592	U.S.	April 19, 2007
U.S. 20070067465	U.S.	March 22, 2007
U.S. 20070038718	U.S.	February 15, 2007
U.S. 20070027992	U.S.	February 1, 2007
U.S. 20070019235	U.S.	January 25, 2007
U.S. 20060265498	U.S.	November 23, 2006
U.S. 20060259558	U.S.	November 16, 2006
U.S. 20060253597	U.S.	November 9, 2006
U.S. 20060230461	U.S.	October 12, 2006
U.S. 20060224677	U.S.	October 5, 2006
U.S. 20060206713	U.S.	September 14, 2006
U.S. 20060195542	U.S.	August 31, 2006
U.S. 20060168024	U.S.	July 27, 2006
U.S. 20060168329	U.S.	July 27, 2006
U.S. 20060153380	U.S.	July 13, 2006
U.S. 20060149821	U.S.	July 6, 2006
U.S. 20060107323	U.S.	May 18, 2006
U.S. 20060101334	U.S.	May 11, 2006
U.S. 20060085505	U.S.	April 20, 2006
U.S. 20060053279	U.S.	March 9, 2006
U.S. 20060053490	U.S.	March 9, 2006
U.S. 20060031306	U.S.	February 9, 2006
U.S. 20060026242	U.S.	February 2, 2006

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>3</sup></b>
U.S. 20060015563	U.S.	January 19, 2006
U.S. 20060004772	U.S.	January 5, 2006
U.S. 20050257261	U.S.	November 17, 2005
U.S. 20050235065	U.S.	October 20, 2005
U.S. 20050223076	U.S.	October 6, 2005
U.S. 20050216587	U.S.	September 29, 2005
U.S. 20050198173	U.S.	September 8, 2005
U.S. 20050188023	U.S.	August 25, 2005
U.S. 20050188045	U.S.	August 25, 2005
U.S. 20050182735	U.S.	August 18, 2005
U.S. 20050097320	U.S.	May 5, 2005
U.S. 20050080857	U.S.	April 14, 2005
U.S. 20050076084	U.S.	April 7, 2005
U.S. 20050076240	U.S.	April 7, 2005
U.S. 20050060643	U.S.	March 17, 2005
U.S. 20050033810	U.S.	February 10, 2005
U.S. 20040203589	U.S.	October 14, 2004
U.S. 20040176072	U.S.	September 9, 2004
U.S. 20040177120	U.S.	September 9, 2004
U.S. 6721784	U.S.	April 13, 2004
U.S. 20030236845	U.S.	December 25, 2003
U.S. 20030229672	U.S.	December 11, 2003
U.S. 20030225850	U.S.	December 4, 2003
U.S. 6574658	U.S.	June 3, 2003
U.S. 20030023736	U.S.	January 30, 2003
U.S. 20020184315	U.S.	December 5, 2002
U.S. 20020138271	U.S.	September 26, 2002
U.S. 6161130-A	U.S.	December 12, 2000
U.S. 6073142-A	U.S.	June 6, 2000

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<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>4</sup></b>
KR20060096784	Korea	September 13, 2006
U.S. 20100150328	U.S.	June 17, 2010
U.S. 20120144198	U.S.	June 7, 2012
WO2009132668	PCT	November 5, 2009
U.S. 20120084203	U.S.	April 5, 2012
U.S. 20050190904	U.S.	September 1, 2005
U.S. 20090270073	U.S.	October 29, 2009
U.S. 6327347	U.S.	December 4, 2001
U.S. 20080084975	U.S.	April 10, 2008
KR20120061022	Korea	June 12, 2012
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U.S. 6324271	U.S.	November 27, 2001
U.S. 20080198991	U.S.	August 21, 2008
U.S. 20090217039	U.S.	August 27, 2009
U.S. 20100319063	U.S.	December 16, 2010
U.S. 20120307993	U.S.	December 6, 2012
U.S. 20090046839	U.S.	February 19, 2009
U.S. 20110085650	U.S.	April 14, 2011
U.S. 6338140	U.S.	January 8, 2002
U.S. 20130035104	U.S.	February 7, 2013
U.S. 20110026699	U.S.	February 3, 2011
U.S. 20060031315	U.S.	February 9, 2006
U.S. 20120311329	U.S.	December 6, 2012
U.S. 20080037785	U.S.	February 14, 2008
U.S. 8150005	U.S.	April 3, 2012
U.S. 8737624	U.S.	May 27, 2014
U.S. 5841865	U.S.	November 24, 1998

<sup>4</sup> The dates in this column are the latest dates on which the patents or publications were publicly available. Defendants reserve the right to identify earlier dates should such dates be ascertained through discovery.

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>4</sup></b>
U.S. 10880732	U.S.	December 29, 2020
U.S. 2013166914	U.S.	June 27, 2013
U.S. 20110116612	U.S.	May 19, 2011
U.S. 9247427	U.S.	January 26, 2016
U.S. 20080037785	U.S.	February 14, 2008
U.S. 8737624	U.S.	May 27, 2014
U.S. 6496571	U.S.	December 17, 2002
U.S. 8364131	U.S.	May 17, 2009
U.S. 20080137828	U.S.	June 17, 2008
U.S. 20090022155	U.S.	January 22, 2009
U.S. 7437558	U.S.	October 14, 2008
U.S. 6219793	U.S.	April 17, 2001
U.S. 20030108160	U.S.	June 12, 2003
WO2018213457	PCT	November 22, 2018
U.S. 10122715	U.S.	November 6, 2018
U.S. 20180184289	U.S.	June 28, 2018
U.S. 20180160387	U.S.	June 7, 2018
U.S. 9940482	U.S.	April 10, 2018
U.S. 9906554	U.S.	February 27, 2018
U.S. 9847973	U.S.	December 19, 2017
U.S. 20170331816	U.S.	November 16, 2017
U.S. 20170331824	U.S.	November 16, 2017
U.S. 20170324767	U.S.	November 9, 2017
U.S. 9800589	U.S.	October 24, 2017
U.S. 20170251006	U.S.	August 31, 2017
U.S. 20170195310	U.S.	July 6, 2017
U.S. 9613341	U.S.	April 4, 2017
U.S. 20170091274	U.S.	March 30, 2017
U.S. 20170085584	U.S.	March 23, 2017
U.S. 20170078321	U.S.	March 16, 2017

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>4</sup></b>
U.S. 9560506	U.S.	January 31, 2017
U.S. 20170005961	U.S.	January 5, 2017
U.S. 9471714	U.S.	October 18, 2016
U.S. 9473437	U.S.	October 18, 2016
U.S. 20160269437	U.S.	September 15, 2016
U.S. 20160225897	U.S.	August 4, 2016
U.S. 9338287	U.S.	May 10, 2016
U.S. 9332022	U.S.	May 3, 2016
U.S. 20160104132	U.S.	April 14, 2016
U.S. 20160094566	U.S.	March 31, 2016
U.S. 20160087925	U.S.	March 24, 2016
U.S. 9277049	U.S.	March 1, 2016
U.S. 9258314	U.S.	February 9, 2016
U.S. 20160037270	U.S.	February 4, 2016
U.S. 9245115	U.S.	January 26, 2016
U.S. 20160014151	U.S.	January 14, 2016
U.S. 20150381653	U.S.	December 31, 2015
U.S. 20150371212	U.S.	December 24, 2015
U.S. 20150363839	U.S.	December 17, 2015
U.S. 20150334065	U.S.	November 19, 2015
U.S. 20150326510	U.S.	November 12, 2015
U.S. 20150288714	U.S.	October 8, 2015
U.S. 9154514	U.S.	October 6, 2015
U.S. 20150236990	U.S.	August 20, 2015
U.S. 20150216413	U.S.	August 6, 2015
U.S. 20150172233	U.S.	June 18, 2015
U.S. 9060057	U.S.	June 16, 2015
U.S. 20150156154	U.S.	June 4, 2015
U.S. 20150148006	U.S.	May 28, 2015
U.S. 20150113627	U.S.	April 23, 2015

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>4</sup></b>
U.S. 20150100896	U.S.	April 9, 2015
U.S. 8996042	U.S.	March 31, 2015
U.S. 20150081722	U.S.	March 19, 2015
U.S. 8984640	U.S.	March 17, 2015
U.S. 20150067833	U.S.	March 5, 2015
U.S. 8959163	U.S.	February 17, 2015
U.S. 8949353	U.S.	February 3, 2015
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U.S. 20140340822	U.S.	November 20, 2014
U.S. 20140258420	U.S.	September 11, 2014
U.S. 20140259158	U.S.	September 11, 2014
U.S. 8832202	U.S.	September 9, 2014
U.S. 20140250506	U.S.	September 4, 2014
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U.S. 20140230061	U.S.	August 14, 2014
U.S. 20140214895	U.S.	July 31, 2014
U.S. 8752172	U.S.	June 10, 2014
U.S. 8719940	U.S.	May 6, 2014
U.S. 20140082726	U.S.	March 20, 2014
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U.S. 8667074	U.S.	March 4, 2014
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U.S. 20130305318	U.S.	November 14, 2013
U.S. 8583915	U.S.	November 12, 2013
U.S. 8572184	U.S.	October 29, 2013
U.S. 8566938	U.S.	October 22, 2013

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>4</sup></b>
U.S. 8560962	U.S.	October 15, 2013
U.S. 20130185775	U.S.	July 18, 2013
U.S. 8489689	U.S.	July 16, 2013
U.S. 20130128883	U.S.	May 23, 2013
U.S. 20130104198	U.S.	April 25, 2013
U.S. 20130083129	U.S.	April 4, 2013
U.S. 20130081142	U.S.	March 28, 2013
U.S. 20130067012	U.S.	March 14, 2013
U.S. 20130060905	U.S.	March 7, 2013
U.S. 8365258	U.S.	January 29, 2013
U.S. 20120311703	U.S.	December 6, 2012
U.S. 20120278694	U.S.	November 1, 2012
U.S. 20120253810	U.S.	October 4, 2012
U.S. 20120242488	U.S.	September 27, 2012
U.S. 20120246725	U.S.	September 27, 2012
U.S. 20120227104	U.S.	September 6, 2012
U.S. 8255572	U.S.	August 28, 2012
U.S. 20120192258	U.S.	July 26, 2012
U.S. 20120167233	U.S.	June 28, 2012
U.S. 20120136780	U.S.	May 31, 2012
U.S. 8131655	U.S.	March 6, 2012
U.S. 20120030293	U.S.	February 2, 2012
U.S. 20110294478	U.S.	December 1, 2011
U.S. 20110271349	U.S.	November 3, 2011
U.S. 8010614	U.S.	August 30, 2011
U.S. 20110191688	U.S.	August 4, 2011
U.S. 20110191847	U.S.	August 4, 2011
U.S. 20110145152	U.S.	June 16, 2011
JP-2011100489-A	Japan	May 19, 2011
U.S. 20110087485	U.S.	April 14, 2011

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>4</sup></b>
U.S. 7917655	U.S.	March 29, 2011
U.S. 20110066687	U.S.	March 17, 2011
U.S. 7899213	U.S.	March 1, 2011
U.S. 7899866	U.S.	March 1, 2011
U.S. 20100313253	U.S.	December 9, 2010
U.S. 20100299399	U.S.	November 25, 2010
U.S. 20100287246	U.S.	November 11, 2010
U.S. 7831522	U.S.	November 9, 2010
U.S. 7814545	U.S.	October 12, 2010
U.S. 20100257222	U.S.	October 7, 2010
U.S. 7809795	U.S.	October 5, 2010
U.S. 7809796	U.S.	October 5, 2010
U.S. 20100235636	U.S.	September 16, 2010
U.S. 7797752	U.S.	September 14, 2010
U.S. 20100198928	U.S.	August 5, 2010
U.S. 20100145900	U.S.	June 10, 2010
U.S. 20100115040	U.S.	May 6, 2010
U.S. 20100094887	U.S.	April 15, 2010
U.S. 20100082758	U.S.	April 1, 2010
U.S. 20100070761	U.S.	March 18, 2010
U.S. 20100043071	U.S.	February 18, 2010
U.S. 20100030798	U.S.	February 4, 2010
U.S. 7644274	U.S.	January 5, 2010
U.S. 20090319629	U.S.	December 24, 2009
U.S. 20090292781	U.S.	November 26, 2009
U.S. 20090260064	U.S.	October 15, 2009
U.S. 20090252159	U.S.	October 8, 2009
U.S. 20090228583	U.S.	September 10, 2009
U.S. 20090210708	U.S.	August 20, 2009
U.S. 20090089859	U.S.	April 2, 2009

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>4</sup></b>
U.S. 20090064330	U.S.	March 5, 2009
U.S. 20090037350	U.S.	February 5, 2009
U.S. 20080290154	U.S.	November 27, 2008
U.S. 20080276315	U.S.	November 6, 2008
U.S. 20080235794	U.S.	September 25, 2008
U.S. 20080175266	U.S.	July 24, 2008
U.S. 20080178288	U.S.	July 24, 2008
U.S. 20080141374	U.S.	June 12, 2008
U.S. 20080104235	U.S.	May 1, 2008
U.S. 20080098237	U.S.	April 24, 2008
U.S. 20080050014	U.S.	February 28, 2008
U.S. 20080046970	U.S.	February 21, 2008
U.S. 20080022107	U.S.	January 24, 2008
U.S. 20080004049	U.S.	January 3, 2008
U.S. 20070299916	U.S.	December 27, 2007
U.S. 20070276907	U.S.	November 29, 2007
U.S. 20070271343	U.S.	November 22, 2007
U.S. 7299261	U.S.	November 20, 2007
U.S. 7293063	U.S.	November 6, 2007
U.S. 20070239639	U.S.	October 11, 2007
U.S. 20070214495	U.S.	September 13, 2007
U.S. 20070198642	U.S.	August 23, 2007
U.S. 20070192169	U.S.	August 16, 2007
U.S. 20070143407	U.S.	June 21, 2007
U.S. 20070143432	U.S.	June 21, 2007
U.S. 20070136573	U.S.	June 14, 2007
U.S. 20070136806	U.S.	June 14, 2007
U.S. 20070130618	U.S.	June 7, 2007
U.S. 20070107053	U.S.	May 10, 2007
U.S. 20070100944	U.S.	May 3, 2007

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>4</sup></b>
U.S. 20070101423	U.S.	May 3, 2007
U.S. 20070086592	U.S.	April 19, 2007
U.S. 20070067465	U.S.	March 22, 2007
U.S. 20070038718	U.S.	February 15, 2007
U.S. 20070027992	U.S.	February 1, 2007
U.S. 20070019235	U.S.	January 25, 2007
U.S. 20060265498	U.S.	November 23, 2006
U.S. 20060259558	U.S.	November 16, 2006
U.S. 20060253597	U.S.	November 9, 2006
U.S. 20060230461	U.S.	October 12, 2006
U.S. 20060224677	U.S.	October 5, 2006
U.S. 20060206713	U.S.	September 14, 2006
U.S. 20060195542	U.S.	August 31, 2006
U.S. 20060168024	U.S.	July 27, 2006
U.S. 20060168329	U.S.	July 27, 2006
U.S. 20060153380	U.S.	July 13, 2006
U.S. 20060149821	U.S.	July 6, 2006
U.S. 20060107323	U.S.	May 18, 2006
U.S. 20060101334	U.S.	May 11, 2006
U.S. 20060085505	U.S.	April 20, 2006
U.S. 20060053279	U.S.	March 9, 2006
U.S. 20060053490	U.S.	March 9, 2006
U.S. 20060031306	U.S.	February 9, 2006
U.S. 20060026242	U.S.	February 2, 2006
U.S. 20060015563	U.S.	January 19, 2006
U.S. 20060004772	U.S.	January 5, 2006
U.S. 20050257261	U.S.	November 17, 2005
U.S. 20050235065	U.S.	October 20, 2005
U.S. 20050223076	U.S.	October 6, 2005
U.S. 20050216587	U.S.	September 29, 2005

<b>Patent / Publication No.</b>	<b>Country of Origin</b>	<b>Date of Issue /Publication<sup>4</sup></b>
U.S. 20050198173	U.S.	September 8, 2005
U.S. 20050188023	U.S.	August 25, 2005
U.S. 20050188045	U.S.	August 25, 2005
U.S. 20050182735	U.S.	August 18, 2005
U.S. 20050097320	U.S.	May 5, 2005
U.S. 20050080857	U.S.	April 14, 2005
U.S. 20050076084	U.S.	April 7, 2005
U.S. 20050076240	U.S.	April 7, 2005
U.S. 20050060643	U.S.	March 17, 2005
U.S. 20050033810	U.S.	February 10, 2005
U.S. 20040203589	U.S.	October 14, 2004
U.S. 20040176072	U.S.	September 9, 2004
U.S. 20040177120	U.S.	September 9, 2004
U.S. 6721784	U.S.	April 13, 2004
U.S. 20030236845	U.S.	December 25, 2003
U.S. 20030229672	U.S.	December 11, 2003
U.S. 20030225850	U.S.	December 4, 2003
U.S. 6574658	U.S.	June 3, 2003
U.S. 20030023736	U.S.	January 30, 2003
U.S. 20020184315	U.S.	December 5, 2002
U.S. 20020138271	U.S.	September 26, 2002
U.S. 6161130-A	U.S.	December 12, 2000
U.S. 6073142-A	U.S.	June 6, 2000

**B. Prior Art Non-Patent Publications**

In addition to the patents and patent and patent application publications, Defendants disclose the following additional publications:

## 1. The '009 Patent

Title, Author(s), and Publisher	Date of Publication <sup>5</sup>
Chow, Stanley & Gustave, Christophe & Vinokurov, Dmitri. (2009). Authenticating displayed names in telephony. Bell Labs Technical Journal. 14. 267-282. 10.1002/bltj.20367.	March 2009
Peterson, J., Jennings, C.: Enhancements for Authenticated Identity Management in the Session Initiation Protocol (SIP). IETF RFC4474 (August 2006)	August 2006
Gritzalis, Dimitris & Lopez, Javier. (2009). Emerging Challenges for Security, Privacy and Trust, 24th IFIP TC 11 International Information Security Conference, SEC 2009, Pafos, Cyprus, May 18-20, 2009. Proceedings. 297.	May 2009
A. Plies, M. Massoth and R. Marx, "Approach to Identity Card-Based Voice-over-IP Authentication," <i>2010 Second International Conferences on Advances in Multimedia</i> , Athens, Greece, 2010, pp. 61-66, doi: 10.1109/MMEDIA.2010.30.	2010
Dietz, Michael & Shekhar, Shashi & Pisetsky, Yuliy & Shu, Anhei & Wallach, Dan. (2011). QUIRE: Lightweight Provenance for Smart Phone Operating Systems. Computing Research Repository - CORR. 1102.2445.	2011
Zakir Durumeric, James Kasten, Michael Bailey, and J. Alex Halderman. 2013. Analysis of the HTTPS certificate ecosystem. In Proceedings of the 2013 conference on Internet measurement conference (IMC '13). Association for Computing Machinery, New York, NY, USA, 291–304. <a href="https://doi.org/10.1145/2504730.2504755">https://doi.org/10.1145/2504730.2504755</a>	October 2013
Ayers, R. , Brothers, S. and Jansen, W. (2013), Guidelines on Mobile Device Forensics (Draft) (NIST SP), National Institute of Standards and Technology, Gaithersburg, MD, [online], <a href="https://www.nist.gov/system/files/documents/2017/05/09/draft-guidelines-on-mobile-device-forensics.pdf">https://www.nist.gov/system/files/documents/2017/05/09/draft-guidelines-on-mobile-device-forensics.pdf</a> (Accessed July 18, 2024)	September 2013
M. La Polla, F. Martinelli and D. Sgandurra, "A Survey on Security for Mobile Devices," in <i>IEEE Communications Surveys &amp; Tutorials</i> , vol. 15, no. 1, pp. 446-471, First Quarter 2013, doi: 10.1109/SURV.2012.013012.00028.	March 2012
Banerjee, S. (2016). Aadhaar: Digital inclusion and public services in India. World Development Report, 81–92. <a href="https://thedocs.worldbank.org/en/doc/655801461250682317-">https://thedocs.worldbank.org/en/doc/655801461250682317-</a>	2016
Adrian Dabrowski, Nicola Pianta, Thomas Klepp, Martin Mulazzani, and Edgar Weippl. 2014. IMSI-catch me if you can: IMSI-catcher-	2014

<sup>5</sup> The dates in this column are the latest dates on which the publications were publicly available. Defendants reserve the right to identify earlier dates should such dates be ascertained through discovery.

Title, Author(s), and Publisher	Date of Publication <sup>5</sup>
catchers. In Proceedings of the 30th Annual Computer Security Applications Conference (ACSAC '14). Association for Computing Machinery, New York, NY, USA, 246–255. <a href="https://doi.org/10.1145/2664243.2664272">https://doi.org/10.1145/2664243.2664272</a>	
Khan, Wilayat & Ullah, Habib & Hussain, Riaz. (2013). Energy-Efficient Mutual Authentication Protocol for Handheld Devices Based on Public Key Cryptography. <i>International Journal of Computer Theory and Engineering</i> . Vol 5. 754-758. 10.7763/IJCTE.2013.V5.790.	October 2013
S. Mirzadeh, H. Cruickshank and R. Tafazolli, "Secure Device Pairing: A Survey," in <i>IEEE Communications Surveys &amp; Tutorials</i> , vol. 16, no. 1, pp. 17-40, First Quarter 2014, doi: 10.1109/SURV.2013.111413.00196.	December 2013
Lyle, J. <i>et al.</i> (2013). <i>Personal</i> PKI for the Smart Device Era. In: De Capitani di Vimercati, S., Mitchell, C. (eds) <i>Public Key Infrastructures, Services and Applications</i> . EuroPKI 2012. Lecture Notes in Computer Science, vol 7868. Springer, Berlin, Heidelberg. <a href="https://doi.org/10.1007/978-3-642-40012-4_5">https://doi.org/10.1007/978-3-642-40012-4_5</a>	2013
Entrust: "Strong Multifactor Authentication Methods from Entrust IdentityGuard," <a href="https://web.archive.org/web/20110825101942/http://www.entrust.com/strong-authentication/authenticators.htm">https://web.archive.org/web/20110825101942/http://www.entrust.com/strong-authentication/authenticators.htm</a> . Aug. 25, 2011.	August 2013
Entrust: Mobile Authentication and Transaction Verification 1,2,3, <a href="https://web.archive.org/web/20110814071521/http://www.entrust.com/mobile-security">https://web.archive.org/web/20110814071521/http://www.entrust.com/mobile-security</a> . Aug. 14, 2011.	August 2011
Entrust: Proven Transaction Verification on Smartphones & Mobile Devices-Entrust, <a href="https://web.archive.org/web/20110918231205/http://www.entrust.com/transaction-verification/index.htm">https://web.archive.org/web/20110918231205/http://www.entrust.com/transaction-verification/index.htm</a> . Sep. 18, 2011.	2011
Entrust: WP_Securing_Whats_At_Risk_July08, <a href="https://web.archive.org/web/20110809104408/http://download.entrust.com/resources/download.cfm/22313/">https://web.archive.org/web/20110809104408/http://download.entrust.com/resources/download.cfm/22313/</a> . Aug. 9, 2011.	2008

## 2. The '989 Patent

Title, Author(s), and Publisher	Date of Publication <sup>6</sup>
Chow, Stanley & Gustave, Christophe & Vinokurov, Dmitri. (2009). Authenticating displayed names in telephony. Bell Labs Technical Journal. 14. 267-282. 10.1002/bltj.20367.	March 2009
Peterson, J., Jennings, C.: Enhancements for Authenticated Identity Management in the Session Initiation Protocol (SIP). IETF RFC4474 (August 2006)	August 2006
Gritzalis, Dimitris & Lopez, Javier. (2009). Emerging Challenges for Security, Privacy and Trust, 24th IFIP TC 11 International Information Security Conference, SEC 2009, Pafos, Cyprus, May 18-20, 2009. Proceedings. 297.	May 2009
A. Plies, M. Massoth and R. Marx, "Approach to Identity Card-Based Voice-over-IP Authentication," <i>2010 Second International Conferences on Advances in Multimedia</i> , Athens, Greece, 2010, pp. 61-66, doi: 10.1109/MMEDIA.2010.30.	2010
Dietz, Michael & Shekhar, Shashi & Pisetsky, Yuliy & Shu, Anhei & Wallach, Dan. (2011). QUIRE: Lightweight Provenance for Smart Phone Operating Systems. Computing Research Repository - CORR. 1102.2445.	2011
Zakir Durumeric, James Kasten, Michael Bailey, and J. Alex Halderman. 2013. Analysis of the HTTPS certificate ecosystem. In Proceedings of the 2013 conference on Internet measurement conference (IMC '13). Association for Computing Machinery, New York, NY, USA, 291–304. <a href="https://doi.org/10.1145/2504730.2504755">https://doi.org/10.1145/2504730.2504755</a>	October 2013
Ayers, R. , Brothers, S. and Jansen, W. (2013), Guidelines on Mobile Device Forensics (Draft) (NIST SP), National Institute of Standards and Technology, Gaithersburg, MD, [online], <a href="https://www.nist.gov/system/files/documents/2017/05/09/draft-guidelines-on-mobile-device-forensics.pdf">https://www.nist.gov/system/files/documents/2017/05/09/draft-guidelines-on-mobile-device-forensics.pdf</a> (Accessed July 18, 2024)	September 2013
M. La Polla, F. Martinelli and D. Sgandurra, "A Survey on Security for Mobile Devices," in <i>IEEE Communications Surveys &amp; Tutorials</i> , vol. 15, no. 1, pp. 446-471, First Quarter 2013, doi: 10.1109/SURV.2012.013012.00028.	March 2012
Banerjee, S. (2016). Aadhaar: Digital inclusion and public services in India. World Development Report, 81–92. <a href="https://thedocs.worldbank.org/en/doc/655801461250682317-">https://thedocs.worldbank.org/en/doc/655801461250682317-</a>	2016
Adrian Dabrowski, Nicola Pianta, Thomas Klepp, Martin Mulazzani, and Edgar Weippl. 2014. IMSI-catch me if you can: IMSI-catcher-	2014

<sup>6</sup> The dates in this column are the latest dates on which the publications were publicly available. Defendants reserve the right to identify earlier dates should such dates be ascertained through discovery.

Title, Author(s), and Publisher	Date of Publication <sup>6</sup>
catchers. In Proceedings of the 30th Annual Computer Security Applications Conference (ACSAC '14). Association for Computing Machinery, New York, NY, USA, 246–255. <a href="https://doi.org/10.1145/2664243.2664272">https://doi.org/10.1145/2664243.2664272</a>	
Khan, Wilayat & Ullah, Habib & Hussain, Riaz. (2013). Energy-Efficient Mutual Authentication Protocol for Handheld Devices Based on Public Key Cryptography. <i>International Journal of Computer Theory and Engineering</i> . Vol 5. 754-758. 10.7763/IJCTE.2013.V5.790.	October 2013
S. Mirzadeh, H. Cruickshank and R. Tafazolli, "Secure Device Pairing: A Survey," in <i>IEEE Communications Surveys &amp; Tutorials</i> , vol. 16, no. 1, pp. 17-40, First Quarter 2014, doi: 10.1109/SURV.2013.111413.00196.	December 2013
Lyle, J. <i>et al.</i> (2013). <i>Personal PKI for the Smart Device Era</i> . In: De Capitani di Vimercati, S., Mitchell, C. (eds) <i>Public Key Infrastructures, Services and Applications</i> . EuroPKI 2012. Lecture Notes in Computer Science, vol 7868. Springer, Berlin, Heidelberg. <a href="https://doi.org/10.1007/978-3-642-40012-4_5">https://doi.org/10.1007/978-3-642-40012-4_5</a>	2013
Entrust: "Strong Multifactor Authentication Methods from Entrust IdentityGuard," <a href="https://web.archive.org/web/20110825101942/http://www.entrust.com/strong-authentication/authenticators.htm">https://web.archive.org/web/20110825101942/http://www.entrust.com/strong-authentication/authenticators.htm</a> . Aug. 25, 2011.	August 2013
Entrust: Mobile Authentication and Transaction Verification 1,2,3, <a href="https://web.archive.org/web/20110814071521/http://www.entrust.com/mobile-security">https://web.archive.org/web/20110814071521/http://www.entrust.com/mobile-security</a> . Aug. 14, 2011.	August 2011
Entrust: Proven Transaction Verification on Smartphones & Mobile Devices-Entrust, <a href="https://web.archive.org/web/20110918231205/http://www.entrust.com/transaction-verification/index.htm">https://web.archive.org/web/20110918231205/http://www.entrust.com/transaction-verification/index.htm</a> . Sep. 18, 2011.	2011
Entrust: WP_Securing_Whats_At_Risk_July08, <a href="https://web.archive.org/web/20110809104408/http://download.entrust.com/resources/download.cfm/22313/">https://web.archive.org/web/20110809104408/http://download.entrust.com/resources/download.cfm/22313/</a> . Aug. 9, 2011.	2008

### 3. The '132 Patent

Title, Author(s), and Publisher	Date of Publication <sup>7</sup>
Chow, Stanley & Gustave, Christophe & Vinokurov, Dmitri. (2009). Authenticating displayed names in telephony. Bell Labs Technical Journal. 14. 267-282. 10.1002/bltj.20367.	March 2009
Peterson, J., Jennings, C.: Enhancements for Authenticated Identity Management in the Session Initiation Protocol (SIP). IETF RFC4474 (August 2006)	August 2006
Gritzalis, Dimitris & Lopez, Javier. (2009). Emerging Challenges for Security, Privacy and Trust, 24th IFIP TC 11 International Information Security Conference, SEC 2009, Pafos, Cyprus, May 18-20, 2009. Proceedings. 297.	May 2009
A. Plies, M. Massoth and R. Marx, "Approach to Identity Card-Based Voice-over-IP Authentication," <i>2010 Second International Conferences on Advances in Multimedia</i> , Athens, Greece, 2010, pp. 61-66, doi: 10.1109/MMEDIA.2010.30.	2010
Dietz, Michael & Shekhar, Shashi & Pisetsky, Yuliy & Shu, Anhei & Wallach, Dan. (2011). QUIRE: Lightweight Provenance for Smart Phone Operating Systems. Computing Research Repository - CORR. 1102.2445.	2011
Zakir Durumeric, James Kasten, Michael Bailey, and J. Alex Halderman. 2013. Analysis of the HTTPS certificate ecosystem. In Proceedings of the 2013 conference on Internet measurement conference (IMC '13). Association for Computing Machinery, New York, NY, USA, 291–304. <a href="https://doi.org/10.1145/2504730.2504755">https://doi.org/10.1145/2504730.2504755</a>	October 2013
Ayers, R. , Brothers, S. and Jansen, W. (2013), Guidelines on Mobile Device Forensics (Draft) (NIST SP), National Institute of Standards and Technology, Gaithersburg, MD, [online], <a href="https://www.nist.gov/system/files/documents/2017/05/09/draft-guidelines-on-mobile-device-forensics.pdf">https://www.nist.gov/system/files/documents/2017/05/09/draft-guidelines-on-mobile-device-forensics.pdf</a> (Accessed July 18, 2024)	September 2013
M. La Polla, F. Martinelli and D. Sgandurra, "A Survey on Security for Mobile Devices," in <i>IEEE Communications Surveys &amp; Tutorials</i> , vol. 15, no. 1, pp. 446-471, First Quarter 2013, doi: 10.1109/SURV.2012.013012.00028.	March 2012
Banerjee, S. (2016). Aadhaar: Digital inclusion and public services in India. World Development Report, 81–92. <a href="https://thedocs.worldbank.org/en/doc/655801461250682317-">https://thedocs.worldbank.org/en/doc/655801461250682317-</a>	2016
Adrian Dabrowski, Nicola Pianta, Thomas Klepp, Martin Mulazzani, and Edgar Weippl. 2014. IMSI-catch me if you can: IMSI-catcher-	2014

<sup>7</sup> The dates in this column are the latest dates on which the publications were publicly available. Defendants reserve the right to identify earlier dates should such dates be ascertained through discovery.

Title, Author(s), and Publisher	Date of Publication <sup>7</sup>
catchers. In Proceedings of the 30th Annual Computer Security Applications Conference (ACSAC '14). Association for Computing Machinery, New York, NY, USA, 246–255. <a href="https://doi.org/10.1145/2664243.2664272">https://doi.org/10.1145/2664243.2664272</a>	
Khan, Wilayat & Ullah, Habib & Hussain, Riaz. (2013). Energy-Efficient Mutual Authentication Protocol for Handheld Devices Based on Public Key Cryptography. <i>International Journal of Computer Theory and Engineering</i> . Vol 5. 754-758. 10.7763/IJCTE.2013.V5.790.	October 2013
S. Mirzadeh, H. Cruickshank and R. Tafazolli, "Secure Device Pairing: A Survey," in <i>IEEE Communications Surveys &amp; Tutorials</i> , vol. 16, no. 1, pp. 17-40, First Quarter 2014, doi: 10.1109/SURV.2013.111413.00196.	December 2013
Lyle, J. <i>et al.</i> (2013). <i>Personal</i> PKI for the Smart Device Era. In: De Capitani di Vimercati, S., Mitchell, C. (eds) <i>Public Key Infrastructures, Services and Applications</i> . EuroPKI 2012. Lecture Notes in Computer Science, vol 7868. Springer, Berlin, Heidelberg. <a href="https://doi.org/10.1007/978-3-642-40012-4_5">https://doi.org/10.1007/978-3-642-40012-4_5</a>	2013
Entrust: "Strong Multifactor Authentication Methods from Entrust IdentityGuard," <a href="https://web.archive.org/web/20110825101942/http://www.entrust.com/strong-authentication/authenticators.htm">https://web.archive.org/web/20110825101942/http://www.entrust.com/strong-authentication/authenticators.htm</a> . Aug. 25, 2011.	August 2013
Entrust: Mobile Authentication and Transaction Verification 1,2,3, <a href="https://web.archive.org/web/20110814071521/http://www.entrust.com/mobile-security">https://web.archive.org/web/20110814071521/http://www.entrust.com/mobile-security</a> . Aug. 14, 2011.	August 2011
Entrust: Proven Transaction Verification on Smartphones & Mobile Devices-Entrust, <a href="https://web.archive.org/web/20110918231205/http://www.entrust.com/transaction-verification/index.htm">https://web.archive.org/web/20110918231205/http://www.entrust.com/transaction-verification/index.htm</a> . Sep. 18, 2011.	2011
Entrust: WP_Securing_Whats_At_Risk_July08, <a href="https://web.archive.org/web/20110809104408/http://download.entrust.com/resources/download.cfm/22313/">https://web.archive.org/web/20110809104408/http://download.entrust.com/resources/download.cfm/22313/</a> . Aug. 9, 2011.	2008

### C. Prior Art Systems

Defendants also contend that the Asserted Claims are invalid in view of public knowledge, uses and/or offers for sale or sales of products and services that are prior art under 35 U.S.C. § 102(a)(1). As discovery is ongoing, Defendants continue to investigate these events.

Defendants also reserve the right to rely upon any system, public knowledge or use embodying or otherwise incorporating any of the prior art disclosed below, alone or in combination. Defendants further reserve the right to rely upon any other documents or references describing any such system, knowledge or use.

**1. '009 Patent**

<b>Item Offered for Sale and/or Publicly Used or Known</b>	<b>Date of Offer / Public Use / Knowledge<sup>8</sup></b>	<b>Person or Entity Who Made and Received Offer, Made Public Use, or Made Information Known or to Whom Made Known</b>
IETF RFC 4474 Systems(s)/Standards before the priority date of the Asserted Patent	August 2006	IETF Network Working Group and all working groups and individuals involved in the IETF standardization
Aadhaar project	2009	Indian Department of Information and the Unique Identification Authority of India (UIDAI)
Entrust: Mobile Authentication and Transaction Verification System/IdentityGuard	2011	Entrust Inc.
Experian Verification System	2012	Experian PLC

**2. '989 Patent**

<b>Item Offered for Sale and/or Publicly Used or Known</b>	<b>Date of Offer / Public Use / Knowledge<sup>9</sup></b>	<b>Person or Entity Who Made and Received Offer, Made Public Use, or Made Information Known or to Whom Made Known</b>
IETF RFC 4474 Systems(s)/Standards before the priority date of the Asserted Patent	August 2006	IETF Network Working Group and all working groups and individuals involved in the IETF standardization
Aadhaar project	2009	Indian Department of Information and the Unique Identification Authority of India (UIDAI)

<sup>8</sup> The dates in this column are the latest dates on which the systems were publicly used or known. Defendants reserve the right to identify earlier dates should such dates be ascertained through discovery.

<sup>9</sup> The dates in this column are the latest dates on which the systems were publicly used or known. Defendants reserve the right to identify earlier dates should such dates be ascertained through discovery.

<b>Item Offered for Sale and/or Publicly Used or Known</b>	<b>Date of Offer / Public Use / Knowledge<sup>9</sup></b>	<b>Person or Entity Who Made and Received Offer, Made Public Use, or Made Information Known or to Whom Made Known</b>
Entrust: Mobile Authentication and Transaction Verification System/IdentityGuard	2011	Entrust Inc.
Experian Verification System	2012	Experian PLC

### 3. '132 Patent

<b>Item Offered for Sale and/or Publicly Used or Known</b>	<b>Date of Offer / Public Use / Knowledge<sup>10</sup></b>	<b>Person or Entity Who Made and Received Offer, Made Public Use, or Made Information Known or to Whom Made Known</b>
IETF RFC 4474 Systems(s)/Standards before the priority date of the Asserted Patent	August 2006	IETF Network Working Group and all working groups and individuals involved in the IETF standardization
Aadhaar project	2009	Indian Department of Information and the Unique Identification Authority of India (UIDAI)
Entrust: Mobile Authentication and Transaction Verification System/IdentityGuard	2011	Entrust Inc.
Experian Verification System	2012	Experian PLC

#### V. P.R. 3-3(b) DISCLOSURES: EACH ITEM OF PRIOR ART THAT ANTICIPATES AND/OR RENDERS OBVIOUS THE ASSERTED CLAIM, AND OBVIOUSNESS COMBINATIONS AND MOTIVATIONS TO COMBINE

Based on presently known information and the apparent constructions RightQuestion is asserting in its Infringement Contentions, the prior art references identified above anticipate the Asserted Claims or, alone or in combination with the knowledge in the art, render the Asserted Claims obvious. To the extent RightQuestion asserts that any of the prior art references charted in

<sup>10</sup> The dates in this column are the latest dates on which the systems were publicly used or known. Defendants reserve the right to identify earlier dates should such dates be ascertained through discovery.

Exhibits A-01 et seq., B-01 et seq., and C-01 et seq. fail to explicitly or inherently disclose any element of the Asserted Claims, Defendants contend that it would have been obvious to modify such reference to include the allegedly missing element, in view of the knowledge of one of ordinary skill in the art, the admitted prior art of the Asserted Patents, and/or in combination with any of the other prior art references identified in the Exhibits for that respective patent. To the extent RightQuestion contends that any primary reference does not anticipate the Asserted Claims, it would have been obvious to combine or modify the primary references with concepts from other prior art.

In particular, for each limitation of the Asserted Claims that RightQuestion contends is not met by a particular primary reference, Defendants contend that the limitation (and claim as a whole) is obvious based on a combination of that particular primary reference with (1) any other primary reference disclosing that limitation, (2) any other reference as identified in Exhibits A–C as disclosing that limitation, (3) any admitted prior art, as explained in the background of each patent or discussed in the file history, and/or (4) the knowledge of a person of ordinary skill in the art including any of the references and concepts discussed herein regarding the relevant background and state of the art. The specific combinations of prior art that Defendants contend render the Asserted Claims obvious are readily determinable as described herein and as provided in Exhibits A-C. Defendants' obviousness grounds for each dependent claim incorporate the obviousness grounds for the claim(s) from which the dependent claim depends in addition to any obviousness grounds identified in the charts for the dependent claim. Defendants reserve the right to rely on uncited portions of the prior art references, other documents, and/or operational systems, as well as fact and expert testimony, to provide context or to aid in understanding the cited portions

of the references and interpreting the teachings of the prior art and to establish bases for combinations of certain cited references that render the Asserted Claims obvious.

Where the invalidity claim charts (Exhibits A, B and C) cite to a particular figure in a reference, the citation should be understood to encompass the caption of the figure and other text relating to and/or describing the figure. Similarly, where the invalidity claim charts cite to particular text referring to a figure, the citation should be understood to include the figure and related figures as well.

Defendants do not yet have the benefit of RightQuestion's positions on the prior art, including what (if any) elements it contends are missing in each prior art reference, whether RightQuestion agrees that a reference is in fact prior art, and whether RightQuestion agrees that a person of ordinary skill in the art would be motivated to combine specific references. Defendants reserve the right to supplement these obviousness positions (including identifying additional prior art combinations and the associated reasons to combine) as discovery in the case progresses, including expert discovery.

While the categories of art (patents/applications, non-patent publications, and systems) below are organized by asserted patent number, because of the overlapping nature of the asserted patents, Defendants identify each reference in each category as art applicable to each of the asserted patents.

#### **A. Primary References**

The following prior art references ("primary references"), alone or in combination with any other reference identified in these contentions, render invalid one or more of the Asserted Claims.

##### **1. The '009 Patent**

<b>Exh.</b>	<b>Patent/ Publication No./System</b>	<b>Country of Origin</b>	<b>Named Inventor</b>	<b>Issue / Publication /102(a)(1) Date</b>	<b>Short Title</b>
A-01	US2010/0150328	U.S.	Perreault et al.	June 17, 2010	Perreault
A-02	KR20060096784	Korea	Han	September 13, 2006	Han
A-03	US2012/0144198	U.S.	Har et al.	June 7, 2012	Har
A-04	6,327,347	U.S.	Gutzmann et al.	December 4, 2001	Gutzmann
A-05	US2009/0270073	U.S.	Ling et al.	October 29, 2009	Ling
A-06	RFC 4474	U.S.	Peterson et al.	August 2006	RFC 4474
A-07	6,496,571	U.S.	Wilson	December 17, 2002	Wilson
A-08	8,364,131	U.S.	Nagaraja	January 29, 2013	Nagaraja
A-09	US2008/0137828	U.S.	Chmaytelli	June 12, 2008	Chmaytelli
A-10	US2014/0095986	U.S.	Karpey	April 2, 2015	Karpey
A-11	US2008/0084975	U.S.	Schwartz	April 10, 2008	Schwartz
A-12	KR20120061022	Korea	Kim et al.	June 12, 2012	Kim
A-13	6,324,271	U.S.	Sawyer et al.	November 27, 2001	Sawyer
A-14	US2009/0217039	U.S.	Kurapati	February 5, 2009	Kurapati
A-15	10,880,732	U.S.	Bombacino et al.	December 29, 2020	Bombacino
A-16	US2008/0198991	U.S.	Saito	August 21, 2008	Saito
A-17	US2009/0046839	U.S.	Chow et al.	February 19, 2009	Chow
A-18	US2011/0085650	U.S.	Cheon et al.	April 14, 2011	Cheon
A-19	Entrust	U.S.	Entrust	2012	Entrust
A-20	Experian	U.S.	Experian	2012	Experian

## 2. The '989 Patent

<b>Exh.</b>	<b>Patent/ Publication No. /System</b>	<b>Country of Origin</b>	<b>Named Inventor</b>	<b>Issue / Publication /102(a)(1) Date</b>	<b>Short Title</b>
B-01	KR20120061022	Korea	Kim et al.	June 12, 2012	Kim
B-02	US2008/0084975	U.S.	Schwartz	January 5, 2007	Schwartz
B-03	US2015/0095986	U.S.	Karpey et al.	April 2, 2015	Karpey
B-04	10,880,732	U.S.	Bombacino et al.	December 29, 2020	Bombacino

<b>Exh.</b>	<b>Patent/ Publication No. /System</b>	<b>Country of Origin</b>	<b>Named Inventor</b>	<b>Issue / Publication /102(a)(1) Date</b>	<b>Short Title</b>
B-05	6,324,271	U.S.	Sawyer et al.	November 27, 2001	Sawyer
B-06	US2008/0198991	U.S.	Saito	August 21, 2008	Saito
B-07	US2009/0217039	U.S.	Kurapati	August 27, 2009	Kurapati
B-08	KR20060096784	Korea	Han	September 13, 2006	Han
B-09	US2012/0144198	U.S.	Har et al.	June 7, 2012	Har
B-10	US2009/0270073	U.S.	Ling et al.	October 29, 2009	Ling
B-11	RFC 4474	U.S.	Peterson et al.	August 2006	RFC 4474
B-12	US2012/0307993	U.S.	Masters	December 6, 2012	Masters
B-13	US2009/0046839	U.S.	Chow et al.	February 19, 2009	Chow
B-14	US2011/0085650	U.S.	Cheon et al.	April 14, 2011	Cheon
B-15	Entrust	U.S.	Entrust	2012	Entrust
B-16	Experian	U.S.	Experian	2012	Experian

### 3. The '132 Patent

<b>Exh.</b>	<b>Patent/ Publication No. /System</b>	<b>Country of Origin</b>	<b>Named Inventor</b>	<b>Issue / Publication /102(a)(1) Date</b>	<b>Short Title</b>
C-1	6,324,271	U.S.	Sawyer et al.	November 27, 2001	Sawyer
C-2	US2009/0217039	U.S.	Kurapati	February 5, 2009	Kurapati
C-3	US2012/0144198	U.S.	Har et al.	June 7, 2012	Har
C-4	US2009/0046839	U.S.	Chow et al.	February 19, 2009	Chow
C-5	US2009/0270073	U.S.	Ling et al.	October 29, 2009	Ling
C-6	US2011/0085650	U.S.	Cheon et al.	April 14, 2011	Cheon
C-7	8,467,512	U.S.	Amir et al.	June 18, 2013	Amir
C-8	KR20060096784	Korea	Han	September 13, 2006	Han
C-9	KR20120061022	Korea	Kim et al.	June 12, 2012	Kim
C-10	US2008/0084975	U.S.	Schwartz	January 5, 2007	Schwartz
C-11	US2015/0095986	U.S.	Karpey	April 2, 2015	Schwartz
C-12	RFC 4474	U.S.	Peterson et al.	August 2006	RFC 4474

<b>Exh.</b>	<b>Patent/ Publication No. /System</b>	<b>Country of Origin</b>	<b>Named Inventor</b>	<b>Issue / Publication /102(a)(1) Date</b>	<b>Short Title</b>
C-13	10,880,732	U.S.	Bombacino et al.	December 29, 2020	Bombacino
C-14	US2008/0198991	U.S.	Saito	August 21, 2008	Saito
C-15	Entrust	U.S.	Entrust	2012	Entrust
C-16	Experian	U.S.	Experian	2012	Experian

**B. State of the Art and Obviousness**

The primary references identified above, as further described in the Exhibits, each discloses, either expressly or inherently, every element of the Asserted Claims of the Asserted Patents, thereby anticipating those claims. Additionally, each of the primary references alone (including in combination with the knowledge of a person of ordinary skill in the art) renders obvious the Asserted Claims. To the extent Plaintiff contends that any primary reference does not anticipate or render obvious the Asserted Claims as set forth above, it would have been obvious to combine or modify the primary references with concepts from other prior art, as explained throughout these Invalidity Contentions. In particular, for each limitation of the Asserted Claims that Plaintiff contends is not met by a particular primary reference, Defendants contend that the limitation (and claim as a whole) is obvious based on a combination of that particular primary reference with (1) any other primary reference disclosing that limitation, (2) any reference identified in these Invalidity Contentions as disclosing that limitation, (3) any statements made in the intrinsic record of the Asserted Patents, and/or (4) the knowledge of one of ordinary skill in the art (as explained in additional detail below).

Defendants do not yet have the benefit of Plaintiff's positions regarding the prior art, including what element(s), if any, Plaintiff contends are not disclosed by each prior art reference, whether Plaintiff contends that a reference is not in fact prior art, and whether Plaintiff contends

that a person of ordinary skill in the art would not be motivated to combine specific references. Defendants reserve the right to supplement these obviousness positions (including identifying additional prior art combinations and the associated reasons to combine) in view of such positions and/or as discovery in the case, including expert discovery, progresses.

The information discussed in the prior art raised in these Invalidity Contentions forms the background knowledge of a person of ordinary skill in the art at the earliest alleged priority date for the Asserted Patents and would have been used in determining whether and how to combine references to achieve the claimed invention(s), as discussed herein.<sup>11</sup> Indeed, the existence, nature, and content of each prior art reference, including the prior art references cited herein, provide further evidence regarding the knowledge of a person of ordinary skill in the art at the relevant time. Defendants expressly reserve the right to rely on each of the prior art references, systems, concepts, and technologies discussed in these Invalidity Contentions, including to demonstrate that a particular claim element was known at the time of the Asserted Patent to a person of ordinary skill in the art, to show that the differences between a claimed invention and a prior art reference would have been obvious to a person of ordinary skill in the art, and to establish that a person of ordinary skill in the art would have been motivated to combine teachings of one or more references to achieve a claimed invention.

### **1. Motivations for Making Combinations of Prior Art**

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed in the attached charts; there was a reason to make each combination, each combination of art would have produced no unexpected results, and each

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<sup>11</sup> See *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (stating that “the knowledge [of a person of ordinary skill in the art] is part of the store of public knowledge that must be consulted when considering whether a claimed invention would have been obvious”).

combination at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414–18 (2007) (rejecting the Federal Circuit’s “rigid” application of the teaching, suggestion, or motivation to combine test instead espousing an “expansive and flexible” approach). Indeed, the Supreme Court held that a person of ordinary skill in the art is “a person of ordinary creativity, not an automaton” and “in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like a pieces of a puzzle.” *Id.* at 420–21.

Nevertheless, in keeping with the Local Patent Rules, in addition to the information contained elsewhere in these contentions, Defendants identify additional motivations and reasons to combine the cited art. A person of ordinary skill in the art would have been motivated to combine the primary and additional prior art references as set forth throughout these contentions. Multiple teachings, suggestions, and/or reasons to modify any of the references and/or to combine any two or more of the references come from many sources, including the prior art (specific and as a whole), common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obvious to try, the nature of the problem faced, and/or knowledge possessed by one of ordinary skill in the art.<sup>12</sup> In addition, the patentee admits in the intrinsic record, including the specification and prosecution history of the Asserted Patents, that many of the claimed features were conventional and known in the art (as described in further detail below).

In general, a claimed invention is unpatentable if the differences between it and the prior art “are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.” 35 U.S.C. § 103; *Graham v. John Deere*

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<sup>12</sup> Defendants reserve the right to present qualified expert testimony on any or all of these items.

*Co.*, 383 U.S. 1, 13–14 (1966). The ultimate determination of whether an invention is or is not obvious is a legal conclusion based on underlying factual inquiries including: “(1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness.” *Miles Labs., Inc. v. Shandon, Inc.*, 997 F.2d 870, 877 (Fed. Cir. 1993) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18, 86 S.Ct. 684, 693–694, 15 L.Ed.2d 545 (1966)).

*KSR International Co. v. Teleflex Inc., et al.*, 550 U.S. 398 (2007) (“*KSR*”), reaffirmed *Graham*, holding that a claimed invention can be obvious even if there is no teaching, suggestion, or motivation for combining the prior art to produce that invention. In determining whether a claim is obvious, “[o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *Id.* at 418. In determining whether a claim is obvious, “a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.* When prior art elements are combined according to known methods to yield predictable results, the claimed invention is obvious. *Id.* at 417. In addition, “[o]ne of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 419–20. “Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *Id.* at 420.

Any suggested obviousness combinations set forth herein are in the alternative to Defendants' anticipation contentions and are not to be construed to suggest that any reference included in any combination is not anticipatory in its own right or is not the basis for a single-reference obviousness defense. In particular, Defendants are currently unaware of the extent, if any, to which Plaintiff will contend that certain limitations of the Asserted Claims are not disclosed in the art identified by Defendants as anticipatory. To the extent that an issue arises with respect to any such claim limitation, Defendants reserve the right to identify other references and combinations, which may make obvious the allegedly missing limitation in the disclosed system or method.

The rationale to combine or modify prior art references is significantly stronger when the references seek to solve the same problem, come from the same field, and correspond well. *In re Inland Steel Co.*, 265 F.3d 1354, 1362–64 (Fed. Cir. 2001).

In view of the Supreme Court's *KSR* decision, the PTO issued, and updated, a set of Examination Guidelines. See Examination Guidelines for Determining Obviousness Under 35 U.S.C. § 103 in view of the Supreme Court Decision in *KSR International Co. v. Teleflex, Inc.*, 72 Fed. Reg. 57526 (October 10, 2007); Examination Guidelines Update: Development in the Obviousness Inquiry After *KSR v. Teleflex*, 75 Fed. Reg. 53643-60 (September 2010); see also MPEP § 2141 (<https://www.uspto.gov/web/offices/pac/mpep/s2141.html>) (accessed Jan. 13, 2021). These Guidelines summarized the *KSR* decision and subsequent case law, as well as identified various rationales for finding a claim obvious, including those based on other precedents.

Those rationales include:

- (1) Combining prior art elements according to known methods to yield predictable results;
- (2) Simple substitution of one known element for another to obtain predictable results;

- (3) Use of known technique to improve similar devices (methods, or products) in the same way;
- (4) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- (5) “Obvious to try” – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- (6) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; and
- (7) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

Defendants contend that one or more of these rationales apply in considering the obviousness of the Asserted Claims of the Asserted Patents.

To the extent that prior art identified by Defendants as anticipatory are found not to anticipate the Asserted Claims: (1) the prior art establishes that the claimed subject matter was obvious to a person of ordinary skill in the art at the time of the alleged invention; (2) the claims are nevertheless unpatentable because the Asserted Claims contain nothing that goes beyond “ordinary innovation”; (3) no Asserted Claim goes beyond combining known elements to achieve predictable results (particularly in the predictable art(s) of the Asserted Patents) or does more than choose between clear alternatives known to those of skill in the art; and/or (4) the prior art renders the Asserted Claims obvious either alone or in combination with each other or one or more of the other references identified in these Invalidity Contentions.

## **2. Exemplary Specific Motivations**

Motivation to make the proposed combinations of prior art references and knowledge of one skilled in the art generally exists within the references themselves as well as within the knowledge of one skilled in the art in the relevant time frame. Below are exemplary specific motivations to combine references.

## 1. Finite number of predictable solutions

It would have been obvious to try combining the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field or endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Each of the references identified in these Invalidity Contentions are directed to the same field of endeavor (*e.g.*, “techniques for ascertaining the identity of a device initiating a communication”) ’009 Patent at 2:41-42.<sup>13</sup> More specifically, each of the references identified herein are directed toward improvements in communication systems that address limitations in the prior art identified by the Asserted Patents. ’099 Patent at 1-20-30 (“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.”). *See e.g.*, Han at [0011]-[0013] (“Conventionally, when a call is received, a service for displaying the phone number of the caller terminal to the receiver terminal is provided. In addition, the user inputs a name of a specific person and a phone number corresponding to the name of the specific person into his/her terminal in advance and stores the name of the specific person and the phone number in an internal memory, so that the receiver terminal extracts the phone number of the sender terminal transmitted together with the phone call signal, reads a name

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<sup>13</sup> The ’009 Patent is used as a representative example for the Asserted Patents. The citations and statements made with respect to the ’009 Patent are equally attributable to both the ’989 and ’132 Patents, because the specification and figures for the Asserted Patents, which are continuations of each other, are largely identical.

corresponding to the extracted phone number from the memory, and displays the name on the display unit of the receiver terminal.”; “Such a conventional terminal may only output information previously input by the user to the terminal, and there is a problem in that the reliability of previously input information may not be guaranteed. Moreover, the telephone calls from the originator which the , receiver doesn't know. In this case, there is a problem in that the receiver cannot grasp any information about the sender.”); Har at [0011]] (“As mobile devices become more widely used, security concerns arise. Currently, when a mobile device user receives a call, there is no guarantee that the caller is who he says he is. For example, a caller may identify himself as a service provider, offering a new service or a current promotion. The caller may request sensitive personal information including account numbers and credit card information. A prudent user may hesitate to provide such information without some degree of assurance that the caller is who he says he is. Similarly, it is difficult for a caller who calls a user to know if the person who answers the call is the person the caller is calling. For example, a service provider may call an account holder's mobile telephone number but without some degree of questioning, does not know if the user who answered the call is the account holder or someone else.”); Ling at [0005]-[0011] (“It is known that there are some cheating issues by means of mobile telephone today. For example, someone professing to be from the Government Tax department may call a mobile telephone user and tell him that he can be refunded his tax after the payment of a fee. Many people are cheated by not checking to determine whether the call is really coming from the declared department. Thus, to a large degree, the success of such mobile telephone cheating may be attributed to the fact that the mobile telephone user can not identify the caller's true identity.”); “However, it can be seen from the prior art shown in FIG. 1 that the currently used communication system does not provide a process for authenticating the incoming call number.”).

Furthermore, the Asserted Patents specifically admit that a variety of prior art communication systems and methods may be used consistent with the prior art identified in these invalidity contentions. *See* '009 patent at 3:44-52 (“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.”). The solutions identified in the prior art utilize the same admitted prior art communication systems and techniques that are identified in the Asserted Patents. *See e.g.*, Har at [0034] (“The caller can initiate the call on a mobile device over a cellular voice channel, from a computer over a data channel or from a landline telephone over a voice channel.”; “The authentication request can be sent using a data channel (such as but not limited to an Internet connection, an SMS connection or an MMS connection) which can be concurrent with the active cellular call.”); Kurapati at [0039] (“The AVC 104 can be a computer, a server, a switch, a PBX, a gateway or other suitable device and can be operated by the called party, a network provider, a service provider, a facility provider or a call center. The AVA 110 and AVC 104 use various in-band and out-of-band communication channels to exchange information to validate authenticity of caller ID, dialed digits and/or the called party. In-band communication can be done through DTMF, modem, voice signals and out-of-band communication can be done through SMS, SIP, and other VoIP control protocols where necessary.”); Chow at [0048] (“In this example, a Short Message Service (SMS) message is sent. The SMS message includes an indication 1150 that the called party has been authenticated (A), or not authenticated (NA), which is not shown; and, the called party identification information, in this example, “The Bank in California.”); Ling at

[0035] (“The identifier containing the caller's 201 identity generated by the identifier generation means 205 can be supplied to the callee 203 in the form of a wireless application protocol such as Short Message Service (SMS) or USSD (Unstructured Supplementary Service Data) message. Further, the caller 201 can be a fixed telephone user or a mobile telephone user.”). Thus, as set forth in the aforementioned claim charts, a person of ordinary skill in the art would be motivated to look for solutions in other references in that field or that solve the same alleged problems. Indeed, as set forth below, the claimed inventions recite well known tool such as the use of cryptography and performing security determinations.

In short, one of ordinary skill in the art would have been motivated to create combinations identified in these contentions using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or teaching, suggestion, or motivation in the prior art generally. Also, market forces in the industry, and the desire to improve features and performance, would motivate the addition of features to systems as they become available, become smaller, become less expensive, become more commonly used, provide better performance, reduce costs, or predictably achieve other clearly desirable results

## **2. Inherent motivation to combine**

Many of the prior art references cite to, rely upon, incorporate, or are described as an inherent part of one another (*e.g.*, reliance on or citation to specific ways to increase the data rate of a wireless transmitter in a wireless computing network environment). To the extent principles such as validation of a call in a communication system or network are not already considered inherent to or part of such references, a person of ordinary skill in the art would be motivated to combine their teachings to achieve predictable results. It would also be obvious to a person of ordinary skill in the art to combine multiple references that apply the same principles (*e.g.*,

combining multiple references addressing one or more of principles of improving trustworthiness in communications through the use of well-known authentication and verification techniques).

### **3. Overlapping authorship, inventorship, or assignees**

Certain of the aforementioned prior art references have the same prior art author(s). A person of ordinary skill in the art would be motivated to combine the work of the same prior art author. Similarly, certain of the prior art references involved the same firms or entities in their development, such as RPX Clearinghouse LLC for Sawyer and Gutzmann. Other common firms or entities between patents include Microsoft Technology Licensing LLC (*e.g.*, Har and U.S. Patent Publication No. US20100319063A1). Moreover, prior art inventors would attend common trade events, standards bodies, etc., and keep abreast of technologies and solutions in these fields.

### **4. References from the same field**

As shown in the attached Exhibits, each of the references identified comes from the same field—*e.g.*, methods and systems for verification and authentication of the identity of a calling party in a communications system/network. The problems sought to be solved by the identified references and systems were the same ones that had already been solved in the prior art. Indeed, the Asserted Claims recite one of a finite number of known, available alternatives to solve these known problems. The Asserted Claims simply combine previously known methods in a way that was explicitly and implicitly taught and suggested in the prior art. Implementing the teachings of the references identified herein would achieve improved performance.

### **5. State of the Art and Motivations to Combine**

The subsections below illustrate the state of the art and the knowledge of a person of ordinary skill in the art at the relevant times with respect to specific limitations, elements, or concepts either claimed in the Asserted Patents or alleged to be claimed in the Asserted Patents under Plaintiff's apparent view of the scope of the claims of the Asserted Patents. To the extent it

is asserted that a specific limitation or element discussed below is not found in a reference charted in the attached Exhibits, that missing limitation or element would have been well known to one of ordinary skill in the art, and the person of ordinary skill in the art would have been motivated to provide that missing limitation or element, based on his or her knowledge of the state of the art, as explained below.

**a. Motivations to combine and/or modify regarding a “verification service provider”**

To the extent a prior art reference in Exhibit A is found to not disclose “a verification service provider” as recited in the Asserted Claims, it would have been obvious to modify the reference teachings or otherwise combine the reference teachings with those of the prior art to include the claimed features for at least the following reasons.

**i. Verification Service Providers and Central Authorities**

The limitation in the Asserted Claims related to a verification service provider to perform some type of security determination was well known in the art at the time of the Asserted Patents. For example, amongst the numerous prior references identified in these Invalidity Contentions, use of third party entities to independently determine the validity and authentication of an individual, even in communication systems and networks, was so well known, numerous standard bodies working groups developed and published standard documents, including the technologies, concepts, architectures, protocols, components, and services Plaintiff alleges infringe. For example, these standards bodies include, but are not limited to, the IETF RFC Working Group and the IEEE Standard Working Group. *See* IETF RFC 4474.

For example, before the earliest priority date of the Asserted Patents, the concept of a verification service provider or central authority was well established and recognized by persons of ordinary skill in the art. For instance, the use of certification authorities (CAs) to manage and

validate public keys for secure communications was a standard practice. This was documented in the analysis of the HTTPS certificate ecosystem, which emphasized the critical role of intermediate authorities in ensuring secure internet communications.<sup>14</sup> In the realm of mobile devices, guidelines and standards for validating authentication systems and managing user credentials were well-documented in forensic and security surveys. These guidelines provided detailed procedures for unlocking and authenticating mobile devices, highlighting the critical role of central authorities in forensic investigations.<sup>15</sup> Furthermore, a comprehensive survey on mobile device security outlined various security measures, including SMS and call authentication, underscoring the importance of verification service providers in maintaining mobile security.<sup>16</sup>

In addition to these practical implementations, the IETF RFC 4474, titled "Enhancements for Authenticated Identity Management in the Session Initiation Protocol (SIP)," was a significant milestone in establishing standards for caller identity verification. Published in 2006, this RFC introduced mechanisms for securely authenticating the origin of SIP messages, which are widely used in VoIP (Voice over Internet Protocol) communications. By incorporating cryptographic signatures, RFC 4474 provided a framework for preventing impersonation attacks and ensuring the integrity of caller identities. This standard highlighted the essential role of central authorities,

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<sup>14</sup> Zakir Durumeric, James Kasten, Michael Bailey, and J. Alex Halderman. 2013. Analysis of the HTTPS certificate ecosystem. In Proceedings of the 2013 conference on Internet measurement conference (IMC '13). Association for Computing Machinery, New York, NY, USA, 291–304. <https://doi.org/10.1145/2504730.2504755>

<sup>15</sup> Ayers, R. , Brothers, S. and Jansen, W. (2013), Guidelines on Mobile Device Forensics (Draft) (NIST SP), National Institute of Standards and Technology, Gaithersburg, MD, [online], <https://www.nist.gov/system/files/documents/2017/05/09/draft-guidelines-on-mobile-device-forensics.pdf> (Accessed July 18, 2024)

<sup>16</sup> M. La Polla, F. Martinelli and D. Sgandurra, "A Survey on Security for Mobile Devices," in *IEEE Communications Surveys & Tutorials*, vol. 15, no. 1, pp. 446-471, First Quarter 2013, doi: 10.1109/SURV.2012.013012.00028.

such as CAs, in issuing and managing the necessary certificates for SIP authentication. IETF RFC 4474.

The recognition of verification service providers and central authorities extended to various security domains. For example, the Aadhaar project in India, launched in 2009, utilized a central authentication system to validate user identities for public services. This system was integral to ensuring the accuracy and security of biometric data used in identity verification processes.<sup>17</sup> Additionally, in the context of digital provenance, systems like Quire provided lightweight solutions for validating inter-process communication call chains on mobile devices, further demonstrating the importance of central authorities in maintaining system integrity.<sup>18</sup>

**b. Motivations to combine and/or modify regarding a authentication and the use of public and private keys**

Prior to the earliest priority date for the Asserted Patents, the use of public and private keys for device authentication was well-established in both academic research and industry practices. Public key cryptography, which involves a pair of keys - a public key and a private key - was extensively utilized for secure communications, ensuring that only the intended recipient could decrypt messages.

One significant application was in mutual authentication protocols for handheld devices, which used public/private key pairs to validate entities and secure communication channels.<sup>19</sup> The

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<sup>17</sup> Banerjee, S. (2016). Aadhaar: Digital inclusion and public services in India. World Development Report, 81–92. <https://thedocs.worldbank.org/en/doc/655801461250682317->

<sup>18</sup> Dietz, Michael & Shekhar, Shashi & Pisetsky, Yuliy & Shu, Anhei & Wallach, Dan. (2011). QUIRE: Lightweight Provenance for Smart Phone Operating Systems. Computing Research Repository - CORR. 1102.2445.

<sup>19</sup> Khan, Wilayat & Ullah, Habib & Hussain, Riaz. (2013). Energy-Efficient Mutual Authentication Protocol for Handhled Devices Based on Public Key Cryptography. International Journal of Computer Theory and Engineering, Vol 5. 754-758. 10.7763/IJCTE.2013.V5.790.

protocol demonstrated how both entities in a communication process could authenticate each other's identity securely using their respective public and private keys. Another notable work is the survey on secure device pairing, which detailed various methods of establishing secure connections between devices without pre-shared keys or authenticated public keys. This survey highlighted the extensive history and development of these technologies, showing their critical role in the evolution of secure mobile communications.<sup>20</sup>

The concept of a personal public key infrastructure (PKI) for smart devices was also explored to enhance user authentication and secure access to services. This approach leveraged the device-held private key as a fundamental factor in user authentication, ensuring that access to sensitive information was tightly controlled.<sup>21</sup> Moreover, RFC 4474 by the IETF provided enhancements for authenticated identity management in the Session Initiation Protocol (SIP), which is used extensively in VoIP communications. The RFC introduced mechanisms for securely authenticating the origin of SIP messages using public key signatures, thereby preventing impersonation attacks and ensuring the integrity of caller identities. IETF RFC 4474.

A person of ordinary skill in the art would have been motivated to combine references that disclose authentication and verification techniques that incorporate public and private key cryptography for authenticating devices, ensuring secure and authenticated interactions across various communications platforms.

## 6. Exemplary Combinations

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<sup>20</sup> S. Mirzadeh, H. Cruickshank and R. Tafazolli, "Secure Device Pairing: A Survey," in *IEEE Communications Surveys & Tutorials*, vol. 16, no. 1, pp. 17-40, First Quarter 2014, doi: 10.1109/SURV.2013.111413.00196.

<sup>21</sup> Lyle, J. *et al.* (2013). *Personal PKI for the Smart Device Era*. In: De Capitani di Vimercati, S., Mitchell, C. (eds) *Public Key Infrastructures, Services and Applications*. EuroPKI 2012. Lecture Notes in Computer Science, vol 7868. Springer, Berlin, Heidelberg. [https://doi.org/10.1007/978-3-642-40012-4\\_5](https://doi.org/10.1007/978-3-642-40012-4_5)

**a. '009 Patent**

The primary references identified above, as further described in the Exhibits, each disclose, either expressly or inherently, every element of the Asserted Claims, thereby anticipating those claims. Additionally, each of the primary references alone (including in combination with the knowledge of a person of ordinary skill in the art) renders obvious the Asserted Claims. To the extent Plaintiff contends that any primary reference does not anticipate or render obvious the Asserted Claims as set forth above, it would have been obvious to combine or modify the primary references with concepts from other prior art, as explained throughout these Invalidity Contentions. In particular, for each limitation of the Asserted Claims that Plaintiff contends is not met by a particular primary reference, Defendants contend that the limitation (and claim as a whole) is obvious based on a combination of that particular primary reference with (1) any other primary reference, (2) any reference in these contentions as disclosing a limitation missing in a primary reference, (3) any statements made in the intrinsic record of the Asserted Patent, and/or (4) the knowledge of one of ordinary skill in the art.

It would have been obvious to try combining the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field or endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Each of the references identified in these Invalidity Contentions are directed to the same field of endeavor (*e.g.*, “techniques for ascertaining the identity of a device initiating a communication”) ’009 Patent at 2:41-42. The solutions identified in the prior art utilize the same components and techniques that are identified in the ’099 Patent. Thus, as set forth in the aforementioned claim charts, a person of ordinary skill in the art would be motivated to look for solutions in other references in that field or that solve the same alleged problems.

Relatedly, one of ordinary skill in the art would have been motivated to create combinations identified in these contentions using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or teaching, suggestion, or motivation in the prior art generally. Also, market forces in the industry, and the desire to improve features and performance, would motivate the addition of features to systems as they become available, become smaller, become less expensive, become more commonly used, provide better performance, reduce costs, or predictably achieve other clearly desirable results.

The following includes examples of combinations that one of ordinary skill in the art would have found obvious, in particular with respect to Asserted Claims of the '009 patent:

- Perreault, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Kurapati, render obvious the Asserted Claims of the '009 Patent.
- Han, alone or in combination with Perreault, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Kurapati, render obvious the Asserted Claims of the '009 Patent.
- Har, alone or in combination with Han, Perreault, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Kurapati, render obvious the Asserted Claims of the '009 Patent.
- Gutzmann, alone or in combination with Han, Har, Perreault, Ling, SIP RFC 4474,

Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Kurapati, render obvious the Asserted Claims of the '009 Patent.

- Ling, alone or in combination with Han, Har, Gutzmann, Perreault, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Kurapati, render obvious the Asserted Claims of the '009 Patent.
- SIP RFC 4474, alone or in combination with Han, Har, Gutzmann, Ling, Perreault, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Kurapati, render obvious the Asserted Claims of the '009 Patent.
- Wilson, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Perreault, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Kurapati, render obvious the Asserted Claims of the '009 Patent.
- Nagaraja, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Perreault, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Kurapati, render obvious the Asserted Claims of the '009 Patent.
- Chmaytelli, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Perreault, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Kurapati, render obvious the Asserted Claims of the '009 Patent.

- Karpey, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Perreault, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Kurapati, render obvious the Asserted Claims of the '009 Patent.
- Schwartz, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Perreault, Kim, Sawyer, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Kurapati, render obvious the Asserted Claims of the '009 Patent.
- Kim, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Perreault, Sawyer, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Kurapati, render obvious the Asserted Claims of the '009 Patent.
- Sawyer, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Perreault, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Kurapati, render obvious the Asserted Claims of the '009 Patent.
- Kurapati, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Cheon, Entrust, Experian, and/or Perreault, render obvious the Asserted Claims of the '009 Patent.
- Bombacino, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Kurapati, Saito, Chow, Cheon, Entrust, Experian, and/or Perreault, render obvious the

Asserted Claims of the '009 Patent.

- Saito, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Kurapati, Chow, Cheon, Entrust, Experian, and/or Perreault, render obvious the Asserted Claims of the '009 Patent.
- Chow, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Kurapati, Cheon, Entrust, Experian, and/or Perreault, render obvious the Asserted Claims of the '009 Patent.
- Cheon, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Kurapati, Entrust, Experian, and/or Perreault, render obvious the Asserted Claims of the '009 Patent.
- Entrust, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Kurapati, Cheon, Experian, and/or Perreault, render obvious the Asserted Claims of the '009 Patent.
- Experian, alone or in combination with Han, Har, Gutzmann, Ling, SIP RFC 4474, Wilson, Nagaraja, Chmaytelli, Karpey, Schwartz, Kim, Sawyer, Bombacino, Saito, Chow, Kurapati, Entrust, Cheon, and/or Perreault, render obvious the Asserted Claims of the '009 Patent.

All of the items of prior art above are directed to systems and methods for ascertaining the identity of a device initiating a communication, in accordance with the purported invention of the

Asserted Patents. Combining the known features set forth by these items of prior art would constitute predictable variations contemplated by the ordinary skill in the art at the time of the alleged invention and would be likely to succeed. Combining the features of any of these items of prior art would constitute the mere combination of known elements according to known methods to yield predictable results. Specific to each such item of prior art, Defendants summarize below the reasons why one of ordinary skill in the art would have been motivated to combine such prior art with the other references in Section V.A.

**i. Motivation for combining with Perreault**

Perreault discloses a “process and apparatus to facilitate communication between callers and callees in a system comprising a plurality of nodes with which callers and callees are associated.” Perreault at Abstract. More specifically, Perreault discloses that “[i]n response to initiation of a call by a calling subscriber, a caller identifier and a callee identifier are received” and “[c]all classification criteria associated with the caller identifier are used to classify the call as a public network call or a private network call.” Additionally, Perreault discloses embodiments that include “searching provisions for searching a database including records associating calling attributes with subscribers to the private network to locate a record identifying calling attributes associated with a caller identified by the caller identifier.” Perreault at [0039].

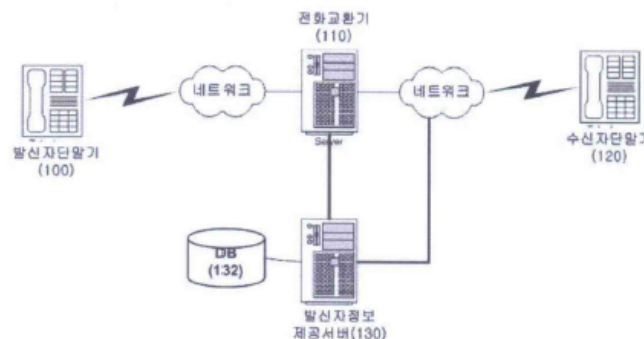
One of ordinary skill in the art would have recognized that a combination with Perreault combines known prior art elements according to known methods to yield predictable results. Perreault and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Perreault was obvious to try because one of skill in the art would have chosen from a finite number of identified,

predictable solutions, with a reasonable expectation of success.

ii. **Motivation for combining with Han**

Han “relates to a caller information providing system and a caller information output terminal capable of outputting additional information about a caller.” Han at Abstract. Specifically, Han discloses that the “relates to a caller information providing system and a caller information output terminal capable of outputting additional information about a caller.” *Id.* “Referring to FIG. 1 [of Han], the caller additional information display system according to the present embodiment includes a caller terminal 100, a telephone exchange station 110, a caller terminal 120, and a caller information providing server 130 connected to a communication network, wherein the caller information providing server 130 includes a database 132” wherein the database includes “sender information” to include “[a]additional information (for example, caller ID, name, phone number, address, age, and other unique information about the caller) about the receiver and unique information (for example, receiver ID, address of the receiver, unique authentication number and unique serial number of the receiver terminal, and other identification information about the receiver) about the receiver” to aid in the authentication process. Han at [0052]-[0054].

**【Drawing 1】**



One of ordinary skill in the art would have recognized that a combination with Han combines known prior art elements according to known methods to yield predictable results. Han

and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Han was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**iii. Motivation for combining with Har**

Har discloses a system and method wherein “[a] data channel transmission can be used to authenticate a voice channel transmission” and “[a] third party trusted authentication server can be used to authenticate the identity of one or more parties to a call where at least one of the parties to the call is using a mobile device.” Har at Abstract. Similar to the solution proposed in the Asserted Patents, Har discloses that “[a] PKI authentication methodology or other symmetric or asymmetric encryption/decryption methodology can be used in a mobile network environment to identify and authenticate a first user to a second user.” *Id.*

One of ordinary skill in the art would have recognized that a combination with Har combines known prior art elements according to known methods to yield predictable results. Har and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Har was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**iv. Motivation for combining with Gutzmann**

Gutzmann discloses “[a] method and system for indicating authentication of the identity of a calling party based on an intrinsic property of the calling party.” Gutzmann at Abstract. More specifically, Gutzmann teaches that “[r]epresentations of intrinsic properties of potential calling parties are gathered and stored as reference representations for use in comparisons with later acquired representations.” *Id.* According to Gutzmann, the “system and method of calling

party authentication can be performed at a central location such as a telephone company central office. In this way, a telephone service provider can maintain one large database of intrinsic properties to which service subscribers have access. Such a database is more comprehensive and therefore more effective than a database any single subscriber could practically create by itself. Furthermore, by providing a common speaker recognition service, common to a plurality of subscribers, the high cost of providing such services can be distributed among a plurality of users. Effectively, the central office acts as an intermediary placed between the calling party and the called party. In this way, the intermediary performs the authentication and sends an authentication signal to the called party before a communication link between the calling party and the called party is established.” Gutzmann at 2:6-21.

One of ordinary skill in the art would have recognized that a combination with Gutzmann combines known prior art elements according to known methods to yield predictable results. Gutzmann and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Gutzmann was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### **v. Motivation for combining with Ling**

Ling discloses a “method, apparatus, system, and computer readable medium for authenticating the identity of a caller” where an “authentication device authenticates a caller's identity based on received information of the caller and an identifier generation device generates an identifier containing the caller's identity.” Ling at Abstract. Ling teaches an apparatus that “includes an authentication means for authenticating the identity of the caller, based on received information about the caller. An identifier generation means generates an identifier containing the identity of the caller and supplies the identity to a mobile telephone user acting as a callee,

based on the result of the authentication.” Ling at [0014].

One of ordinary skill in the art would have recognized that a combination with Ling combines known prior art elements according to known methods to yield predictable results. Ling and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Ling was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**vi. Motivation for combining with SIP RFC 4474**

The SIP RFC 4474 “defines a mechanism for securely identifying originators of SIP messages” and as it relates to call verification, provides “defining two new SIP header fields, Identity, for conveying a signature used for validating the identity, and Identity-Info, for conveying a reference to the certificate of the signer.” SIP RFC 4474 at Abstract. Generally, SIP RFC 4474 “specifies a means of sharing a cryptographic assurance of end-user SIP identity in an interdomain or intradomain context that is based on the concept of an ‘authentication service’ and a new SIP header, the Identity header.” SIP RFC 4474 at P. 5, ¶4.

One of ordinary skill in the art would have recognized that a combination with SIP RFC 4474 at combines known prior art elements according to known methods to yield predictable results. SIP RFC 4474 at and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with SIP RFC 4474 at was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**vii. Motivation for combining with Wilson**

Wilson “generally relates to a telecommunication system, method and telephone and more particularly to a telecommunication system, method and telephone with caller identification

capability.” Wilson at 1:8-11. Specifically, Wilson discloses that at “the originator, a fingerprint signature is captured and forwarded to the originating switch upon call origination. The originating switch requests an ID request from the intelligent network SCP. The signature is mapped against the name that is associated with it in the database. The SCP then responds with that information back to the originating switch. The originating switch routes to the terminating switch through normal routing procedures and provides the calling name information to the terminating switch. The terminating switch alerts the terminating device with display information.” Wilson at 8:56-67.

One of ordinary skill in the art would have recognized that a combination with Wilson at combines known prior art elements according to known methods to yield predictable results. Wilson at and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Wilson at was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### **viii. Motivation for combining with Nagaraja**

Nagaraja “generally to cellular communication systems, and more particularly to methods and apparatus for providing caller recognition based on biometric information provided in a call initiation request.” Nagaraja at 1:8-11. Embodiments of the disclosure to Nagaraja disclose a system that stores information related to a caller and performs a match to information stored in a database that can be used to authenticate and validate a caller. Nagaraja at 9:29-39, 10:1-27.

One of ordinary skill in the art would have recognized that a combination with Nagaraja at combines known prior art elements according to known methods to yield predictable results. Nagaraja at and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Nagaraja at was

obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**ix. Motivation for combining with Chmaytelli**

Chmaytelli discloses “[m]ethods, devices, systems and computer program products are described for implementing on a communication device customized caller ID and remote functional management of a communication device via shared secret exchange between calling and called parties.” Chmaytelli at Abstract. “Referring to FIG. 1, according to one aspect, a system 10 for customized caller ID and/or remote access and management of communication devices is depicted” where “the customized caller ID, secured remote access and communication device management functionality of the present aspects herein described may reside at the called communication device level, the network device level or any combination of the called device and the network device” and wherein “the functionality, in terms of recognizing the shared secret and associating it with an entry in a database, resides at the called device level.” Chmaytelli at [0041]. “The system includes a first communication device 12, which in this example serves as the called communication device, a second communication device 14, which in this example serves as the calling communication device and a network device 16, such as server device residing at a base station within the communication network.” *Id.*

“In one aspect in which the use of shared secrets provide for customized caller identification, the call control manager may include caller identification (ID) logic 52 operable to recognize the caller's identification by displaying on a device display the telephone number and/or name associated with the calling device. In this aspect, the shared secret recognition logic 48, and, optionally, the trigger recognition logic 50, may be operable to recognize a shared secret and, optionally, recognize a trigger, such that the caller ID logic 52 is overridden from displaying the telephone number and/or name associated with the calling device. Instead, the shared secret

recognition logic 48 verifies the shared secret in the shared secret database 22 of the personal information manager 34 and communicates the personal information associated with the shared secret, such as name, telephone number or other identification to the caller ID logic 52 for display, or directly displays this information. In this regard, this aspect provides for the display of the identification of the "actual" caller, based on the shared secret, rather than the display of the identification of the calling device's owner." Chmaytelli at [0050].

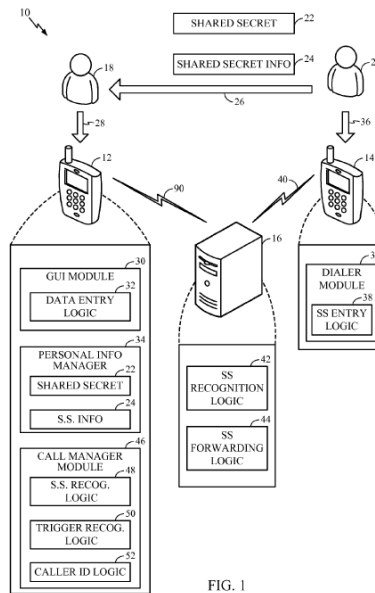


FIG. 1

One of ordinary skill in the art would have recognized that a combination with Chmaytelli at combines known prior art elements according to known methods to yield predictable results. Chmaytelli at and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Chmaytelli at was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### x. Motivation for combining with Karpey

Karpey discloses systems and methods “ for responding to a communication received from an individual” where an “identification score may be obtained for the communication that

indicates the likelihood that a claimed identity of the individual is the actual identity of the individual.” Karpey at Abstract. More specifically, Karpey discloses a “verification score for the communication may also be obtained that indicates the likelihood a purported source of the communication is the actual source of the communication”, an “authentication score for the communication may additionally be obtained that indicates the likelihood the individual has been authenticated”, and an “overall score for the communication may be generated and based on the identification score, verification score, and authentication score.” *Id.* “The response may be a grant or denial of access to one or more services requested by the individual through the communication.” *Id.*

One of ordinary skill in the art would have recognized that a combination with Karpey combines known prior art elements according to known methods to yield predictable results. Karpey and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Karpey was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### **xi. Motivation for combining with Schwartz**

Schwartz discloses a “method and system for automatic incoming call management uses function test results to build call signatures that are stored for later use in incoming call analysis.” Schwartz at Abstract. Specifically, Schwartz teaches that “an incoming call management service, comprising: a call director for receiving call control messages respecting incoming calls to Subscribers of the incoming call management service, performing function tests associated with various call states of the incoming calls, building a call signature associated with each incoming call using the function test results, and making incoming call management decisions based on the function test results; a subscriber’s preferences database for storing

subscriber preference information also used by the call director in making the call management decisions; and a signatures database for storing selected signatures built by the call director.”

Schwartz at [0009]. See Schwartz at Fig. 1:

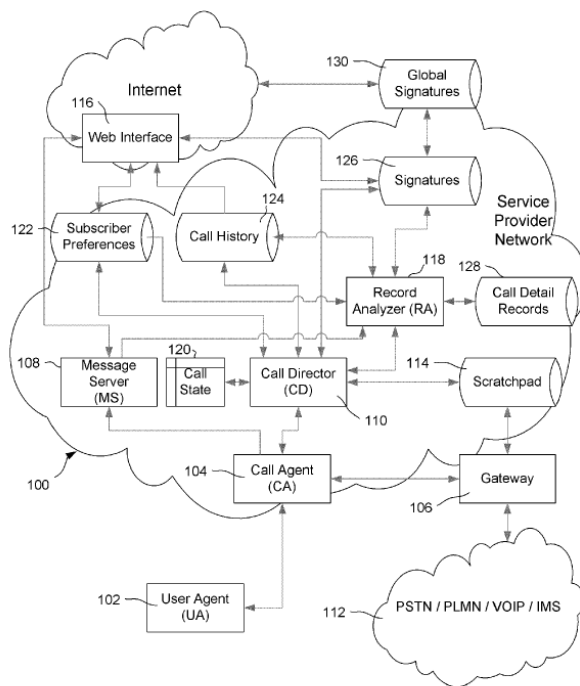


FIG. 1

One of ordinary skill in the art would have recognized that a combination with Schwartz combines known prior art elements according to known methods to yield predictable results. Schwartz and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Schwartz was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

### xii. Motivation for combining with Kim

Kim discloses a “method and a system for authenticating a caller in a voice communication network using a data communication network, an originating device, a receiving terminal and a program therefor.” Kim at Title of Invention. Kim teaches that “the system for

authenticating a caller in a voice communication network using a data communication network of a device capable of being connected to a voice communication network and a data communication network comprises: an authentication key receiving unit for receiving, through a data communication network, a generated authentication key value by substituting a key generation rule for calling information for requesting call connection from a calling side device and receiving information for receiving a call; a signal detecting unit for checking calling information and receiving information corresponding to a call connection signal transmitted to a receiving terminal through a voice communication network; a verification key generating unit for generating a verification key value by substituting the calling information and receiving information into the key generation rule; an authentication processing unit for authenticating consistency by comparing the verification key value with the received authentication key value; and a caller authentication unit for processing caller authentication data corresponding to the authentication result to be outputted to the receiving terminal when the consistency is authenticated.” Kim at [0007].

One of ordinary skill in the art would have recognized that a combination with Kim combines known prior art elements according to known methods to yield predictable results. Kim and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Kim was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

### xiii. **Motivation for combining with Sawyer**

Sawyer teaches a “system and method for caller identification, named certified caller ID (CCID) provides an enhancement to existing calling line identification services by providing the terminating end of a telephone call with a cryptographically-certified identity of the caller, rather

than the identity associated with the calling telephone line.” Sawyer at Abstract. Notably, Sawyer discloses that the authentication system advantageously “in the operation of CCID, the caller's identity is authenticated by a token, such as a smart card or other integrated circuit device which is capable of executing a cryptographic authentication protocol, optionally in conjunction with a Personal Identification Number (PIN) or biometric confirmation. Beneficially, CCID works in conjunction with several associated Customer Local Area Signalling Services (CLASS), e.g. Selective Call Acceptance, Selective Call Forwarding and Distinctive Ring to provide special call treatment based on the identity of the caller.” *Id.*

One of ordinary skill in the art would have recognized that a combination with Sawyer combines known prior art elements according to known methods to yield predictable results. Sawyer and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Sawyer was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### xiv. **Motivation for combining with Kurapati**

Kurapati “relates generally to the field of communications and, more particularly, to a system, method and apparatus for authenticating calls.” Kurapati at [0002]. Kurapati discloses “a system, method and apparatus for authenticating calls that is a robust Anti-Vishing solution” that “can identify Caller ID spoofing, verify dialed number to detect man-in-the middle and verify called party against dialed digits to detect impersonation.” Kurapati at Abstract. Specifically Kurapati teaches “a system for authenticating a calling device that includes a communications network communicably coupled to the calling device and a controller communicably coupled to the communications network. The controller includes a communications interface communicably coupled to the communications network and a processor communicably coupled to the

communications interface. The processor (a) receives a call from the calling device, (b) sends a first authentication request to the calling device, (c) receives a first authentication response from the calling device, wherein the first authentication response includes a calling device encrypted data generated by the calling device using a caller identification, a called number and a shared secret encryption key, (d) extracts the caller identification and the called number from the encrypted data using the shared secret encryption key, (e) determines whether the extracted caller identification and the extracted called number are valid, and (f) transfers the call to a called device whenever the extracted caller identification and the extracted called number are valid. The calling device (a) initiates the call, (b) receives the first authentication request, (c) generates the calling device encrypted data, and (d) sends the first authentication response.” Kurapati at [0010].

One of ordinary skill in the art would have recognized that a combination with Kurapati combines known prior art elements according to known methods to yield predictable results. Kurapati and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Kurapati was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### **xv. Motivation for combining with Bombacino**

Bombacino discloses “a method, system and computer program product for authentication of phone caller identity.” Bombacino at Abstract. Specifically, according to various embodiments, Bombacino discloses a technique that includes: “responsive to initiation of a telephone call by a caller from a first telephone unit to a second telephone unit, retrieving an identification object comprising identification information corresponding to the caller; encrypting the identification object using an encryption key stored on the first telephone unit; and transmitting, as part of the

telephone call, the encrypted caller identification object to a telephone network destined for the second telephone unit.” Bombacino at 1:65-2:9.

One of ordinary skill in the art would have recognized that a combination with Bombacino combines known prior art elements according to known methods to yield predictable results. Bombacino and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Bombacino was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**xvi. Motivation for combining with Saito**

Saito relates to “a telephone, and more particularly, to a method for confirming an identity of a caller.” Saito at [0002]. Consistent with the problems identified in the Asserted Patents, Saito discloses that “[f]rauds have committed frequently wherein a person who pretends to be a family member of a receiver calls the receiver and makes the receiver transfer cash to a specified account.” Saito at [0004]. “In order to prevent such frauds, confirmation of the identity of the caller is necessary. One method for confirming the identity of the caller is utilizing caller ID (identification) service provided by telephone companies.” *Id.* In order to correctly identify a caller, Saito discloses a “a telephone which includes: a voice input unit which inputs an audio signal; a user token input unit which inputs a user token that is data for proving an identity of a user; a user reference storage which stores a user reference that is data used to verify the user token; a user verifier which verifies the user token on the basis of the user reference which is stored in the user reference storage; a caller token storage which stores a caller token that is data for proving an identity of a caller; and a caller token embedder which embeds, upon successful verification of the user token, in the audio signal the caller token which is stored in the caller

token storage.” Saito at [0007].

One of ordinary skill in the art would have recognized that a combination with Saito combines known prior art elements according to known methods to yield predictable results. Saito and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Saito was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### xvii. **Motivation for combining with Chow**

Chow discloses a “method comprising a plurality of operations” wherein an “operation is provided for receiving an authentication certificate of a called party.” Chow at Abstract. Specifically, Chow discloses “a method for authenticating a phone user, thus thwarting threats related to spoofing of user identity” which is directed to “enabling a calling party to unambiguously and reliably identify a called party identity through an authentication notice delivered to his/her telephony apparatus on a per call basis.” *Id.* Chow teaches that “[a] registry holds authenticated identification information of the called party” and “[u]pon successful registration, the registry (operating as a certificate authority) signs the certificate embedded with the identification and the public key of the called party.” Chow at [0018]. Chow’s authentication method addresses the same problems identified in the Asserted Patents, spoofing identity, and proposes a similar solution consistent with a variety of prior art solutions.

One of ordinary skill in the art would have recognized that a combination with Chow combines known prior art elements according to known methods to yield predictable results. Chow and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Chow was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable

solutions, with a reasonable expectation of success.

**xviii. Motivation for combining with Cheon**

Cheon relates to “[a] caller authentication system that may enable a called party to be provided with identification information of a caller may be provided” wherein the “caller authentication system, including: a communication system to transmit, when a call request signal is received from a calling terminal of a caller, network information and a telephone number of the calling terminal to a certificate authority server, and to request identification of the caller, the network information and the telephone number being included in the call request signal, to transmit, when identification information of the caller is received from the certificate authority server in response to the identification request, the identification information to a called terminal of a called party, and to enable the identification information to be displayed on the called terminal.” Cheon at Abstract.

One of ordinary skill in the art would have recognized that a combination with Cheon combines known prior art elements according to known methods to yield predictable results. Cheon and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Cheon was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**xix. Motivation for combining with Entrust**

At least as early as 2008, Entrust Inc. provides systems and software for securing digital identities and information. Entrust’s Authentication platform authenticated devices and provides secure user experience across a wide variety of communication mediums. Entrust used device identification, analytics, and risk context to detect fraudulent behavior and provide multi-factor

authentication solutions.

One of ordinary skill in the art would have recognized that a combination with Entrust combines known prior art elements according to known methods to yield predictable results. Entrust and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Entrust was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### **xx. Motivation for combining with Experian**

At least as early as 2012, Experian offered a host of identity verification tools for authenticating a user. For example, Experian's Precise ID provided identity management, risk-based authentication and knowledge-based solutions to authenticate users and devices. Similar to the claims of the Asserted Patents, Experian provided caller authentication and device enrollment to provide a more accurate call validation system.

One of ordinary skill in the art would have recognized that a combination with Experian combines known prior art elements according to known methods to yield predictable results. Experian and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Experian was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### **b. '989 Patent**

The primary references identified above, as further described in the Exhibits, each disclose, either expressly or inherently, every element of the Asserted Claims, thereby anticipating those claims. Additionally, each of the primary references alone (including in combination with the knowledge of a person of ordinary skill in the art) renders obvious the Asserted Claims. To the

extent Plaintiff contends that any primary reference does not anticipate or render obvious the Asserted Claims as set forth above, it would have been obvious to combine or modify the primary references with concepts from other prior art, as explained throughout these Invalidity Contentions. In particular, for each limitation of the Asserted Claims that Plaintiff contends is not met by a particular primary reference, Defendants contend that the limitation (and claim as a whole) is obvious based on a combination of that particular primary reference with (1) any other primary reference, (2) any reference in these contentions as disclosing a limitation missing in a primary reference, (3) any statements made in the intrinsic record of the Asserted Patent, and/or (4) the knowledge of one of ordinary skill in the art.

It would have been obvious to try combining the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field or endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Each of the references identified in these Invalidity Contentions are directed to the same field of endeavor (*e.g.*, “techniques for ascertaining the identity of a device initiating a communication”) ’989 Patent at 2:42-43. The solutions identified in the prior art utilize the same components and techniques that are identified in the ’989 Patent. Thus, as set forth in the aforementioned claim charts, a person of ordinary skill in the art would be motivated to look for solutions in other references in that field or that solve the same alleged problems.

Relatedly, one of ordinary skill in the art would have been motivated to create combinations identified in these contentions using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or teaching, suggestion, or motivation in the prior art generally.

Also, market forces in the industry, and the desire to improve features and performance, would motivate the addition of features to systems as they become available, become smaller, become less expensive, become more commonly used, provide better performance, reduce costs, or predictably achieve other clearly desirable results.

The following includes examples of combinations that one of ordinary skill in the art would have found obvious, in particular with respect to Asserted Claims of the '989 patent:

- Kim, alone or in combination with Schwartz, Karpey, Bombacino, Sawyer, Saito, Kurapati, Han, Har, Ling, SIP RFC 4474, Chow, Cheon, Entrust, Experian, and/or Masters render obvious the Asserted Claims of the '989 Patent.
- Schwartz, alone or in combination with Kim, Karpey, Bombacino, Sawyer, Saito, Kurapati, Han, Har, Ling, SIP RFC 4474, Chow, Cheon, Entrust, Experian, and/or Masters render obvious the Asserted Claims of the '989 Patent.
- Karpey, alone or in combination with Schwartz, Kim, Bombacino, Sawyer, Saito, Kurapati, Han, Har, Ling, SIP RFC 4474, Chow, Cheon, Entrust, Experian, and/or Masters render obvious the Asserted Claims of the '989 Patent.
- Bombacino, alone or in combination with Schwartz, Karpey, Kim, Sawyer, Saito, Kurapati, Han, Har, Ling, SIP RFC 4474, Chow, Cheon, Entrust, Experian, and/or Masters render obvious the Asserted Claims of the '989 Patent.
- Sawyer, alone or in combination with Schwartz, Karpey, Bombacino, Kim, Saito, Kurapati, Han, Har, Ling, SIP RFC 4474, Chow, Cheon, Entrust, Experian, and/or Masters render obvious the Asserted Claims of the '989 Patent.
- Saito, alone or in combination with Schwartz, Karpey, Bombacino, Sawyer, Kim, Kurapati, Han, Har, Ling, SIP RFC 4474, Chow, Cheon, Entrust, Experian, and/or

Masters render obvious the Asserted Claims of the '989 Patent.

- Kurapati, alone or in combination with Schwartz, Karpey, Bombacino, Sawyer, Saito, Kim, Han, Har, Ling, SIP RFC 4474, Chow, Cheon, Entrust, Experian, and/or Masters render obvious the Asserted Claims of the '989 Patent.
- Han, alone or in combination with Schwartz, Karpey, Bombacino, Sawyer, Saito, Kurapati, Kim, Har, Ling, SIP RFC 4474, Chow, Cheon, Entrust, Experian, and/or Masters render obvious the Asserted Claims of the '989 Patent.
- Har, alone or in combination with Schwartz, Karpey, Bombacino, Sawyer, Saito, Kurapati, Han, Kim, Ling, SIP RFC 4474, Chow, Cheon, Entrust, Experian, and/or Masters render obvious the Asserted Claims of the '989 Patent.
- SIP RFC 4474, alone or in combination with Schwartz, Karpey, Bombacino, Sawyer, Saito, Kurapati, Han, Har, Ling, Kim, Chow, Cheon, Entrust, Experian, and/or Masters render obvious the Asserted Claims of the '989 Patent.
- Ling, alone or in combination with Schwartz, Karpey, Bombacino, Sawyer, Saito, Kurapati, Han, Har, Kim, SIP RFC 4474, Chow, Cheon, Entrust, Experian, and/or Masters render obvious the Asserted Claims of the '989 Patent.
- Masters, alone or in combination with Schwartz, Karpey, Bombacino, Sawyer, Saito, Kurapati, Han, Har, Ling, SIP RFC 4474, Chow, Cheon, Entrust, Experian, and/or Kim render obvious the Asserted Claims of the '989 Patent.
- Chow, alone or in combination with Schwartz, Karpey, Bombacino, Sawyer, Saito, Kurapati, Han, Har, Ling, SIP RFC 4474, Masters, Cheon, Entrust, Experian, and/or Kim render obvious the Asserted Claims of the '989 Patent.
- Cheon, alone or in combination with Schwartz, Karpey, Bombacino, Sawyer, Saito,

Kurapati, Han, Har, Ling, SIP RFC 4474, Chow, Masters, Entrust, Experian, and/or Kim render obvious the Asserted Claims of the '989 Patent.

- Entrust, alone or in combination with Schwartz, Karpey, Bombacino, Sawyer, Saito, Kurapati, Han, Har, Ling, SIP RFC 4474, Chow, Masters, Cheon, Experian, and/or Kim render obvious the Asserted Claims of the '989 Patent.
- Experian, alone or in combination with Schwartz, Karpey, Bombacino, Sawyer, Saito, Kurapati, Han, Har, Ling, SIP RFC 4474, Chow, Masters, Cheon, Entrust, and/or Kim render obvious the Asserted Claims of the '989 Patent.

All of the items of prior art above are directed to systems and methods for ascertaining the identity of a device initiating a communication, in accordance with the purported invention of the Asserted Patents. Combining the known features set forth by these items of prior art would constitute predictable variations contemplated by the ordinary skill in the art at the time of the alleged invention and would be likely to succeed. Combining the features of any of these items of prior art would constitute the mere combination of known elements according to known methods to yield predictable results. Specific to each such item of prior art, Defendants summarize below the reasons why one of ordinary skill in the art would have been motivated to combine such prior art with the other references in Section V.A.

**i. Motivation for combining with Kim**

Kim discloses a “method and a system for authenticating a caller in a voice communication network using a data communication network, an originating device, a receiving terminal and a program therefor.” Kim at Title of Invention. Kim teaches that “the system for authenticating a caller in a voice communication network using a data communication network of a device capable of being connected to a voice communication network and a data

communication network comprises: an authentication key receiving unit for receiving, through a data communication network, a generated authentication key value by substituting a key generation rule for calling information for requesting call connection from a calling side device and receiving information for receiving a call; a signal detecting unit for checking calling information and receiving information corresponding to a call connection signal transmitted to a receiving terminal through a voice communication network; a verification key generating unit for generating a verification key value by substituting the calling information and receiving information into the key generation rule; an authentication processing unit for authenticating consistency by comparing the verification key value with the received authentication key value; and a caller authentication unit for processing caller authentication data corresponding to the authentication result to be outputted to the receiving terminal when the consistency is authenticated.” Kim at [0007].

One of ordinary skill in the art would have recognized that a combination with Kim combines known prior art elements according to known methods to yield predictable results. Kim and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Kim was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**ii. Motivation for combining with Schwartz**

Schwartz discloses a “method and system for automatic incoming call management uses function test results to build call signatures that are stored for later use in incoming call analysis.” Schwartz at Abstract. Specifically, Schwartz teaches that “an incoming call management service, comprising: a call director for receiving call control messages respecting incoming calls to Subscribers of the incoming call management service, performing function



Karpey discloses systems and methods “ for responding to a communication received from an individual” where an “identification score may be obtained for the communication that indicates the likelihood that a claimed identity of the individual is the actual identity of the individual.” Karpey at Abstract. More specifically, Karpey discloses a “verification score for the communication may also be obtained that indicates the likelihood a purported source of the communication is the actual source of the communication”, an “authentication score for the communication may additionally be obtained that indicates the likelihood the individual has been authenticated”, and an “overall score for the communication may be generated and based on the identification score, verification score, and authentication score.” *Id.* “The response may be a grant or denial of access to one or more services requested by the individual through the communication.” *Id.*

One of ordinary skill in the art would have recognized that a combination with Karpey combines known prior art elements according to known methods to yield predictable results. Karpey and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Karpey was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### iv. **Motivation for combining with Bombacino**

Bombacino discloses “a method, system and computer program product for authentication of phone caller identity.” Bombacino at Abstract. Specifically, according to various embodiments, Bombacino discloses a technique that includes: “responsive to initiation of a telephone call by a caller from a first telephone unit to a second telephone unit, retrieving an identification object comprising identification information corresponding to the caller; encrypting the identification object using an encryption key stored on the first telephone unit; and transmitting, as part of the

telephone call, the encrypted caller identification object to a telephone network destined for the second telephone unit.” Bombacino at 1:65-2:9.

One of ordinary skill in the art would have recognized that a combination with Bombacino combines known prior art elements according to known methods to yield predictable results. Bombacino and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Bombacino was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**v. Motivation for combining with Sawyer**

Sawyer teaches a “system and method for caller identification, named certified caller ID (CCID) provides an enhancement to existing calling line identification services by providing the terminating end of a telephone call with a cryptographically-certified identity of the caller, rather than the identity associated with the calling telephone line.” Sawyer at Abstract. Notably, Sawyer discloses that the authentication system advantageously “in the operation of CCID, the caller's identity is authenticated by a token, such as a smart card or other integrated circuit device which is capable of executing a cryptographic authentication protocol, optionally in conjunction with a Personal Identification Number (PIN) or biometric confirmation. Beneficially, CCID works in conjunction with several associated Customer Local Area Signalling Services (CLASS), e.g. Selective Call Acceptance, Selective Call Forwarding and Distinctive Ring to provide special call treatment based on the identity of the caller.” *Id.*

One of ordinary skill in the art would have recognized that a combination with Sawyer combines known prior art elements according to known methods to yield predictable results. Sawyer and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Sawyer was obvious to try

because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

vi. **Motivation for combining with Saito**

Saito relates to “a telephone, and more particularly, to a method for confirming an identity of a caller.” Saito at [0002]. Consistent with the problems identified in the Asserted Patents, Saito discloses that “[f]rauds have committed frequently wherein a person who pretends to be a family member of a receiver calls the receiver and makes the receiver transfer cash to a specified account.” Saito at [0004]. “In order to prevent such frauds, confirmation of the identity of the caller is necessary. One method for confirming the identity of the caller is utilizing caller ID (identification) service provided by telephone companies.” *Id.* In order to correctly identify a caller, Saito discloses a “a telephone which includes: a voice input unit which inputs an audio signal; a user token input unit which inputs a user token that is data for proving an identity of a user; a user reference storage which stores a user reference that is data used to verify the user token; a user verifier which verifies the user token on the basis of the user reference which is stored in the user reference storage; a caller token storage which stores a caller token that is data for proving an identity of a caller; and a caller token embedder which embeds, upon successful verification of the user token, in the audio signal the caller token which is stored in the caller token storage.” Saito at [0007].

One of ordinary skill in the art would have recognized that a combination with Saito combines known prior art elements according to known methods to yield predictable results. Saito and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Saito was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with

a reasonable expectation of success.

**vii. Motivation for combining with Kurapati**

Kurapati “relates generally to the field of communications and, more particularly, to a system, method and apparatus for authenticating calls.” Kurapati at [0002]. Kurapati discloses “a system, method and apparatus for authenticating calls that is a robust Anti-Vishing solution” that “can identify Caller ID spoofing, verify dialed number to detect man-in-the middle and verify called party against dialed digits to detect impersonation.” Kurapati at Abstract. Specifically Kurapati teaches “a system for authenticating a calling device that includes a communications network communicably coupled to the calling device and a controller communicably coupled to the communications network. The controller includes a communications interface communicably coupled to the communications network and a processor communicably coupled to the communications interface. The processor (a) receives a call from the calling device, (b) sends a first authentication request to the calling device, (c) receives a first authentication response from the calling device, wherein the first authentication response includes a calling device encrypted data generated by the calling device using a caller identification, a called number and a shared secret encryption key, (d) extracts the caller identification and the called number from the encrypted data using the shared secret encryption key, (e) determines whether the extracted caller identification and the extracted called number are valid, and (f) transfers the call to a called device whenever the extracted caller identification and the extracted called number are valid. The calling device (a) initiates the call, (b) receives the first authentication request, (c) generates the calling device encrypted data, and (d) sends the first authentication response.” Kurapati at [0010].

One of ordinary skill in the art would have recognized that a combination with Kurapati combines known prior art elements according to known methods to yield predictable results.

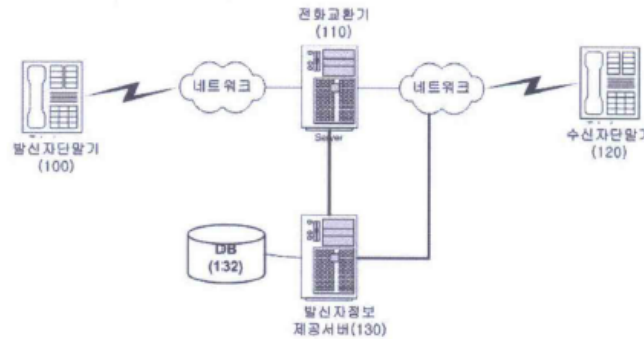
Kurapati and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Kurapati was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**viii. Motivation for combining with Han**

Han “relates to a caller information providing system and a caller information output terminal capable of outputting additional information about a caller.” Han at Abstract. Specifically, Han discloses that the “relates to a caller information providing system and a caller information output terminal capable of outputting additional information about a caller.” *Id.* “Referring to FIG. 1 [of Han], the caller additional information display system according to the present embodiment includes a caller terminal 100, a telephone exchange station 110, a caller terminal 120, and a caller information providing server 130 connected to a communication network, wherein the caller information providing server 130 includes a database 132” wherein the database includes “sender information” to include “[a]dditional information (for example, caller ID, name, phone number, address, age, and other unique information about the caller) about the receiver and unique information (for example, receiver ID, address of the receiver, unique authentication number and unique serial number of the receiver terminal, and other identification information about the

receiver) about the receiver” to aid in the authentication process. Han at [0052]-[0054].

**【Drawing 1】**



One of ordinary skill in the art would have recognized that a combination with Han combines known prior art elements according to known methods to yield predictable results. Han and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Han was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**ix. Motivation for combining with Har**

Har discloses a system and method wherein “[a] data channel transmission can be used to authenticate a voice channel transmission” and “[a] third party trusted authentication server can be used to authenticate the identity of one or more parties to a call where at least one of the parties to the call is using a mobile device.” Har at Abstract. Similar to the solution proposed in the Asserted Patents, Har discloses that “[a] PKI authentication methodology or other symmetric or asymmetric encryption/decryption methodology can be used in a mobile network environment to identify and authenticate a first user to a second user.” *Id.*

One of ordinary skill in the art would have recognized that a combination with Har combines known prior art elements according to known methods to yield predictable results. Har

and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Har was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**x. Motivation for combining with Ling**

Ling discloses a “method, apparatus, system, and computer readable medium for authenticating the identity of a caller” where an “authentication device authenticates a caller's identity based on received information of the caller and an identifier generation device generates an identifier containing the caller's identity.” Ling at Abstract. Ling teaches an apparatus that “includes an authentication means for authenticating the identity of the caller, based on received information about the caller. An identifier generation means generates an identifier containing the identity of the caller and supplies the identity to a mobile telephone user acting as a callee, based on the result of the authentication.” Ling at [0014].

One of ordinary skill in the art would have recognized that a combination with Ling combines known prior art elements according to known methods to yield predictable results. Ling and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Ling was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**xi. Motivation for combining with SIP RFC 4474**

The SIP RFC 4474 “defines a mechanism for securely identifying originators of SIP messages” and as it relates to call verification, provides “defining two new SIP header fields, Identity, for conveying a signature used for validating the identity, and Identity-Info, for conveying a reference to the certificate of the signer.” SIP RFC 4474 at Abstract. Generally, SIP

RFC 4474 “specifies a means of sharing a cryptographic assurance of end-user SIP identity in an interdomain or intradomain context that is based on the concept of an ‘authentication service’ and a new SIP header, the Identity header.” SIP RFC 4474 at P. 5, ¶4.

One of ordinary skill in the art would have recognized that a combination with SIP RFC 4474 at combines known prior art elements according to known methods to yield predictable results. SIP RFC 4474 at and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with SIP RFC 4474 at was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**xii. Motivation for combining with Masters**

Masters discloses that “a centralized server is utilized as a phone number resolving server that maintains a database having phone numbers categorized into a variety of categories or profiles, for example, indicating whether a particular phone number is a SPAM caller or telemarketer, etc.” and wherein the “server is configured to provide a lookup service for a variety of clients to determine whether a particular phone number is associated with a particular category.” Masters at [0013]. Masters identifies the caller by transmitting a “request to the phone number resolving server by providing a phone number of an incoming call (e.g., a caller ID) to determine the category of the phone number” which “can be utilized by the client to process the incoming call, such as, for example, routing the call to the intended recipient, playing a particular message, or dropping the call entirely, etc.” Masters at [0013].

One of ordinary skill in the art would have recognized that a combination with Masters at combines known prior art elements according to known methods to yield predictable results. Masters at and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Masters at was obvious

to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**xiii. Motivation for combining with Chow**

Chow discloses a “method comprising a plurality of operations” wherein an “operation is provided for receiving an authentication certificate of a called party.” Chow at Abstract. Specifically, Chow discloses “a method for authenticating a phone user, thus thwarting threats related to spoofing of user identity” which is directed to “enabling a calling party to unambiguously and reliably identify a called party identity through an authentication notice delivered to his/her telephony apparatus on a per call basis.” *Id.* Chow teaches that “[a] registry holds authenticated identification information of the called party” and “[u]pon successful registration, the registry (operating as a certificate authority) signs the certificate embedded with the identification and the public key of the called party.” Chow at [0018]. Chow’s authentication method addresses the same problems identified in the Asserted Patents, spoofing identity, and proposes a similar solution consistent with a variety of prior art solutions.

One of ordinary skill in the art would have recognized that a combination with Chow combines known prior art elements according to known methods to yield predictable results. Chow and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Chow was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**xiv. Motivation for combining with Cheon**

Cheon relates to “[a] caller authentication system that may enable a called party to be provided with identification information of a caller may be provided” wherein the “caller authentication system, including: a communication system to transmit, when a call request signal

is received from a calling terminal of a caller, network information and a telephone number of the calling terminal to a certificate authority server, and to request identification of the caller, the network information and the telephone number being included in the call request signal, to transmit, when identification information of the caller is received from the certificate authority server in response to the identification request, the identification information to a called terminal of a called party, and to enable the identification information to be displayed on the called terminal.” Cheon at Abstract.

One of ordinary skill in the art would have recognized that a combination with Cheon combines known prior art elements according to known methods to yield predictable results. Cheon and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Cheon was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### xv. **Motivation for combining with Entrust**

At least as early as 2008, Entrust Inc. provided systems and software for securing digital identities and information. Entrust’s Authentication platform authenticated devices and provided secure user experiences across a wide variety of communication mediums. Entrust used device identification, analytics, and risk context to detect fraudulent behavior and provide multi-factor authentication solutions.

One of ordinary skill in the art would have recognized that a combination with Entrust combines known prior art elements according to known methods to yield predictable results. Entrust and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Entrust was obvious to try because one of skill in the art would have chosen from a finite number of identified,

predictable solutions, with a reasonable expectation of success.

**xvi. Motivation for combining with Experian**

At least as early as 2012, Experian offered a host of identity verification tools for authenticating a user. For example, Experian's Precise ID provided identity management, risk-based authentication and knowledge-based solutions to authenticate users and devices. Similar to the claims of the Asserted Patents, Experian provided caller authentication and device enrollment to provide a more accurate call validation system.

One of ordinary skill in the art would have recognized that a combination with Experian combines known prior art elements according to known methods to yield predictable results. Experian and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Experian was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**c. '132 Patent**

The primary references identified above, as further described in the Exhibits, each disclose, either expressly or inherently, every element of the Asserted Claims, thereby anticipating those claims. Additionally, each of the primary references alone (including in combination with the knowledge of a person of ordinary skill in the art) renders obvious the Asserted Claims. To the extent Plaintiff contends that any primary reference does not anticipate or render obvious the Asserted Claims as set forth above, it would have been obvious to combine or modify the primary references with concepts from other prior art, as explained throughout these Invalidity Contentions. In particular, for each limitation of the Asserted Claims that Plaintiff contends is not met by a particular primary reference, Defendants contend that the limitation (and claim as a whole) is obvious based on a combination of that particular primary reference with (1) any other

primary reference, (2) any reference in these contentions as disclosing a limitation missing in a primary reference, (3) any statements made in the intrinsic record of the Asserted Patent, and/or (4) the knowledge of one of ordinary skill in the art.

It would have been obvious to try combining the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field or endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. Each of the references identified in these Invalidity Contentions are directed to the same field of endeavor (*e.g.*, “techniques for ascertaining the identity of a device initiating a communication”) ’132 Patent at 2:46-47. The solutions identified in the prior art utilize the same components and techniques that are identified in the ’132 Patent. Thus, as set forth in the aforementioned claim charts, a person of ordinary skill in the art would be motivated to look for solutions in other references in that field or that solve the same alleged problems.

Relatedly, one of ordinary skill in the art would have been motivated to create combinations identified in these contentions using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or teaching, suggestion, or motivation in the prior art generally. Also, market forces in the industry, and the desire to improve features and performance, would motivate the addition of features to systems as they become available, become smaller, become less expensive, become more commonly used, provide better performance, reduce costs, or predictably achieve other clearly desirable results.

The following includes examples of combinations that one of ordinary skill in the art would have found obvious, in particular with respect to Asserted Claims of the ’132 patent:

- Sawyer, alone or in combination with, Kurapati, Har, Chow, Ling, Cheon, Amir, Han, Kim, Schwartz, Karpey, Bombacino, Saito, Entrust, Experian, and/or SIP RFC 4474 render obvious the Asserted Claims of the '132 Patent.
- Kurapati, alone or in combination with, Sawyer, Har, Chow, Ling, Cheon, Amir, Han, Kim, Schwartz, Karpey, Bombacino, Saito, Entrust, Experian, and/or SIP RFC 4474 render obvious the Asserted Claims of the '132 Patent.
- Har, alone or in combination with, Kurapati, Sawyer, Chow, Ling, Cheon, Amir, Han, Kim, Schwartz, Karpey, Bombacino, Saito, Entrust, Experian, and/or SIP RFC 4474 render obvious the Asserted Claims of the '132 Patent.
- Chow, alone or in combination with, Kurapati, Har, Sawyer, Ling, Cheon, Amir, Han, Kim, Schwartz, Karpey, Bombacino, Saito, Entrust, Experian, and/or SIP RFC 4474 render obvious the Asserted Claims of the '132 Patent.
- Ling, alone or in combination with, Kurapati, Har, Chow, Sawyer, Cheon, Amir, Han, Kim, Schwartz, Karpey, Bombacino, Saito, Entrust, Experian, and/or SIP RFC 4474 render obvious the Asserted Claims of the '132 Patent.
- Cheon, alone or in combination with, Kurapati, Har, Chow, Ling, Sawyer, Amir, Han, Kim, Schwartz, Karpey, Bombacino, Saito, Entrust, Experian, and/or SIP RFC 4474 render obvious the Asserted Claims of the '132 Patent.
- Amir, alone or in combination with, Kurapati, Har, Chow, Ling, Cheon, Sawyer, Han, Kim, Schwartz, Karpey, Bombacino, Saito, Entrust, Experian, and/or SIP RFC 4474 render obvious the Asserted Claims of the '132 Patent.
- Han, alone or in combination with, Kurapati, Har, Chow, Ling, Cheon, Amir, Sawyer, Kim, Schwartz, Karpey, Bombacino, Saito, Entrust, Experian, and/or SIP

RFC 4474 render obvious the Asserted Claims of the '132 Patent.

- Kim, alone or in combination with, Kurapati, Har, Chow, Ling, Cheon, Amir, Han, Sawyer, Schwartz, Karpey, Bombacino, Saito, Entrust, Experian, and/or SIP RFC 4474 render obvious the Asserted Claims of the '132 Patent.
- Schwartz, alone or in combination with, Kurapati, Har, Chow, Ling, Cheon, Amir, Han, Kim, Sawyer, Karpey, Bombacino, Saito, Entrust, Experian, and/or SIP RFC 4474 render obvious the Asserted Claims of the '132 Patent.
- Karpey, alone or in combination with, Kurapati, Har, Chow, Ling, Cheon, Amir, Han, Kim, Schwartz, Sawyer, Bombacino, Saito, Entrust, Experian, and/or SIP RFC 4474 render obvious the Asserted Claims of the '132 Patent.
- SIP RFC 4474, alone or in combination with, Kurapati, Har, Chow, Ling, Cheon, Amir, Han, Kim, Schwartz, Karpey, Bombacino, Entrust, Experian, Saito, and/or Sawyer render obvious the Asserted Claims of the '132 Patent.
- Bombacino, alone or in combination with, Kurapati, Har, Chow, Ling, Cheon, Amir, Han, Kim, Schwartz, Karpey, SIP RFC 4474, Saito, Entrust, Experian, and/or Sawyer render obvious the Asserted Claims of the '132 Patent.
- Saito, alone or in combination with, Kurapati, Har, Chow, Ling, Cheon, Amir, Han, Kim, Schwartz, Karpey, SIP RFC 4474, Bombacino, Entrust, Experian, and/or Sawyer render obvious the Asserted Claims of the '132 Patent.
- Entrust, alone or in combination with, Kurapati, Har, Chow, Ling, Cheon, Amir, Han, Kim, Schwartz, Karpey, SIP RFC 4474, Bombacino, Saito, Experian, and/or Sawyer render obvious the Asserted Claims of the '132 Patent.
- Experian, alone or in combination with, Kurapati, Har, Chow, Ling, Cheon, Amir,

Han, Kim, Schwartz, Karpey, SIP RFC 4474, Bombacino, Entrust, Saito, and/or Sawyer render obvious the Asserted Claims of the '132 Patent.

All of the items of prior art above are directed to systems and methods for ascertaining the identity of a device initiating a communication, in accordance with the purported invention of the Asserted Patents. Combining the known features set forth by these items of prior art would constitute predictable variations contemplated by the ordinary skill in the art at the time of the alleged invention and would be likely to succeed. Combining the features of any of these items of prior art would constitute the mere combination of known elements according to known methods to yield predictable results. Specific to each such item of prior art, Defendants summarize below the reasons why one of ordinary skill in the art would have been motivated to combine such prior art with the other references in Section V.A.

**i. Motivation for combining with Sawyer**

Sawyer teaches a “system and method for caller identification, named certified caller ID (CCID) provides an enhancement to existing calling line identification services by providing the terminating end of a telephone call with a cryptographically-certified identity of the caller, rather than the identity associated with the calling telephone line.” Sawyer at Abstract. Notably, Sawyer discloses that the authentication system advantageously “in the operation of CCID, the caller's identity is authenticated by a token, such as a smart card or other integrated circuit device which is capable of executing a cryptographic authentication protocol, optionally in conjunction with a Personal Identification Number (PIN) or biometric confirmation. Beneficially, CCID works in conjunction with several associated Customer Local Area Signalling Services (CLASS), e.g. Selective Call Acceptance, Selective Call Forwarding and Distinctive Ring to provide special call treatment based on the identity of the caller.” *Id.*

One of ordinary skill in the art would have recognized that a combination with Sawyer

combines known prior art elements according to known methods to yield predictable results. Sawyer and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Sawyer was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

ii. **Motivation for combining with Kurapati**

Kurapati “relates generally to the field of communications and, more particularly, to a system, method and apparatus for authenticating calls.” Kurapati at [0002]. Kurapati discloses “a system, method and apparatus for authenticating calls that is a robust Anti-Vishing solution” that “can identify Caller ID spoofing, verify dialed number to detect man-in-the middle and verify called party against dialed digits to detect impersonation.” Kurapati at Abstract. Specifically Kurapati teaches “a system for authenticating a calling device that includes a communications network communicably coupled to the calling device and a controller communicably coupled to the communications network. The controller includes a communications interface communicably coupled to the communications network and a processor communicably coupled to the communications interface. The processor (a) receives a call from the calling device, (b) sends a first authentication request to the calling device, (c) receives a first authentication response from the calling device, wherein the first authentication response includes a calling device encrypted data generated by the calling device using a caller identification, a called number and a shared secret encryption key, (d) extracts the caller identification and the called number from the encrypted data using the shared secret encryption key, (e) determines whether the extracted caller identification and the extracted called number are valid, and (f) transfers the call to a called device whenever the extracted caller identification and the extracted called number are valid. The calling device (a) initiates the call, (b) receives the first authentication request, (c) generates the

calling device encrypted data, and (d) sends the first authentication response.” Kurapati at [0010].

One of ordinary skill in the art would have recognized that a combination with Kurapati combines known prior art elements according to known methods to yield predictable results. Kurapati and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Kurapati was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

### iii. **Motivation for combining with Har**

Har discloses a system and method wherein “[a] data channel transmission can be used to authenticate a voice channel transmission” and “[a] third party trusted authentication server can be used to authenticate the identity of one or more parties to a call where at least one of the parties to the call is using a mobile device.” Har at Abstract. Similar to the solution proposed in the Asserted Patents, Har discloses that “[a] PKI authentication methodology or other symmetric or asymmetric encryption/decryption methodology can be used in a mobile network environment to identify and authenticate a first user to a second user.” *Id.*

One of ordinary skill in the art would have recognized that a combination with Har combines known prior art elements according to known methods to yield predictable results. Har and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Har was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

### iv. **Motivation for combining with Chow**

Chow discloses a “method comprising a plurality of operations” wherein an “operation is

provided for receiving an authentication certificate of a called party.” Chow at Abstract. Specifically, Chow discloses “a method for authenticating a phone user, thus thwarting threats related to spoofing of user identity” which is directed to “enabling a calling party to unambiguously and reliably identify a called party identity through an authentication notice delivered to his/her telephony apparatus on a per call basis.” *Id.* Chow teaches that “[a] registry holds authenticated identification information of the called party” and “[u]pon successful registration, the registry (operating as a certificate authority) signs the certificate embedded with the identification and the public key of the called party.” Chow at [0018]. Chow’s authentication method addresses the same problems identified in the Asserted Patents, spoofing identity, and proposes a similar solution consistent with a variety of prior art solutions.

One of ordinary skill in the art would have recognized that a combination with Chow combines known prior art elements according to known methods to yield predictable results. Chow and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Chow was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### **v. Motivation for combining with Ling**

Ling discloses a “method, apparatus, system, and computer readable medium for authenticating the identity of a caller” where an “authentication device authenticates a caller's identity based on received information of the caller and an identifier generation device generates an identifier containing the caller's identity.” Ling at Abstract. Ling teaches an apparatus that “includes an authentication means for authenticating the identity of the caller, based on received information about the caller. An identifier generation means generates an identifier containing the identity of the caller and supplies the identity to a mobile telephone user acting as a callee,

based on the result of the authentication.” Ling at [0014].

One of ordinary skill in the art would have recognized that a combination with Ling combines known prior art elements according to known methods to yield predictable results. Ling and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Ling was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**vi. Motivation for combining with Cheon**

Cheon relates to “[a] caller authentication system that may enable a called party to be provided with identification information of a caller may be provided” wherein the “caller authentication system, including: a communication system to transmit, when a call request signal is received from a calling terminal of a caller, network information and a telephone number of the calling terminal to a certificate authority server, and to request identification of the caller, the network information and the telephone number being included in the call request signal, to transmit, when identification information of the caller is received from the certificate authority server in response to the identification request, the identification information to a called terminal of a called party, and to enable the identification information to be displayed on the called terminal.” Cheon at Abstract.

One of ordinary skill in the art would have recognized that a combination with Cheon combines known prior art elements according to known methods to yield predictable results. Cheon and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Cheon was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable

solutions, with a reasonable expectation of success.

**vii. Motivation for combining with Amir**

Amir relates to systems and methods which “authenticates a caller identity displayed by a caller.” Amir at 3:17-33. Amir discloses many relevant authentication/verification techniques that were well known in the prior art. *See e.g.*, Amir at 5:32-38 (“Registering callers/senders may also then be issued a public encryption key or digital signature for encoding communications sent between the caller/sender and the service system 100. The public encryption key or digital signature may also be associated with a private key during registration so that encrypted communications may be securely transmitted to the service system 100.”); 6:29-6:40 (“The screener 120 may then verify the challenge received from the authenticator 140 matches the challenge issued to the caller 110 during the call (step 270). Optionally, the screener 120 may also verify that the caller identification and phone number received from the authenticator 140 match the caller identification and phone number displayed by the caller 110 during the call. If the challenge is not verified, the screener 120 may block the call from reaching the subscriber 130 and the call may be terminated (step 280). If the challenge is verified, the screener 120 may then pass the call on to the subscriber 130 (step 290).”); 5:52-6:7 (““The screener 120 may then issue a challenge to the caller 110 (step 240). Examples of a challenge may include an arbitrarily selected word, phrase, or number, presented during the call or a previously-designated identifier recorded during registration. The challenge may be presented verbally over the phone or sent to another registered location such as the caller's e-mail address or to a mobile phone capable of receiving short message system messages (SMS). During the process, a software agent may be employed to automate the service system 100 by performing functions such as intercepting the call, recognizing and requesting caller identification, issuing challenges, and forwarding the calls to the subscriber 130. Other functions of the software agent may include performing speech-

synthesis and speech-recognition tools to interact with the caller 110. For example, the speech-synthesis tools may be used to issue the challenge during the phone call. In another example, the speech-recognition tools may be employed to recognize and retrieve caller account information from the authenticator 140 or data bank 150. Another embodiment may use the software agent to request the caller 110 use touch tone input of information and the software agent may include tools to retrieve call account information based on the inputted touch tones.”).

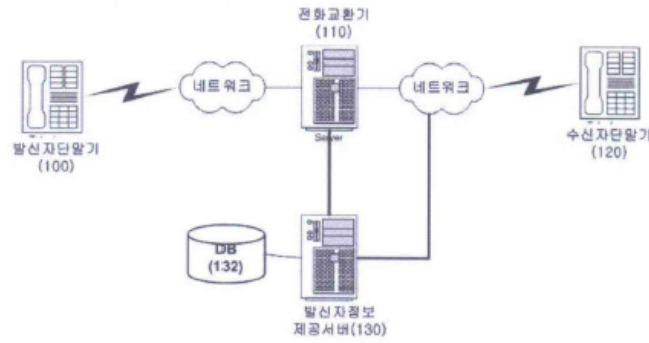
One of ordinary skill in the art would have recognized that a combination with Amir at combines known prior art elements according to known methods to yield predictable results. Amir at and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Amir at was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### viii. **Motivation for combining with Han**

Han “relates to a caller information providing system and a caller information output terminal capable of outputting additional information about a caller.” Han at Abstract. Specifically, Han discloses that the “relates to a caller information providing system and a caller information output terminal capable of outputting additional information about a caller.” *Id.* “Referring to FIG. 1 [of Han], the caller additional information display system according to the present embodiment includes a caller terminal 100, a telephone exchange station 110, a caller terminal 120, and a caller information providing server 130 connected to a communication network, wherein the caller information providing server 130 includes a database 132” wherein the database includes “sender information” to include “[a]dditional information (for example, caller ID, name, phone number, address, age, and other unique information about the caller) about the receiver and unique information (for example, receiver ID, address of the receiver, unique authentication number and

unique serial number of the receiver terminal, and other identification information about the receiver) about the receiver” to aid in the authentication process. Han at [0052]-[0054].

**【Drawing 1】**



One of ordinary skill in the art would have recognized that a combination with Han combines known prior art elements according to known methods to yield predictable results. Han and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Han was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### ix. Motivation for combining with Kim

Kim discloses a “method and a system for authenticating a caller in a voice communication network using a data communication network, an originating device, a receiving terminal and a program therefor.” Kim at Title of Invention. Kim teaches that “the system for authenticating a caller in a voice communication network using a data communication network of a device capable of being connected to a voice communication network and a data communication network comprises: an authentication key receiving unit for receiving, through a data communication network, a generated authentication key value by substituting a key generation rule for calling information for requesting call connection from a calling side device

and receiving information for receiving a call; a signal detecting unit for checking calling information and receiving information corresponding to a call connection signal transmitted to a receiving terminal through a voice communication network; a verification key generating unit for generating a verification key value by substituting the calling information and receiving information into the key generation rule; an authentication processing unit for authenticating consistency by comparing the verification key value with the received authentication key value; and a caller authentication unit for processing caller authentication data corresponding to the authentication result to be outputted to the receiving terminal when the consistency is authenticated.” Kim at [0007].

One of ordinary skill in the art would have recognized that a combination with Kim combines known prior art elements according to known methods to yield predictable results. Kim and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Kim was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### **x. Motivation for combining with Schwartz**

Schwartz discloses a “method and system for automatic incoming call management uses function test results to build call signatures that are stored for later use in incoming call analysis.” Schwartz at Abstract. Specifically, Schwartz teaches that “an incoming call management service, comprising: a call director for receiving call control messages respecting incoming calls to Subscribers of the incoming call management service, performing function tests associated with various call states of the incoming calls, building a call signature associated with each incoming call using the function test results, and making incoming call management decisions based on the function test results; a subscriber’s preferences database for storing

subscriber preference information also used by the call director in making the call management decisions; and a signatures database for storing selected signatures built by the call director.”

Schwartz at [0009]. See Schwartz at Fig. 1:

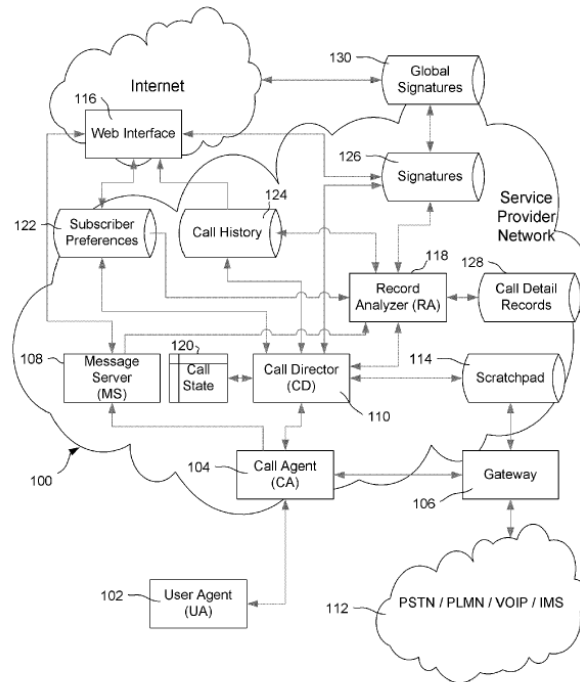


FIG. 1

One of ordinary skill in the art would have recognized that a combination with Schwartz combines known prior art elements according to known methods to yield predictable results. Schwartz and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Schwartz was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**xi. Motivation for combining with Karpey**

Karpey discloses systems and methods “for responding to a communication received from an individual” where an “identification score may be obtained for the communication that indicates the likelihood that a claimed identity of the individual is the actual identity of the

individual.” Karpey at Abstract. More specifically, Karpey discloses a “verification score for the communication may also be obtained that indicates the likelihood a purported source of the communication is the actual source of the communication”, an “authentication score for the communication may additionally be obtained that indicates the likelihood the individual has been authenticated”, and an “overall score for the communication may be generated and based on the identification score, verification score, and authentication score.” *Id.* “The response may be a grant or denial of access to one or more services requested by the individual through the communication.” *Id.*

One of ordinary skill in the art would have recognized that a combination with Karpey combines known prior art elements according to known methods to yield predictable results. Karpey and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Karpey was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**xii. Motivation for combining with SIP RFC 4474**

The SIP RFC 4474 “defines a mechanism for securely identifying originators of SIP messages” and as it relates to call verification, provides “defining two new SIP header fields, Identity, for conveying a signature used for validating the identity, and Identity-Info, for conveying a reference to the certificate of the signer.” SIP RFC 4474 at Abstract. Generally, SIP RFC 4474 “specifies a means of sharing a cryptographic assurance of end-user SIP identity in an interdomain or intradomain context that is based on the concept of an ‘authentication service’ and a new SIP header, the Identity header.” SIP RFC 4474 at P. 5, ¶4.

One of ordinary skill in the art would have recognized that a combination with SIP RFC 4474 at combines known prior art elements according to known methods to yield predictable

results. SIP RFC 4474 at and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with SIP RFC 4474 at was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**xiii. Motivation for combining with Bombacino**

Bombacino discloses “a method, system and computer program product for authentication of phone caller identity.” Bombacino at Abstract. Specifically, according to various embodiments, Bombacino discloses a technique that includes: “responsive to initiation of a telephone call by a caller from a first telephone unit to a second telephone unit, retrieving an identification object comprising identification information corresponding to the caller; encrypting the identification object using an encryption key stored on the first telephone unit; and transmitting, as part of the telephone call, the encrypted caller identification object to a telephone network destined for the second telephone unit.” Bombacino at 1:65-2:9.

One of ordinary skill in the art would have recognized that a combination with Bombacino combines known prior art elements according to known methods to yield predictable results. Bombacino and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Bombacino was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

**xiv. Motivation for combining with Saito**

Saito relates to “a telephone, and more particularly, to a method for confirming an identity of a caller.” Saito at [0002]. Consistent with the problems identified in the Asserted Patents, Saito discloses that “[f]rauds have committed frequently wherein a person who pretends to be a family member of a receiver calls the receiver and makes the receiver transfer cash to a

specified account.” Saito at [0004]. “In order to prevent such frauds, confirmation of the identity of the caller is necessary. One method for confirming the identity of the caller is utilizing caller ID (identification) service provided by telephone companies.” *Id.* In order to correctly identify a caller, Saito discloses a “a telephone which includes: a voice input unit which inputs an audio signal; a user token input unit which inputs a user token that is data for proving an identity of a user; a user reference storage which stores a user reference that is data used to verify the user token; a user verifier which verifies the user token on the basis of the user reference which is stored in the user reference storage; a caller token storage which stores a caller token that is data for proving an identity of a caller; and a caller token embedder which embeds, upon successful verification of the user token, in the audio signal the caller token which is stored in the caller token storage.” Saito at [0007].

One of ordinary skill in the art would have recognized that a combination with Saito combines known prior art elements according to known methods to yield predictable results. Saito and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Saito was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### **xv. Motivation for combining with Entrust**

At least as early as 2008, Entrust Inc. provides systems and software for securing digital identities and information. Entrust’s Authentication platform authenticated devices and provides secure user experience across a wide variety of communication mediums. Entrust used device identification, analytics, and risk context to detect fraudulent behavior and provide multi-factor authentication solutions.

One of ordinary skill in the art would have recognized that a combination with Entrust

combines known prior art elements according to known methods to yield predictable results. Entrust and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Entrust was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### xvi. **Motivation for combining with Experian**

At least as early as 2012, Experian offered a host of identity verification tools for authenticating a user. For example, Experian's Precise ID provided identity management, risk-based authentication and knowledge-based solutions to authenticate users and devices. Similar to the claims of the Asserted Patents, Experian provided caller authentication and device enrollment to provide a more accurate call validation system.

One of ordinary skill in the art would have recognized that a combination with Experian combines known prior art elements according to known methods to yield predictable results. Experian and the other references identified in section V.A use known techniques to improve similar devices or methods in the same way. Moreover, a combination with Experian was obvious to try because one of skill in the art would have chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success.

#### **C. Secondary Considerations**

A patentee bears the burden of production with respect to evidence of secondary considerations of non-obviousness. *ZUP, LLC v. Nash Mfg., Inc.*, 896 F.3d 1365, 1373 (Fed. Cir. 2018). As of the date of these Invalidity Contentions, Plaintiff has not identified any secondary considerations of non-obviousness. Defendants reserve all rights to respond to any secondary considerations of non-obviousness raised by Plaintiff, including by updating, modifying, and/or adding to these Invalidity Contentions. Defendants are not aware of any unexpected results (none

is mentioned in the Asserted Patents or their file histories), long felt need, commercial success (or any nexus to any allegedly successful commercial embodiment), or awards for the Asserted Patents. Indeed, as shown in these Invalidity Contentions, dozens of other companies and individuals described, built, and/or patented the exact same concepts in the Asserted Patents before Plaintiff ever did—often many years before. Even where others’ inventions occurred at approximately the same time as the alleged invention in the Asserted Patents, such simultaneous invention further demonstrates the obviousness of the Asserted Patents.

**VI. P.R. 3-3(c) DISCLOSURES: CHARTS IDENTIFYING WHERE IN EACH ITEM OF PRIOR ART EACH ELEMENT OF THE ASSERTED CLAIM IS FOUND**

Exhibits A-01 et seq., B-01 et seq. and C-01 et seq., of these contentions are charts that identify where each element of each Asserted Claim is found in the prior art. The claim charts in these contentions (Exhibits A-01 et seq., B-01 et seq., and C-01 et seq.) provide example sections within the prior art references that teach or suggest each and every element of the assert claims either expressly or inherently. The contentions set forth obviousness arguments based on the disclosures in each of the references, teachings well known at the time of filing, admitted prior art, and the knowledge of a person of ordinary skill in the art at the time the respective patent application was filed. If needed, all of the exhibited art can be used in combination for an obvious determination.

**VII. P.R. 3-3(d) – INVALIDITY UNDER 35 U.S.C. § 112**

Defendants provide the following grounds for invalidity under 35 U.S.C. § 112(a)-(b). Defendants’ investigation of the Asserted Patents is ongoing, and Defendants reserve the right to amend or supplement these disclosures based on further investigation and in a manner consistent with the Federal Rules of Civil Procedure, the Local Patent Rules for the Eastern District of Texas,

and the Docket Control Order, or otherwise in accordance with any order or direction of this Court or agreement of the parties. Further, Plaintiff's Infringement Contentions fail to provide sufficient detail to fully understand its proposed application of the Asserted Claims, and Defendants reserve the right to assert additional grounds for invalidity under 35 U.S.C. § 112 in response to Plaintiff's claim interpretations. Defendants also reserve the right to supplement, modify, or otherwise amend these grounds for invalidity under 35 U.S.C. § 112 based on the Court's claim construction rulings or opinions or the parties' positions or arguments taken in connection with the claim construction process.

In addition, while Defendants identify claims below that are indefinite under 35 U.S.C. § 112(b), Defendants will more fully address these grounds as part of claim construction.<sup>22</sup> Defendants reserve the right to provide additional explanation and/or argument for their Invalidity Contentions under Section 112, including, for example, based on expert testimony.

**A. Invalidity Based on Indefiniteness, Enablement, and Written Description**

Defendants identify the below grounds upon which it presently contends the Asserted Claims of the Asserted Patents are invalid for failure to meet one or more of the requirements of 35 U.S.C. § 112. A more detailed basis for Defendants' indefiniteness, enablement, and/or written description defenses will be set forth in expert reports on invalidity, to be served in accordance with the Court's Scheduling Order, or in its claim construction briefing. Defendants have also not yet taken any depositions related to these issues. Defendants thus specifically reserve the right to amend and/or supplement these Invalidity Contentions based on a failure to comply with the requirements of 35 U.S.C. § 112.

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<sup>22</sup> Any dependent claim is invalid if it depends, directly or indirectly, on another claim that is invalid under 35 U.S.C. § 112.

Indefiniteness: Section 112 includes a definiteness requirement. *See* 35 U.S.C. § 112(b). (“The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention”). The definiteness requirement of Section 112 requires that “a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S.Ct. 2120, 2129 (2014). Claims that depend from claims that are indefinite inherit the indefiniteness of the claims from which they depend and are also indefinite.

Written Description and Enablement: 35 U.S.C. § 112(a) requires a patent to describe “the manner and process of making and using [the claimed invention], in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same.” A patent must disclose enough to permit a person of skill in the art, after reading the specification, to practice the claimed invention without undue experimentation. *Sitrick v. Dreamworks, LLC*, 516 F.3d 993, 999 (Fed. Cir. 2008). Moreover, “[t]he full scope of the claimed invention must be enabled.” *Id.* at 999-1000 (“Because the asserted claims are broad enough to cover both movies and video games, the patents must enable both embodiments.”) “Enabling the full scope of each claim is part of the quid pro quo of the patent bargain.” *Id.*

35 U.S.C. § 112 further includes a written description requirement. 35 U.S.C. § 112(a) (“The specification shall contain a written description of the invention . . .”). To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the

claimed invention at the time of filing the patent application. *See generally AriadPharms., Inc. v. Eli Lilly and Co.*, 598 F. 3d 1336 (Fed. Cir. 2010).

Claims that depend from claims that are invalid for lack of enablement or written description support inherit the deficiencies of the claims from which they depend and are also invalid.

Subject to the reservation of rights above, Defendants provide below an identification of Asserted Claims that are, at least as apparently construed by Plaintiff in their Infringement Contentions, invalid pursuant to 35 U.S.C. § 112 as indefinite, not enabled, or lacking sufficient written description.

**1. Indefiniteness (35 U.S.C. § 112(b))**

One or more of the Asserted Claims are invalid because they fail to particularly point out and distinctly claim the subject matter that the listed inventors regarded as their inventions. The Asserted Claims suffer from multiple defects. First, many of the claim terms are simply jargon with no accepted definitions. The claims themselves provide no clarity on what the inventors actually intend the claims to encompass. Second, RightQuestion has adopted broad and idiosyncratic interpretations of the claim language, confirming the boundaries of the claims are indefinite. Third, even if some of the claim terms are understandable in isolation, the patent specification suggests that some of these claim terms (such as backchannel) have a different definition, but the specification fails to teach what that term means. Fourth, many of the claim limitations are internally inconsistent or recite duplicative steps, yet each claim limitation must have its own meaning, so it is unclear what is covered by that claim.

For at least those reasons, Defendants therefore contend that a person of ordinary skill in the art to which the purported invention pertains would not understand the scope of the below-identified claim language read in light of the pertinent specification. If one or more claim

limitations below are construed as subject to 35 U.S.C. § 112(f), i.e., as a means-plus-function claim, Defendants reserve the right to assert the claim is indefinite if no corresponding structures are recited in the specifications. Defendants presently contend that at least one or more of the following claim terms are indefinite:

- All claims reciting “a verification service provider.” *See, e.g.*, ’009 Patent at Claims 1, 3, 9, 10, 12, 17, 19.
- All claims reciting “enroll” / “enrolling” / “re-enroll” *See, e.g.*, ’009 Patent at Claims 1, 6, 9, 10, 15, 17, 22.
- All claims reciting “a device fingerprint that is generated based at least in part on a set of configuration information associated with the first device.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “store, at the verification service provider, the device fingerprint associated with the first device” / “storing, at the verification service provider, the device fingerprint associated with the first device” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “information transmitted by a second device associated with a communications connection.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “a security determination.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “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.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.

- All claims reciting “selecting, at the verification service provider, an action comprising at least one of blocking the communication, requesting additional authentication, and permitting the communication.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “a backchannel that is different from the communications connection.” *See, e.g.*, ’009 Patent at Claims 2, 11, 18.
- All claims reciting “configured to convey an assurance to a recipient associated with the communications connection.” *See, e.g.*, ’009 Patent at Claims 3, 12, 19.
- All claims reciting “the communications connection is associated with at least one of email, SMS, instant message, and a phone call.” *See, e.g.*, ’009 Patent at Claims 4, 13, 20.
- All claims reciting “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.” *See, e.g.*, ’009 Patent at Claims 6, 15, 22.
- All claims reciting “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.” *See, e.g.*, ’009 Patent at Claims 7, 16, 23.
- All claims reciting “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.” *See, e.g.*, ’009 Patent at Claim 8.
- All claims reciting “wherein the verification service provider is further configured to re-enroll the first device in response to a determination of a change in the device fingerprint.” *See, e.g.*, ’009 Patent at Claim 8.
  - All claims reciting “information pertaining to the call including: (1) a value generated based at least in part on information associated with the calling device, and (2) a score generated for the calling device, the score indicating a validity of a phone number.” *See, e.g.*, ’989 Patent at Claims 1, 27, 28.
  - All claims reciting “perform a security determination based at least in part on the score generated for the calling device” / “performing a security determination based at least in part on the score generated for the calling device.” *See, e.g.*, ’989 Patent at Claims 1, 27, 28.
  - All claims reciting “verifying the value included in the information pertaining to the call initiated by the calling device.” *See, e.g.*, ’989 Patent at Claims 1, 27, 28.
  - All claims reciting “perform at least one of conveying an assurance to a callee associated with the call or conveying a failure to confirm to the callee associated with the call” / “performing at least one of conveying an assurance to a callee associated with the call or conveying a failure to confirm to the callee associated with the call.” *See, e.g.*, ’989 Patent at Claims 1, 27, 28.
  - All claims reciting “wherein the value is generated based at least in part on one of symmetric key cryptography and asymmetric key cryptography.” *See, e.g.*, ’989 Patent at Claim 4.

- All claims reciting “wherein the score for the calling device is generated in response to the call being initiated by the calling device.” *See, e.g.*, ’989 Patent at Claim 5.
- All claims reciting “wherein the score for the calling device is generated based at least in part on information associated with a user that is associated with the calling device.” *See, e.g.*, ’989 Patent at Claim 6.
- All claims reciting “wherein the security determination is performed by one of a device associated with a called phone number and an entity different from the device associated with a called phone number.” *See, e.g.*, ’989 Patent at Claim 8.
- All claims reciting “wherein the security determination comprises determining a validity of the call based at least in part on a cryptographic key on the calling device.” *See, e.g.*, ’989 Patent at Claim 9.
- All claims reciting “wherein the information pertaining to the call further includes a timestamp, and wherein the one or more processors are configured to prevent a replay attack using the timestamp.” *See, e.g.*, ’989 Patent at Claim 10.
- All claims reciting “wherein the security determination is based at least in part on a score indicating a validity of the call, and wherein the score is generated based at least in part on device information.” *See, e.g.*, ’989 Patent at Claim 11.
- All claims reciting “wherein the device information used to generate the score comprises at least one of a unique software identifier, a semi-unique software identifier, an embedded hardware identifier, a user-added hardware identifier, and a device fingerprint.” *See, e.g.*, ’989 Patent at Claim 12.
- All claims reciting “wherein the user-added hardware identifier is associated with geolocation information.” *See, e.g.*, ’989 Patent at Claim 13.

- All claims reciting “wherein the device fingerprint is determined based at least in part on at least one of a set of device settings, a set of installed applications, an indication of a software version, and a contact list.” *See, e.g.*, ’989 Patent at Claim 14.
- All claims reciting “wherein the user-added hardware identifier is associated with a memory card.” *See, e.g.*, ’989 Patent at Claim 15.
- All claims reciting “wherein the one or more processors are configured to confirm an observed phone number associated with the call.” *See, e.g.*, ’989 Patent at Claim 16.
- All claims reciting “wherein the information associated with the call is provided by an agent on the calling device.” *See, e.g.*, ’989 Patent at Claim 17.
- All claims reciting “wherein the information associated with the call is provided in response to one of a detection of an outgoing communication and a prompt to validate communication session information.” *See, e.g.*, ’989 Patent at Claim 18.
- All claims reciting “wherein the score is based at least in part on an age of the information associated with the calling device.” *See, e.g.*, ’989 Patent at Claim 19.
- All claims reciting “wherein the score is based at least in part on one or more of feedback associated with a particular phone call, an indication of a stolen device, an indication of a potential spoof attempt, an indication of fraud related to a device, or an indication of a verification that was subsequently determined to be errant.” *See, e.g.*, ’989 Patent at Claim 20.
- All claims reciting “wherein the score comprises a reputation score.” *See, e.g.*, ’989 Patent at Claim 21.
- All claims reciting “wherein the value is generated at least in part by the calling device.” *See, e.g.*, ’989 Patent at Claim 22.

- All claims reciting “wherein the value is provided at least in part by an entity different from the calling device.” *See, e.g.*, ’989 Patent at Claim 23.
- All claims reciting “wherein the value comprises at least one of an authentication code, a counter value, a pseudo-random number, a number specific to a particular session, or a number specific to the calling device.” *See, e.g.*, ’989 Patent at Claim 24.
- All claims reciting “wherein the security determination is performed based at least in part on evaluate of the score against a threshold score.” *See, e.g.*, ’989 Patent at Claim 25.
- All claims reciting “wherein the score is based at least in part on an age of a timestamp.” *See, e.g.*, ’989 Patent at Claim 26.
- All claims reciting “receiving information pertaining to a call initiated by a caller device, wherein the information pertaining to the call comprises data related to (1) a phone number associated with a callee device, (2) device information associated with the caller device, and (3) a cryptographic element associated with the caller device.” *See, e.g.*, ’132 Patent at Claim 1.
- All claims reciting “performing a security determination based at least in part on the cryptographic element associated with the caller device comprised in the received information pertaining to the call.” *See, e.g.*, ’132 Patent at Claim 1.
- All claims reciting “based at least in part on a result of the security determination performed based at least in part on the cryptographic element associated with the caller device, transmitting, using a cellular network, a notification directed to the callee device.” *See, e.g.*, ’132 Patent at Claim 1.

- All claims reciting “wherein the security determination is based at least in part on a policy.” *See, e.g.*, ’132 Patent at Claim 2.
- All claims reciting “wherein the security determination is based at least in part on a validation of the information pertaining to the call.” *See, e.g.*, ’132 Patent at Claim 5.
- All claims reciting “storing, in a data store, at least one record including contents associated with the caller device.” *See, e.g.*, ’132 Patent at Claim 6.
- All claims reciting “storing, in a data store, at least one certificate used to validate the call.” *See, e.g.*, ’132 Patent at Claim 7.
- All claims reciting “wherein the call is validated at least in part by using at least one of a secret key or a public key.” *See, e.g.*, ’132 Patent at Claim 8.
- All claims reciting “wherein the security determination is based at least in part on execution of a rule.” *See, e.g.*, ’132 Patent at Claim 9.
- All claims reciting “wherein the result of the security determination comprises a score indicating a validity of a phone number associated with the caller device.” *See, e.g.*, ’132 Patent at Claim 12.
- All claims reciting “wherein the security determination is risk-based.” *See, e.g.*, ’132 Patent at Claim 13.
- All claims reciting “wherein the device information associated with the caller device comprises at least one of a unique software identifier, a semi-unique software identifier, an embedded hardware identifier, or a user-added hardware identifier.” *See, e.g.*, ’132 Patent at Claim 15.

## 2. Written Description (35 U.S.C. § 112(a))

Defendants contend that Plaintiff's apparent claim constructions render the asserted claims extremely broad in scope and well beyond the purported inventions described in the Asserted Patent. Plaintiff is attempting to construe the Asserted Patent in an idiosyncratic manner that is entirely inconsistent with the written specification of the Asserted Patent as well as with the understanding of one of ordinary skill in the art at the time the applications that issued as the Asserted Patent was filed. These allegations are inconsistent with the plain language of the claims, the supporting description, and the prosecution history.

The Asserted Claims are this invalid because the specification of the Asserted Patent does not include sufficient written description of the purported inventions allegedly claimed in the Asserted Patent. Here, many of the claim elements are not discussed or disclosed in the specifications of the Asserted Patents, or any discussion is minimal relative to Plaintiff's expansive reading of the claims. Defendants therefore contend that the full scope of each Asserted Claim was not described with particularity in the specification to which priority is sought, so as not to set forth enough detail to allow a person of ordinary skill in the art to understand what is claimed and to recognize that the inventor invented what is claimed. At least the following claim terms are invalid for lack of written description under 35 U.S.C. § 112:

- All claims reciting "a verification service provider." *See, e.g.*, '009 Patent at Claims 1, 3, 9, 10, 12, 17, 19.
- All claims reciting "enroll" / "enrolling" / "re-enroll" *See, e.g.*, '009 Patent at Claims 1, 6, 9, 10, 15, 17, 22.
- All claims reciting "a device fingerprint that is generated based at least in part on a set of configuration information associated with the first device." *See, e.g.*, '009 Patent at Claims 1, 10, 17.

- All claims reciting “store, at the verification service provider, the device fingerprint associated with the first device” / “storing, at the verification service provider, the device fingerprint associated with the first device” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “information transmitted by a second device associated with a communications connection.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “a security determination.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “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.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “selecting, at the verification service provider, an action comprising at least one of blocking the communication, requesting additional authentication, and permitting the communication.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “a backchannel that is different from the communications connection.” *See, e.g.*, ’009 Patent at Claims 2, 11, 18.
- All claims reciting “configured to convey an assurance to a recipient associated with the communications connection.” *See, e.g.*, ’009 Patent at Claims 3, 12, 19.

- All claims reciting “the communications connection is associated with at least one of email, SMS, instant message, and a phone call.” *See, e.g.*, ’009 Patent at Claims 4, 13, 20.
- All claims reciting “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.” *See, e.g.*, ’009 Patent at Claims 6, 15, 22.
- All claims reciting “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.” *See, e.g.*, ’009 Patent at Claims 7, 16, 23.
- All claims reciting “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.” *See, e.g.*, ’009 Patent at Claim 8.
- All claims reciting “wherein the verification service provider is further configured to re-enroll the first device in response to a determination of a change in the device fingerprint.” *See, e.g.*, ’009 Patent at Claim 8.
- All claims reciting “information pertaining to the call including: (1) a value generated based at least in part on information associated with the calling device, and (2) a score generated for the calling device, the score indicating a validity of a phone number.” *See, e.g.*, ’989 Patent at Claims 1, 27, 28.

- All claims reciting “perform a security determination based at least in part on the score generated for the calling device” / “performing a security determination based at least in part on the score generated for the calling device.” *See, e.g.*, ’989 Patent at Claims 1, 27, 28.
- All claims reciting “verifying the value included in the information pertaining to the call initiated by the calling device.” *See, e.g.*, ’989 Patent at Claims 1, 27, 28.
- All claims reciting “perform at least one of conveying an assurance to a callee associated with the call or conveying a failure to confirm to the callee associated with the call” / “performing at least one of conveying an assurance to a callee associated with the call or conveying a failure to confirm to the callee associated with the call.” *See, e.g.*, ’989 Patent at Claims 1, 27, 28.
- All claims reciting “wherein the information associated with the calling device comprises a cryptographic key associated with the calling device.” *See, e.g.*, ’989 Patent at Claim 3.
- All claims reciting “wherein the value is generated based at least in part on one of symmetric key cryptography and asymmetric key cryptography.” *See, e.g.*, ’989 Patent at Claim 4.
- All claims reciting “wherein the score for the calling device is generated based at least in part on information associated with a user that is associated with the calling device.” *See, e.g.*, ’989 Patent at Claim 6.
- All claims reciting “wherein the security determination is performed by one of a device associated with a called phone number and an entity different from the device associated with a called phone number.” *See, e.g.*, ’989 Patent at Claim 8.

- All claims reciting “wherein the security determination comprises determining a validity of the call based at least in part on a cryptographic key on the calling device.” *See, e.g.*, ’989 Patent at Claim 9.
- All claims reciting “wherein the information pertaining to the call further includes a timestamp, and wherein the one or more processors are configured to prevent a replay attack using the timestamp.” *See, e.g.*, ’989 Patent at Claim 10.
- All claims reciting “wherein the security determination is based at least in part on a score indicating a validity of the call, and wherein the score is generated based at least in part on device information.” *See, e.g.*, ’989 Patent at Claim 11.
- All claims reciting “wherein the device information used to generate the score comprises at least one of a unique software identifier, a semi-unique software identifier, an embedded hardware identifier, a user-added hardware identifier, and a device fingerprint.” *See, e.g.*, ’989 Patent at Claim 12.
- All claims reciting “wherein the user-added hardware identifier is associated with geolocation information.” *See, e.g.*, ’989 Patent at Claim 13.
- All claims reciting “wherein the device fingerprint is determined based at least in part on at least one of a set of device settings, a set of installed applications, an indication of a software version, and a contact list.” *See, e.g.*, ’989 Patent at Claim 14.
- All claims reciting “wherein the one or more processors are configured to confirm an observed phone number associated with the call.” *See, e.g.*, ’989 Patent at Claim 16.
- All claims reciting “wherein the information associated with the call is provided by an agent on the calling device.” *See, e.g.*, ’989 Patent at Claim 17.

- All claims reciting “wherein the information associated with the call is provided in response to one of a detection of an outgoing communication and a prompt to validate communication session information.” *See, e.g.*, ’989 Patent at Claim 18.
- All claims reciting “wherein the score is based at least in part on an age of the information associated with the calling device.” *See, e.g.*, ’989 Patent at Claim 19.
- All claims reciting “wherein the score is based at least in part on one or more of feedback associated with a particular phone call, an indication of a stolen device, an indication of a potential spoof attempt, an indication of fraud related to a device, or an indication of a verification that was subsequently determined to be errant.” *See, e.g.*, ’989 Patent at Claim 20.
- All claims reciting “wherein the score comprises a reputation score.” *See, e.g.*, ’989 Patent at Claim 21.
- All claims reciting “wherein the value is generated at least in part by the calling device.” *See, e.g.*, ’989 Patent at Claim 22.
- All claims reciting “wherein the value is provided at least in part by an entity different from the calling device.” *See, e.g.*, ’989 Patent at Claim 23.
- All claims reciting “wherein the value comprises at least one of an authentication code, a counter value, a pseudo-random number, a number specific to a particular session, or a number specific to the calling device.” *See, e.g.*, ’989 Patent at Claim 24.
- All claims reciting “wherein the security determination is performed based at least in part on evaluate of the score against a threshold score.” *See, e.g.*, ’989 Patent at Claim 25.

- All claims reciting “wherein the score is based at least in part on an age of a timestamp.”  
*See, e.g.,* ’989 Patent at Claim 26.
- All claims reciting “receiving information pertaining to a call initiated by a caller device, wherein the information pertaining to the call comprises data related to (1) a phone number associated with a callee device, (2) device information associated with the caller device, and (3) a cryptographic element associated with the caller device.”  
*See, e.g.,* ’132 Patent at Claim 1.
- All claims reciting “performing a security determination based at least in part on the cryptographic element associated with the caller device comprised in the received information pertaining to the call.” *See, e.g.,* ’132 Patent at Claim 1.
- All claims reciting “based at least in part on a result of the security determination performed based at least in part on the cryptographic element associated with the caller device, transmitting, using a cellular network, a notification directed to the callee device.” *See, e.g.,* ’132 Patent at Claim 1.
- All claims reciting “wherein the security determination is based at least in part on a policy.” *See, e.g.,* ’132 Patent at Claim 2.
- All claims reciting “wherein the security determination is based at least in part on a validation of the information pertaining to the call.” *See, e.g.,* ’132 Patent at Claim 5.
- All claims reciting “storing, in a data store, at least one record including contents associated with the caller device.” *See, e.g.,* ’132 Patent at Claim 6.
- All claims reciting “storing, in a data store, at least one certificate used to validate the call.” *See, e.g.,* ’132 Patent at Claim 7.

- All claims reciting “wherein the call is validated at least in part by using at least one of a secret key or a public key.” *See, e.g.*, ’132 Patent at Claim 8.
- All claims reciting “wherein the security determination is based at least in part on execution of a rule.” *See, e.g.*, ’132 Patent at Claim 9.
- All claims reciting “wherein the result of the security determination comprises a score indicating a validity of a phone number associated with the caller device.” *See, e.g.*, ’132 Patent at Claim 12.
- All claims reciting “wherein the security determination is risk-based.” *See, e.g.*, ’132 Patent at Claim 13.
- All claims reciting “wherein the device information associated with the caller device comprises at least one of a unique software identifier, a semi-unique software identifier, an embedded hardware identifier, or a user-added hardware identifier.” *See, e.g.*, ’132 Patent at Claim 15.

### **3. Lack of Enablement under 35 U.S.C. § 112(a)**

The enablement requirement of 35 U.S.C. § 112(a), requires that the patent specification enable “those skilled in the art to make and use the full scope of the claimed invention without ‘undue experimentation.’” *Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997) (quoting *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993)). “[T]he scope of the claims must be less than or equal to the scope of the enablement.” *Nat’l Recovery Tech., Inc. v. Magnetic Separation Sys., Inc.*, 166 F.3d 1190, 1196 (Fed. Cir. 1999).

Here, the claims of the Asserted Patents speak in jargon and use functional terms without any meaningful disclosure in the specifications of how to implement such functionality. Indeed, many of these terms are barely mentioned, if at all, in the specifications. Defendants therefore

contend that at least the following claim limitations fail to comply with 35 U.S.C. § 112(a) due to lack of enablement and thus render the claims in which they are recited invalid:

- All claims reciting “a verification service provider.” *See, e.g.*, ’009 Patent at Claims 1, 3, 9, 10, 12, 17, 19.
- All claims reciting “enroll” / “enrolling” / “re-enroll” *See, e.g.*, ’009 Patent at Claims 1, 6, 9, 10, 15, 17, 22.
- All claims reciting “a device fingerprint that is generated based at least in part on a set of configuration information associated with the first device.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “store, at the verification service provider, the device fingerprint associated with the first device” / “storing, at the verification service provider, the device fingerprint associated with the first device” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “information transmitted by a second device associated with a communications connection.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “a security determination.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “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.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.

- All claims reciting “selecting, at the verification service provider, an action comprising at least one of blocking the communication, requesting additional authentication, and permitting the communication.” *See, e.g.*, ’009 Patent at Claims 1, 10, 17.
- All claims reciting “a backchannel that is different from the communications connection.” *See, e.g.*, ’009 Patent at Claims 2, 11, 18.
- All claims reciting “configured to convey an assurance to a recipient associated with the communications connection.” *See, e.g.*, ’009 Patent at Claims 3, 12, 19.
- All claims reciting “the communications connection is associated with at least one of email, SMS, instant message, and a phone call.” *See, e.g.*, ’009 Patent at Claims 4, 13, 20.
- All claims reciting “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.” *See, e.g.*, ’009 Patent at Claims 6, 15, 22.
- All claims reciting “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.” *See, e.g.*, ’009 Patent at Claims 7, 16, 23.
- All claims reciting “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.” *See, e.g.*, ’009 Patent at Claim 8.

- All claims reciting “wherein the verification service provider is further configured to re-enroll the first device in response to a determination of a change in the device fingerprint.” *See, e.g.*, ’009 Patent at Claim 8.
- All claims reciting “information pertaining to the call including: (1) a value generated based at least in part on information associated with the calling device, and (2) a score generated for the calling device, the score indicating a validity of a phone number.” *See, e.g.*, ’989 Patent at Claims 1, 27, 28.
- All claims reciting “perform a security determination based at least in part on the score generated for the calling device” / “performing a security determination based at least in part on the score generated for the calling device.” *See, e.g.*, ’989 Patent at Claims 1, 27, 28.
- All claims reciting “verifying the value included in the information pertaining to the call initiated by the calling device.” *See, e.g.*, ’989 Patent at Claims 1, 27, 28.
- All claims reciting “perform at least one of conveying an assurance to a callee associated with the call or conveying a failure to confirm to the callee associated with the call” / “performing at least one of conveying an assurance to a callee associated with the call or conveying a failure to confirm to the callee associated with the call.” *See, e.g.*, ’989 Patent at Claims 1, 27, 28.
- All claims reciting “wherein the information associated with the calling device comprises a cryptographic key associated with the calling device.” *See, e.g.*, ’989 Patent at Claim 3.

- All claims reciting “wherein the value is generated based at least in part on one of symmetric key cryptography and asymmetric key cryptography.” *See, e.g.*, ’989 Patent at Claim 4.
- All claims reciting “wherein the score for the calling device is generated in response to the call being initiated by the calling device.” *See, e.g.*, ’989 Patent at Claim 5.
- All claims reciting “wherein the score for the calling device is generated based at least in part on information associated with a user that is associated with the calling device.” *See, e.g.*, ’989 Patent at Claim 6.
- All claims reciting “wherein the security determination is performed by one of a device associated with a called phone number and an entity different from the device associated with a called phone number.” *See, e.g.*, ’989 Patent at Claim 8.
- All claims reciting “wherein the security determination comprises determining a validity of the call based at least in part on a cryptographic key on the calling device.” *See, e.g.*, ’989 Patent at Claim 9.
- All claims reciting “wherein the information pertaining to the call further includes a timestamp, and wherein the one or more processors are configured to prevent a replay attack using the timestamp.” *See, e.g.*, ’989 Patent at Claim 10.
- All claims reciting “wherein the security determination is based at least in part on a score indicating a validity of the call, and wherein the score is generated based at least in part on device information.” *See, e.g.*, ’989 Patent at Claim 11.
- All claims reciting “wherein the device information used to generate the score comprises at least one of a unique software identifier, a semi-unique software identifier,

an embedded hardware identifier, a user-added hardware identifier, and a device fingerprint.” *See, e.g.*, ’989 Patent at Claim 12.

- All claims reciting “wherein the user-added hardware identifier is associated with geolocation information.” *See, e.g.*, ’989 Patent at Claim 13.
- All claims reciting “wherein the device fingerprint is determined based at least in part on at least one of a set of device settings, a set of installed applications, an indication of a software version, and a contact list.” *See, e.g.*, ’989 Patent at Claim 14.
- All claims reciting “wherein the one or more processors are configured to confirm an observed phone number associated with the call.” *See, e.g.*, ’989 Patent at Claim 16.
- All claims reciting “wherein the information associated with the call is provided by an agent on the calling device.” *See, e.g.*, ’989 Patent at Claim 17.
- All claims reciting “wherein the information associated with the call is provided in response to one of a detection of an outgoing communication and a prompt to validate communication session information.” *See, e.g.*, ’989 Patent at Claim 18.
- All claims reciting “wherein the score is based at least in part on an age of the information associated with the calling device.” *See, e.g.*, ’989 Patent at Claim 19.
- All claims reciting “wherein the score is based at least in part on one or more of feedback associated with a particular phone call, an indication of a stolen device, an indication of a potential spoof attempt, an indication of fraud related to a device, or an indication of a verification that was subsequently determined to be errant.” *See, e.g.*, ’989 Patent at Claim 20.
- All claims reciting “wherein the score comprises a reputation score.” *See, e.g.*, ’989 Patent at Claim 21.

- All claims reciting “wherein the value is generated at least in part by the calling device.”  
*See, e.g.,* ’989 Patent at Claim 22.
- All claims reciting “wherein the value is provided at least in part by an entity different from the calling device.” *See, e.g.,* ’989 Patent at Claim 23.
- All claims reciting “wherein the value comprises at least one of an authentication code, a counter value, a pseudo-random number, a number specific to a particular session, or a number specific to the calling device.” *See, e.g.,* ’989 Patent at Claim 24.
- All claims reciting “wherein the security determination is performed based at least in part on evaluate of the score against a threshold score.” *See, e.g.,* ’989 Patent at Claim 25.
- All claims reciting “wherein the score is based at least in part on an age of a timestamp.”  
*See, e.g.,* ’989 Patent at Claim 26.
- All claims reciting “receiving information pertaining to a call initiated by a caller device, wherein the information pertaining to the call comprises data related to (1) a phone number associated with a callee device, (2) device information associated with the caller device, and (3) a cryptographic element associated with the caller device.”  
*See, e.g.,* ’132 Patent at Claim 1.
- All claims reciting “performing a security determination based at least in part on the cryptographic element associated with the caller device comprised in the received information pertaining to the call.” *See, e.g.,* ’132 Patent at Claim 1.
- All claims reciting “based at least in part on a result of the security determination performed based at least in part on the cryptographic element associated with the caller

- device, transmitting, using a cellular network, a notification directed to the callee device.” *See, e.g.*, ’132 Patent at Claim 1.
- All claims reciting “wherein the security determination is based at least in part on a policy.” *See, e.g.*, ’132 Patent at Claim 2.
  - All claims reciting “storing, in a data store, at least one record including contents associated with the caller device.” *See, e.g.*, ’132 Patent at Claim 6.
  - All claims reciting “storing, in a data store, at least one certificate used to validate the call.” *See, e.g.*, ’132 Patent at Claim 7.
  - All claims reciting “wherein the call is validated at least in part by using at least one of a secret key or a public key.” *See, e.g.*, ’132 Patent at Claim 8.
  - All claims reciting “wherein the security determination is based at least in part on execution of a rule.” *See, e.g.*, ’132 Patent at Claim 9.
  - All claims reciting “wherein the result of the security determination comprises a score indicating a validity of a phone number associated with the caller device.” *See, e.g.*, ’132 Patent at Claim 12.
  - All claims reciting “wherein the security determination is risk-based.” *See, e.g.*, ’132 Patent at Claim 13.
  - All claims reciting “wherein the device information associated with the caller device comprises at least one of a unique software identifier, a semi-unique software identifier, an embedded hardware identifier, or a user-added hardware identifier.” *See, e.g.*, ’132 Patent at Claim 15.

## VIII. P.R. 3-4 DISCLOSURES AND CONTENTIONS

**A. P.R. 3-4(a) Disclosures**

Pursuant to P.R. 3-4(a), Defendants are separately producing representative technical documentation within their possession, custody, and control that show the operation of aspects or elements of the Accused Instrumentality identified by RightQuestion in its Infringement Contentions for each Defendant. Defendants reserve the right to supplement these disclosures with additional documentation.

**B. P.R. 3-4(b) Disclosures**

In accordance with P.R. 3-4(b), Defendants are producing a single set of prior art references identified in these Invalidity Contentions for prior art related to patents asserted against more than one Defendant. Defendants are also producing prior art references concerning prior art systems and methods. Such documents can be found at the following Bates range: DEFS-RQ-PA\_0000001 to DEFS-RQPA\_0007258. Any prior art references not in English are produced with an English translation of the portion(s) relied upon. These prior art references are cited herein and support the contentions presented. Defendants' search for prior art references, additional documentation, and/or corroborating evidence concerning prior art apparatuses and methods is ongoing. Accordingly, Defendants reserve the right to supplement their production, as provided by the local rules, as additional prior art references, additional documentation, and/or corroborating evidence concerning prior art documents/apparatuses, and methods are obtained during the course of discovery.

**IX. PATENT SUBJECT MATTER INELIGIBILITY CONTENTIONS**

Defendants provide the following pursuant to the Court's Standing Order Regarding Subject Matter Eligibility Contentions, subject to supplementation, revision and amendment pursuant to Federal Rule of Civil Procedure 26(e) and the Orders of record in this matter to the

extent appropriate in light of further investigation and discovery regarding the defenses below, the Court's construction of the claims at issue, and/or the review and analysis of expert witnesses.

Each of the Asserted Claims in the Asserted Patents are ineligible under 35 U.S.C. § 101 because they “are directed to [a] patent-ineligible concept[]” and, further, do not contain “additional elements [that] ‘transform the nature of the claim’ into a patent-eligible application.” *Alice Corp. Pty. v. CLS Bank Int’l*, 573 U.S. 208, 217-18 (2014). More specifically, the alleged “invention” is directed to the concept of prioritizing resource access based on user characteristics to manage resource usage. *See, e.g.*, Complaint, ¶ 81 (“The improvements of the claimed inventions allow network operators *to manage network congestion by prioritizing one or more user terminals or devices (e.g., cellular phones) sharing the network.*” (emphasis added)). Such a concept—and similar concepts—have been repeatedly rejected as abstract. *See, e.g., Broadcom Corp. v. Netflix Inc.*, No. 3:20-CV-04677-JD, 2021 WL 4170784, at \*9 (N.D. Cal. Sept. 14, 2021) (claims directed to dynamic allocation of network resources to different “network routes” “based on priority” given device “provisioning profile[s]” and respective costs); *see also, e.g., BSG Tech LLC v. BuySeasons, Inc.*, 899 F.3d 1281 (Fed. Cir. 2018) (finding abstract the idea of employing historical usage information in determining how to classify data); *OpenTV, Inc. v. Netflix, Inc.*, No. 14-cv-01525, 2014 WL 7185921, at \*4, 8 (N.D. Cal. Dec. 16, 2014) (claims directed to abstract ideas of “ensuring that necessary resources are available before commencing a presentation that requires those resources” and “using information about users to customize a list of content for delivery” ineligible).

Moreover, all of the various limitations set forth in the Asserted Claims of the Asserted Patents were well-understood, routine, and conventional at the time of the alleged priority date. The Asserted Claims of the Asserted Patents therefore provide no inventive concept. *OIP Techs.*,

*Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1364 (Fed. Cir. 2015) (“These processes are well-understood, routine, conventional data-gathering activities that do not make the claims patent eligible”). The bases for Defendants’ subject-matter eligibility contentions for Asserted Claims of the Asserted Patents are set forth more fully in the charts attached hereto as Exhibit D.

November 14, 2024

Respectfully submitted,

/s/ Matthew S. Yungwirth

Matthew S. Yungwirth  
msyungwirth@duanemorris.com  
Glenn D. Richeson  
gdricheson@duanemorris.com  
**DUANE MORRIS LLP**  
1075 Peachtree St, Ste 1700  
Atlanta, GA 30309-3929  
msyungwirth@duanemorris.com

Deron R. Dacus  
ddacus@dacusfirm.com  
**THE DACUS FIRM, P.C.**  
821 ESE Loop 323, Suite 430  
Tyler, TX 75701  
Telephone: (903) 705-7233  
Facsimile: (903) 581-2543

Attorneys for Defendants  
*AT&T CORP., AT&T  
MOBILITY LLC, AT&T MOBILITY II LLC  
and AT&T SERVICES, INC.,*

/s/ Kevin P. Anderson

Kevin P. Anderson  
Brian H. Pandya  
**DUANE MORRIS LLP**  
901 New York Ave N.W., Ste 700 East  
Washington, DC 20001-4795  
Telephone: 202 776-7807  
Facsimile: 202 478-2811

Deron R. Dacus  
ddacus@dacusfirm.com  
**THE DACUS FIRM, P.C.**  
821 ESE Loop 323, Suite 430  
Tyler, TX 75701  
Telephone: (903) 705-7233  
Facsimile: (903) 581-2543

Attorneys for Defendants  
*CELLCO PARTNERSHIP D/B/A VERIZON  
WIRELESS, VERIZON BUSINESS  
NETWORK SERVICES LLC, VERIZON  
CORPORATE SERVICES GROUP INC.,*

*and TRACFONE WIRELESS, INC.*

**CERTIFICATE OF SERVICE**

I hereby certify that on November 14, 2024, the foregoing document was served via e-mail upon all counsel of record in this case.

*/s/Matthew S. Yungwirth*  
Matthew Yungwirth