UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND/ODESSA DIVISION

HEADWATER RESEARCH LLC, *Plaintiff*, v. GOOGLE LLC, *Defendant*.	Case No. 7:25-cv-00231-DC-DTG

GOOGLE'S PRELIMINARY INVALIDITY CONTENTIONS

Defendant Google LLC ("Google") hereby provides the following Preliminary Invalidity Contentions ("Contentions") to Plaintiff Headwater Research LLC ("Headwater") for U.S. Patents 9,615,192 (the "'192 patent") and 10,321,320 (the "'320 patent") (collectively, the "Asserted Patents").

I. PRELIMINARY STATEMENT AND RESERVATION OF RIGHTS

In its Infringement Contentions dated September 8, 2025, Headwater asserted the following claims (the "Asserted Claims"):

- Claims 1-15 of the '192 patent; and
- Claims 1-18 of the '320 patent.

Google does not provide any Contentions directed to claims that Headwater has not asserted for purposes of infringement. To the extent Headwater may be permitted to assert additional claims in the future, Google reserves all rights to disclose new or supplemental contentions regarding such claims.

Because the same claim scope must apply for both infringement and invalidity, these Contentions are based on Headwater's assertions in its Infringement Contentions. Google does not

thereby implicitly or explicitly agree with Headwater's construction of the claims. Google reserves all rights to disclose new or supplemental invalidity contentions, including to address any construction of the claims rendered by the Court, changed theories of infringement, and any evidence obtained during the course of discovery.

Subject to the rights reserved in these Contentions, all Asserted Claims are invalid under at least one or more of 35 U.S.C. §§ 101, 102, 103, and/or 112. The Asserted Claims are invalid at least because they are anticipated and/or rendered obvious under 35 U.S.C. §§ 102 and 103. If Headwater contends or a fact-finder finds that one or more limitations of the Asserted Claims are not disclosed in the identified prior art as anticipatory, Google reserves the right to assert obviousness based on the identified references and/or to identify other references that would have rendered obvious the allegedly missing limitation. Furthermore, the obviousness combinations of references provided below and in the accompanying claim charts under 35 U.S.C. § 103 are exemplary only and are not intended to be exhaustive. If or when Headwater challenges the disclosure of any of these references with respect to particular limitations of the Asserted Claims, Google reserves the right to supplement these Contentions to assert additional or different bases for obviousness. Google reserves the right to use any combination of the references set forth in these Contentions to demonstrate the obviousness of the Asserted Claims. Additionally, certain claims of the Asserted Patents are invalid for failure to comply with the written description, enablement, and definiteness requirements of 35 U.S.C. § 112. The Asserted Claims are also invalid for lack of patentable subject matter under 35 U.S.C. § 101.

Google expressly reserves the right to amend, correct, and/or supplement these Contentions in accordance with the procedural schedule governing this case, as additional information becomes available, and as its discovery and investigation proceeds. The Court's scheduling order and order

governing proceedings in patent cases do not require Google to provide in its preliminary invalidity contentions its contentions regarding improper inventorship, inequitable conduct, laches, unenforceability, and any other equitable defenses. Google expressly reserves the right to raise these defenses at the appropriate time, and as its discovery and investigation proceeds.

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These Contentions reflect Google's knowledge, investigation, and discovery as of the date of service. Google reserves the right to supplement these Contentions as appropriate and for any permissible reason. For example, Google reserves the right to supplement these Contentions after subsequent case events, including any disclosure by Headwater of amended or supplemental infringement contentions, any ruling by the Court on claim construction, or in response to arguments made and positions taken by Headwater during fact and expert discovery. Google also reserves the right to supplement these Contentions if it becomes aware of additional prior art, becomes aware of additional features of the prior art references cited below, or becomes aware of any other relevant information through discovery, including non-party discovery, or otherwise. Google also reserves the right to modify or supplement its Contentions based on the Court's construction of the claims.

In addition to the charts attached hereto, Google expressly incorporates by reference, as if expressly set forth in these Contentions, all invalidity positions, prior art, and claim charts asserted against Headwater in any Headwater lawsuit or IPR proceeding by Google, prior defendants, petitioners, and potential or actual licensees to the Asserted Patents, including, but not limited to, all invalidity positions, prior art, and claim charts asserted against Headwater in *Headwater Research LLC v. Samsung Electronics Co., Ltd. et al.*, No. 2:23-cv-00103-JRG-RSP (E.D. Tex.), *Samsung Electronics Co., Ltd. v. Headwater Research LLC*, IPR2024-00010 (P.T.A.B.), *Samsung*

Electronics Co., Ltd. v. Headwater Research LLC, IPR2024-00003 (P.T.A.B.), *Samsung Electronics Co., Ltd. v. Headwater Research LLC*, IPR2024-00341 (P.T.A.B.), *Samsung Electronics Co., Ltd. v. Headwater Research LLC*, IPR2024-00342 (P.T.A.B.), *Apple Inc. et al v. v. Headwater Research LLC*, IPR2025-01571 (P.T.A.B.), and *Ex Parte* Reexamination Application No. 90/019,753. Google also incorporates any future discovery responses and expert reports in such litigations or proceedings.

Google's citations to disclosures in any particular prior art reference are not (and are not intended to be) exhaustive but rather illustrative. Google reserves the right to rely on uncited portions of the prior art references and on other publications and expert testimony as aids in understanding and interpreting the cited portions, as providing context thereto, as additional evidence that the prior art discloses a claim limitation or the alleged invention as a whole, as evidence of the state of the art at a particular time, as evidence of the obviousness factor of contemporaneous development by others, and as evidence of motivation to combine. Google also reserves the right to rely on uncited portions of the prior art references, other publications, and testimony, including expert testimony, to establish bases for combination of prior art references that render the charted claims obvious. Due to the related nature of the subject matter of the Asserted Patents, Google also reserves the right to rely on any cited portions of a prior art reference for one Asserted Patent against all Asserted Patents. Google also reserves the right to rely upon any documentary or testimonial evidence of the existence of any systems that embodied or practiced the disclosures found in the accompanying invalidity charts, for example as discussed in the prior art references cited herein, as such systems may qualify as prior art under 35 U.S.C. § 102(g).[1]

[1] Citations herein refer to the pre-AIA version of Title 35 of the U.S. Code.

Google intends to rely on admissions concerning the scope of the prior art relevant to the Asserted Patents found in, *inter alia*: the patent prosecution histories for the Asserted Patents and related patents and/or patent applications (including all prior art cited therein); any deposition testimony of the named inventors on the Asserted Patents and related patents and/or patent applications in this matter or any other matter; evidence and testimony relating to the level of skill in the art; and the papers filed and any evidence submitted by Headwater in connection with this matter.

Google reserves the right to assert that the Asserted Claims are invalid under 35 U.S.C. § 102(f) in the event Google obtains additional evidence that the inventors named in any of the Asserted Patents did not invent the subject matter claimed therein. Should Google obtain such evidence, it will provide the name of the person(s) from whom and the circumstances under which the alleged invention or any part of it was derived.

These Contentions are not intended to include or otherwise reflect Google's claim interpretations. Because the Court has not yet construed any of the claims in this litigation, Google bases these Contentions at least on its present understanding of Headwater's view and application of the claim scope, to the extent that view can be inferred from Headwater's actual and/or apparent application of those claims. But Google does not adopt any constructions or interpretations impliedly or expressly in these Contentions. Moreover, Google's Contentions may reflect alternative positions as to claim construction and scope.

For the purposes of these Contentions, Google has made assumptions regarding possible meanings of indefinite claim terms. By making these assumptions, Google does not admit that any claim language satisfies 35 U.S.C. § 112. Similarly, the use of asserted claim terms herein should not be understood to mean that such terms, as used in the Asserted Patents or claims thereof, are

definite or otherwise comply with the conditions of patentability under 35 U.S.C. § 112. Likewise, the use of asserted claim terms herein should not be understood to suggest or imply a common, usual, ordinary, customary, plain, or accepted meaning in the art for any such terms.

By providing these Contentions, Google is not waiving nor limiting its rights to make arguments in the future about the proper scope of the claims or to advance alternative constructions to those Headwater advocates. Google expressly reserves the right to argue for such alternative claim constructions during this litigation and to supplement these Contentions after the Court has issued a claim construction ruling.

Google's factual investigations, including its investigation of prior art and grounds for invalidity, is ongoing. Further, Google's invalidity positions will be the subject of expert testimony. Google reserves the right to supplement these Contentions, including, without limitation, adding additional prior art and grounds of invalidity in accordance with the Federal Rules of Civil Procedure and procedural schedule in this case, or otherwise.

II. PERSON HAVING ORDINARY SKILL IN THE ART

A person of ordinary skill in the art ("POSITA" or "POSA"), in or about January 28, 2009, would have had at least a Bachelor's degree in Computer Science, Electrical Engineering, or a related field, and three to five years of experience in services and application implementation in communication networks. Additional graduate education could substitute for professional experience, and vice versa.

III. IDENTIFICATION OF RELEVANT PRIOR ART

A. Priority Dates

Headwater's Infringement Contentions allege that all three Asserted Patents can claim priority to U.S. Provisional Application Ser. No. 61/206,354, filed on January 28, 2009, entitled "Services Policy Communication System and Method" ("the '354 application"). Headwater has

not met its burden of establishing that the claims of the Asserted Patents are entitled to this priority date. *See In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1376 (Fed. Cir. 2016) (A "patentee bears the burden of establishing that its claimed invention is entitled to an earlier priority date.").

For a patent to claim priority back to the filing date of a particular patent application, all the limitations must appear in the specification of the application to which priority is claimed. However, the '354 application's specification clearly fails to disclose at least the following asserted independent claim limitations, including but not limited to those limitations reciting "device link agent," "an interface to a network to receive network element messages from a plurality of network elements," and the claimed processing of "triggers" by a "message buffer system" and thus fails to disclose any claims depending therefrom:

1. '192 patent

- **Claim 1**: "a transport services stack to maintain a respective secure message link through an Internet network between the message link server and a respective device link agent on each of a plurality of wireless end-user devices, each of the wireless end-user devices comprising multiple software components authorized to receive and process data from secure message link messages received via a device link agent on that device";
- **Claim 1**: "an interface to a network to receive network element messages from a plurality of network elements, the received network element messages comprising respective message content and requests for delivery of the respective message content to respective wireless end-user devices, the respective message content including data for, and an identification of, a respective one of the authorized software components";
- **Claim 1**: "a message buffer system including a memory and logic, the memory to buffer content from the received network element messages for which delivery is requested to a given one of the wireless end-user devices,"
- **Claim 1**: "the logic to determine when one of a plurality of message delivery triggers for the given one of the wireless end-user devices has occurred, wherein for at least some of the received network element messages, the receipt of such a message by the message buffer system is not a message delivery trigger, and for at least one of the message delivery triggers, the trigger is an occurrence of an asynchronous event with time-critical messaging needs"; and
- **Claim 1**: "upon determining that one of the message delivery triggers has occurred, the logic further to supply one or more messages comprising the buffered content to the

transport services stack for delivery on the secure message link maintained between the transport services stack and a device link agent on the given one of the wireless end-user devices."

2. '320 patent

- **Claim 1**: "a network server system including a link interface to maintain a respective secure Internet data message link between the link interface and a respective device link agent on each of a plurality of wireless end-user devices, each of the wireless end-user devices comprising multiple software components authorized to receive messages via the device link agent on that device";

- **Claim 1**: "a network interface to receive messages from a plurality of network elements, for delivery to respective ones of the software components identified in the messages, each network element authorized to send messages via the link interface to one or more of the software components on one or more of the wireless end-user devices; and";

- **Claim 1**: "a message buffer system including a memory and logic, the memory to buffer content from the received network element messages for which delivery is requested to any of the wireless end-user devices";

- **Claim 1**: "the logic to determine when one of a plurality of message delivery triggers for a given one of the wireless end-user devices has occurred, wherein for at least some of the received network element messages, the receipt of such a message by the message buffer system is not a message delivery trigger, and for at least one of the message delivery triggers, the trigger is an occurrence of an asynchronous event with time-critical messaging needs";

- **Claim 1**: "upon determining that one of the message delivery triggers has occurred for the given one of the wireless end-user devices, the logic further to supply one or more messages comprising the buffered content for the given one of the wireless end-user devices to the transport services stack for delivery on the secure message link maintained between the transport services stack and a device link agent on the given one of the wireless end-user devices"; and

- **Claim 1**: "the device link agents on the respective wireless end-user devices, each of the device link agents configured to maintain the respective secure Internet data message link over a wireless network to the link interface, receive secure Internet data messages from the network server system over the respective secure Internet data message link, including messages collected from multiple ones of the network elements and messages corresponding to multiple ones of the software components authorized to receive messages via the device link agent on that respective device, wherein at least a first subset of the secure Internet data messages contain both a unique identifier for a corresponding one of the software agents and data to be consumed by that software component, the data supplied from a respective network element corresponding to that software component, and for software components that are authorized to access messages received via the device link agent, cause messages with a unique identifier corresponding

to a given one of those software applications to be securely delivered to a software process corresponding to the given software component."

B. Prior Art Patent Publications

Based on its investigation to date, Google has provided in the list below the prior art patent publications presently known to Google that it contends anticipate and/or render obvious the Asserted Claims. The prior art identified in these Contentions discloses (i.e., anticipates and/or renders obvious) the elements of the Asserted Claims either explicitly or inherently. Similarly, the prior art patent publications listed on the face of the Asserted Patents discloses (i.e., anticipates and/or renders obvious) the elements of the Asserted Claims either explicitly or inherently, and Google reserves the right to rely on any such reference.

Prior-art patents or publications included in these Contentions may be related (such as a divisional, continuation, continuation-in-part, parent, or child) to earlier or later-filed patents or publications, may have counterparts filed in other jurisdictions, or may incorporate (or be incorporated by) other patents or publications by reference. The listed patents or publications are intended to be representative of these other patents or publications to the extent they exist. Google accordingly reserves the right to modify, amend, or supplement these Contentions with these related patents or publications, as well as other prior art references, upon further investigation. Additionally, any reference in these Contentions, including the exhibits thereto, to a specific subsection or subsections of 35 U.S.C. § 102, is merely exemplary, and Google expressly reserves the right to rely on additional or other sections of 35 U.S.C. § 102, as appropriate. If Headwater asserts that one or more of these references or systems fails to disclose one or more elements of a claim, Google reserves the right to also use those references to invalidate the claim under 35 U.S.C. § 103.

Discovery is ongoing, and Google's prior art investigation and third-party discovery is therefore not yet complete. Google reserves the right to present additional items of prior art under 35 U.S.C. §§ 102 and/or 103 that are located during the course of discovery or further investigation. For example, Google expects to receive documents from additional third parties either through informal requests or under subpoenas that are believed to have knowledge, documentation, and/or corroborating evidence concerning some of the prior art listed and discussed below. These third parties include without limitation the authors, inventors, or assignees of the references listed in these disclosures.

Patent Publication	Publication/Issue Date
US 2004/0243993 A1 (Okonnen)	2004-12-02
EP 1298518 B1 (Hashimoto)	2006-09-13
US 2006/0031873 A1 (Farhny)	2006-02-09
US 7,975,147 B1 (Qumei)	2011-07-05
US 2006/0009198 A1 (Kasai)	2006-01-12
US 2005/0169285 A1 (Wills)	2005-08-04
US 5,751,813 A (Dorenbos)	1998-05-12
US 7,088,990 B1 (Isomursu)	2006-08-08
US 2007/0123206 A1 (Satake)	2007-05-31
US 2007/0203969 A1 (Wakasa)	2007-08-30
US 7,305,697 B2 (Alao)	2007-12-04
WO 2008/048075 A1 (Lee)	2008-04-24
US 2006/0080527 A1 (Novack)	2006-04-13
US 5,675,507 A (Bobo)	1997-10-07

EP 2007055 A2 (Qian)	2008-12-24
US 2003/0078985 A1 (Holbrook)	2003-04-24
KR 20010082789 A (Lee)	2001-08-31
US 2007/0190978 A1 (White)	2007-08-16
US 6,986,037 B1 (Assmann)	2006-01-10
US 2008/0228892 A1 (Staack)	2008-09-18
US 6,263,212 B1 (Ross)	2001-07-17
WO 2006/077283 A1 (Houghton)	2006-07-27
KR 20030036910 (Huckson)	2003-05-09
US 7,925,717 B2 (Chou)	2011-04-12
CN 101136837 A (Fan)	2008-03-05
US 8,966,075 B1 (Chickering)	2015-02-24
KR 10-0856256 B1 (Hwang)	2008-08-27
JP 2008-287519 A (Ozaki)	2008-11-27
US 7,673,007 B2 (Mulligan)	2010-03-02
US 8,099,764 B2 (Herzog)	2012-01-17
US 8,271,683 B2 (Munson)	2012-09-18
US 8,719,391 (Hämäläinen)	2014-05-06
US 2009/0307715 A1 (Santamaria)	2009-10-09
US 2012/0208568 A1 (Cooley)	2012-08-16
US 7,447,799 B2 (Kushner)	2008-11-4
US 7,788,382 B1 (Jones)	2010-08-31
US 8,149,995 B2 (Kirchmeier)	2012-04-03
US 8,195,961 B2 (Ogawa)	2012-06-05

US 2010/0042835 A1 (Lee)	2010-02-18
US 2007/0011736 A1 (Kalibjian)	2007-01-11
US 2009/0240807 A1 (Munson)	2009-09-24
US 2009/0282256 A1 (Rakic)	2009-11-12
US 7,082,615 B1 (Ellison)	2006-07-25
EP 1853044 B1 (Shenfield)	2009-01-14
US 2004/0105431 A1 (Monjas-Llorente)	2004-06-03
US 2007/0214245 A1 (Hamalainen)	2007-09-13
US 2005/0207379 A1 (Shen)	2005-01-27
US 8,041,816 B2 (Ozaki)	2011-10-18
US 7,509,487 B2 (Lu)	2009-03-24
EP 1909463 A1 (Hwang)	2008-04-09
US 9,032,192 B2 (Frank)	2015-05-12
US 2003/0096625 A1 (Lee)	2003-05-22
US 7,844,915 B2 (Platzer)	2010-11-30
US 8,370,818 B2 (Osminer)	2013-02-05
US 2002/0144151 A1 (Shell)	2002-10-03
US 2008/0133569 A1 (Vu)	2008-06-05
US 2004/0122907 A1 (Chou)	2004-06-24
US 7,346,168 (Chou-168)	2005-03-31
US 7,801,517 (Silvestri)	2005-06-29
US 2008/091980 (Alperovitch)	2008-07-31
US 6,970,909 (Schulzrinne)	2002-04-18
WO 2008/065250 (Kovacs)	2008-06-05

EP 1881715 (Neil)	2008-01-23
US 8,108,519 (Zhang)	2010-05-30
US 2003/0226012 (Asokan)	2003-12-04
US 2002/0032853 (Preston)	2002-03-14
US 2005/0240985 (Alkove)	2005-10-27
US 2009/0286531 (Bhatt)	2009-11-19
US 2006/0182137 (Zhou)	2006-08-17
US 2006/ 0294370 (Greenspan)	2003-12-28
US 2007/0185975 (Cunningham)	2007-08-09
US 2008/0046727 (Kanekar)	2008-02-21
US 2008/0215883 (Fok)	2008-09-04
US 2009/0019517 (Turakhia)	2009-01-15
US 2009/0286512 (Huber)	2009-11-19
US 8,555,273 (Chia)	2013-10-08
WO 2005/094011 (Clontz)	2005-03-24

C. Prior Art Non-Patent Publications[2,3]

Non-Patent Publication	Publication Date

[2] Any discussion of a non-patent publication in either Section III.C or in one of the claim charts included herewith that discloses a corresponding product or system shall also apply with equal force to the underlying product or system. In other words, both the non-patent publication and the underlying product or system themselves qualify as prior art in the context that they are used herein.

[3] Discovery is currently ongoing, and Google will supplement these Contentions with respect to the public availability, as necessary, of any non-patent publication if and when more information becomes available. Indeed, Google expects to receive documents from third parties either through informal requests or under subpoenas that are believed to have knowledge, documentation, and/or corroborating evidence concerning the public availability of the identified non-patent publications.

TS 23.140; Multimedia Messaging Service (MMS); Functional description ("TS 23.140" or "MMS")	March 2005
Multimedia Messaging System	October 2003
(a) Extensible Messaging and Presence Protocol (XMPP): Instant Messaging and Presence (b) Session Initiation Protocol Extension for Instant Messaging	a) October 2004 b) August 30, 2002
Steve Babin, Developing Software for Symbian OS: An Introduction to Creating Smartphone Applications in C++	2006
Ben Morris, The Symbian OS Architecture Sourcebook: Design and Evolution of a Mobile Phone OS	2007
Developing Software for Symbian OS	
Android 2.1 Nexus One User Guide	
Android 2.2 Users Guide	
Blackberry, Technical White Paper BlackBerry Corporate Data Access: How Blackberry Extends the Enterprise Wirelessly	2002
BlackBerry 7100 Series User Guide	2004
rfc3746, Forwarding and Control Element Separation (ForCES) Framework	April 2004
Security Engineering (Second Edition) (Anderson)	
Open Mobile Alliance; Multimedia Messaging Service Architecture Overview (MMSARCH) specification, available at https://www.openmobilealliance.org/release/MMS/V1_1-20040715-A/OMA-WAP-MMS-ARCH-V1_1-20040715-A.pdf	2004
Open Mobile Alliance; OMA-ERELD-MMS-v1_2-20030923-C, Enabler Release Definition for MMS Version 1.2," available at https://www.openmobilealliance.org/release/MMS/V1_2-20030923-C/OMA-ERELD-MMS-V1_2-20030923-C.pdf	2003
Technical Specification Group Services and System Aspects Meeting #19, TSGS#19(03)0167, European Telecommunications Standards Institute February 2003 (available at https://www.3gpp.org/ftp/tsg_sa/TSG_SA/TSGS_19/Docs/PDF/SP-030167.pdf)	2003

IETF RFC 793, Transmission Control Protocol (Sept. 1981) (available at https://www.ietf.org/rfc/rfc793.txt)	1921
The TLS Protocol Version v 1.0 (Jan. 1999) (available at https://datatracker.ietf.org/doc/html/rfc2246)	1999
The Transport Layer Security ("TLS") Protocol, V. 1.1, available at https://www.ietf.org/rfc/rfc4346.txt	April 2006
Needham et al., "Using Encryption for Authentication in Large Networks of Computers" (ACM, Vol. 21, No. 12, Dec. 1978)	1978
Schroeder et al., "A Hardware Architecture for Imple-menting Protection Rings" (ACM, Vol. 15, No. 3, Mar. 1972)	1972
Saltzer et al., "The Protection of Information in Com-puter Systems" (IEEE Proceedings, Vol. 63, No. 9, Sept. 1975)	1975
Li et al., "Symbian OS platform security model," available at https://www.usenix.org/system/files/login/articles/73507-li.pdf	2010
Philip Zimmermann, "Pretty Good Privacy: RSA Pub-lic Key Cryptography for the Masses" PGP User's Guide. Version 1.0, June 1991), available at https://www.tech-insider.org/free-software/research/acrobat/910605.pdf	1991
B. Ramsdell, S/MIME Version 3 Message Specifica-tion, IETF RFC 2633, June 1999, available at https://datatracker.ietf.org/doc/html/rfc2633	1999
Mostafa, "Transporting data between wireless applica-tions using a messaging system—MMS" (Wireless Comms. and Mobile Computing, July 7, 2006)	2006
The Secure Sockets Layer ("SSL") Protocol, V. 3.0, available at https://web.archive.org/web/19970614041044/http://home.netscape.com/eng/ssl3/ssl-toc.html and https://web.archive.org/web/19970617034012/http://home.netscape.com/eng/ssl3/3-SPEC.HTM#1	1997
D-Bus Specification V0.12, available at https://web.archive.org/web/20071218065028/http://dbus.freedesktop.org:80/doc/dbus-specification.html#uuids	2007
Peter James, Secure Portable Execution Environments: A Review of Available Technologies ("James")	2008
Malcom Taylor et. al., Extended Abstract: A Hardware-Assisted Data Hiding Based Approach in Building High Performance Secure Execution Systems ("Taylor")	2008

Debajit Ghosh, *Building Push Applications for Android* (May 20, 2010) ("2010 Google IO")	2010
Android Cloud to Device Messaging Framework Developers Page, https://developers.google.com/android/c2dm/ ("C2DM Developers Page"), *archived at* https://web.archive.org/web/20121004073640/https://developers.google.com/android/c2dm/ (*see also* http://code.google.com/android/c2dm/)	2012
Andy Rubin, *Where's my Gphone?*, Google Official Blog, https://googleblog.blogspot.com/2007/11/wheres-my-gphone.html (November 5, 2007) ("Gphone Article")	2007
This is the droid you're looking for, Android Developers Blog, https://android-developers.googleblog.com/2007/11/posted-by-jason-chen-android-advocate.html (November 12, 2007) ("Android Developers Blog")	2007
Download the Android SDK, Google Android Blog, https://googleandroidblog.blogspot.com/2007/11/download-android-sd (November 16, 2007) ("Android SDK m3-rc20a")	2007
Jon Oberheide, *Remote Kill and Install on Google Android*, https://jon.oberheide.org/blog/2010/06/25/remote-kill-and-install-on-google-android/ (June 25, 2010) ("Oberheide Article")	2010
Ron Amadeo, *A History of Pre-Cupcake Android Codenames*, ANDROID POLICE, https://www.androidpolice.com/2012/09/17/a-history-of-pre-cupcake-android-codenames/ (September 17, 2012) ("Android Codenames Article")	2012
SDK Archives, https://developer.android.com/sdk/older_releases.html ("SDK Archives")	
Ron Amadeo, *The (updated) History of Android*, ARS TECHNICA, https://arstechnica.com/gadgets/2016/10/building-android-a-40000-word-history-of-googles-mobile-os/6/#1.0 (October 31, 2016) ("History of Android Article")	2016
Android - An Open Handset Alliance Project, *archived at* https://web.archive.org/web/20071127104310/http://code.google.com/android/index.html	2007

Welcome to Android, *archived at* https://web.archive.org/web/20071126222919/http://code.google.com/android/documentation.html	2007
What is Android?, *archived at* https://web.archive.org/web/20071127134521/http://code.google.com/android/what-is-android.html	2007
ZDNet, MWC08: Hands-on with a working Google Android device (February 12, 2008), *available at* https://www.zdnet.com/article/mwc08-hands-on-with-a-working-google-android-device/	2008
Android Demo, November 11, 2007, *available at* https://www.youtube.com/watch?v=1FJHYqE0RDg&ab_channel=AndroidDevelopers; *see also* https://web.archive.org/web/20071208011550/http://www.youtube.com/watch?v=I6ObTqIiYfE&feature=user#	2007
Android Versions m3-rc20a (Nov 12, 2007), m3-rc22a (Nov 16, 2007), m3-rc37a (Dec 14, 2007), and m5-rc14 (Feb 12, 2008), *see* https://developer.android.com/sdk/older_releases; *see also* https://web.archive.org/web/20071114114445/http://code.google.com/android/download.html (November 14, 2007); https://android-developers.googleblog.com/2007/12/life-can-be-tough-here-are-few-sdk.html; https://web.archive.org/web/20080217071331/https://code.google.com/android/migrating/m3-to-m5/changes.html; https://android-developers.googleblog.com/2008/02/android-sdk-m5-rc14-now-available.html. Each of these versions, alone or in combination with each other, anticipates or renders obvious the Asserted Claims.	2007
Release Notes for Older SDK Versions, *available at* https://developer.android.com/sdk/OLD_RELEASENOTES#m3-rc20a, https://developer.android.com/sdk/OLD_RELEASENOTES#m3-rc22a, https://developer.android.com/sdk/OLD_RELEASENOTES#m3-rc37a, and https://developer.android.com/sdk/OLD_RELEASENOTES#m5-rc14.	2007

Android.content.Intent, *archived at* https://web.archive.org/web/20071126174610/http://code.google.com/android/reference/android/content/Intent.html	2007
android.content.IntentReceiver, *archived at* https://web.archive.org/web/20071117195953/http://code.google.com/android/reference/android/content/IntentReceiver.html#onReceiveIntent(android.content.Context,%20android.content.Intent)	2007
Android.content.Context, *archived at* https://web.archive.org/web/20071128144049/http://code.google.com/android/reference/android/content/Context.html#startActivity(android.content.Intent)	2007
Google APIs and Services in Android, *archived at* https://web.archive.org/web/20071203160805/http://code.google.com/android/toolbox/google-apis.html	2007
com.google.android.xmppService, *archived at* https://web.archive.org/web/20071128120141/http://code.google.com/android/reference/com/google/android/xmppService/package-summary.html	2007
com.google.android.xmppService.IXmppService, *archived at* https://web.archive.org/web/20071121001747/http://code.google.com/android/reference/com/google/android/xmppService/IXmppService.html	2007
com.google.android.xmppService.IXmppSession, *archived at* https://web.archive.org/web/20071125081905/http://code.google.com/android/reference/com/google/android/xmppService/IXmppSession.html#sendDataMessage(java.lang.String,%20android.content.Intent)	2007
com.google.android.gtalkservice, *archived at* https://web.archive.org/web/20080511235039/http://code.google.com/android/toolbox/google-apis.html	2008
com.google.android.gtalkservice.IChatSession, *archived at* https://web.archive.org/web/20080517024311/http://code.google.com/android/reference/com/google/android/gtalkservice/IChatSession.html	2008
java.net.ServerSocket - Android, *archived at* https://web.archive.org/web/20071115041511/http://code.google.com/android/reference/java/net/ServerSocket.html	2007

java.net.Socket, *archived at* https://web.archive.org/web/20071116202919/http://code.google.com/android/reference/java/net/Socket.html	2007
javax.net.ssl.SSLSocket - Android, *archived at* https://web.archive.org/web/20080421122852/http://code.google.com/android/reference/javax/net/ssl/SSLSocket.html	2008
java.security.KeyStore.PrivateKeyEntry - Android, *archived at* https://web.archive.org/web/20080724135231/http://code.google.com/android/reference/java/security/KeyStore.PrivateKeyEntry.html	2008
The SSL Protocol Version 3.0 (November 18, 1996), *available at* https://datatracker.ietf.org/doc/html/draft-ietf-tls-ssl-version3-00	1996
XEP-0035: SSL/TLS Integration (November 5, 2003), *available at* https://xmpp.org/extensions/xep-0035.html	2003
Security and Permissions in Android, *archived at* https://web.archive.org/web/20071130085113/http://code.google.com/android/devel/security.html#manifest	2007
Android Building Blocks, *archived at* https://web.archive.org/web/20071205131148/http://code.google.com/android/devel/building-blocks.html	2007
Accessing Content Providers, *archived at* https://web.archive.org/web/20071126171746/http://code.google.com/android/devel/data/contentproviders.html	2007
android.app.NotificationManager, *archived at* https://web.archive.org/web/20071215121116/http://code.google.com/android/reference/android/app/NotificationManager.html	2007
Google I/O 2008 - Inside the Android Application Framework (June 3, 2008), *available at* https://www.youtube.com/watch?v=TkPiXRNee7A&ab_channel=GoogleforDevelopers	2008
Nazmul Idris, *Android Activity and Sub-activity Tutorial*, Developer Life, July 15, 2008, *available at* https://developerlife.com/2008/07/15/android-app-lifecycle-activity-intent-and-service-draft/	2008

Google Talk on Android (Sep 30, 2008), *available at* https://www.youtube.com/watch?v=C3G4Wv6sns4&ab_channel=GoogleMobileBlog	2008
T-Mobile Unveils the T-Mobile G1 — the First Phone Powered by Android (Sep 22, 2008), *available at* https://www.t-mobile.com/news/press/t-mobile-unveils-the-t-mobile-g1-the-first-phone-powered-by	2008
T-Mobile G1 unveiled (September 23, 2008), CNET, available at https://www.cnet.com/pictures/photos-t-mobile-g1-unveiled/	2008
Android at 15: Everything the T-Mobile G1 had that your phone doesn't, *available at* https://www.androidpolice.com/t-mobile-g1-15-years-later/#expandable-storage.	
In Pictures: 15 Killer Android Apps for the G1, PCWorld, *available at* https://www.pcworld.com/article/537123/android_apps-3.html, *archived at* https://web.archive.org/web/20081020041608/http://www.pcworld.com/article/152384-11/in_pictures_15_killer_android_apps_for_the_g1.html	2008
Shop Savvy Sample Products (Oct 15, 2008), *available at* https://www.youtube.com/watch?app=desktop&v=DoiAehrcv8c&ab_channel=RylanBarnes	2008
The Best Android Apps of 2009, WSJ (December 22, 2009), *available at* https://www.wsj.com/articles/BL-DGB-9571	December 2009
Paid Android Apps Coming Early 2009, Phandroid (October 22, 2008), *available at* https://phandroid.com/2008/10/22/paid-android-apps-coming-early-2009/	2008
iTunes Rewind Highlights The Best Apps Of 2009, TechCrunch+ (December 8, 2009), *available at* https://techcrunch.com/2009/12/08/itunes-rewind-highlights-the-best-apps-of-2009/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAABwpWGIQMLH9RH4dCLei90rUZtxchUu69NlOPHAlf1E37FwRi6Z2Z7VkFWpumOCGRD-kUeR6GisiHEuV6-t01ttp6uEvYkqyLd4uzUO1K-ZmrcvqRg5cVL3a5Ll8-wTJcGr2NVllDrFmCtqFJbl010i5YewT03omj6v2Uf68Ov44	December 2009

L. Parziale et al, TCP/IP Tutorial and Technical Overview, IBM (December 2006)	2006
W. Richard Stevens, TCP/IP Illustrated, Volume 1, The Protocols	1994
TCP/IP For Dummies, 6th Ed.	August 11, 2009
B. Forouzan, TCP/IP Protocol Suite, 4th Ed.	2010
B. Forouzan, TCP/IP Protocol Suite, 3rd Ed.	2006
WAP Push Architectural Overview, Version 08-Nov-1999 ("WAP Architectural Overview")	1999
WAP Wireless Telephony Application, Version 08-Sep-2001, WAP-266-WTA-20010908-a ("WAP Wireless Telephone Application")	2001
WAP Service Indication, Version 31-July-2001, WAP-167-ServiceInd-20010731-a ("WAP Service Indication")	2001
WAP Push OTA Protocol, Version 17-Feb-2000, WAP-189-PushOTA ("WAP Push OTA Protocol Specification")	2000
WAP Push Message, Version 16-August-1999 ("WAP Push Message Specification")	1999
WAP Push Access Protocol, Version 29-April-2001, WAP-247-PAP-20010429-a ("WAP Push Access Protocol")	2001
WAP MMS Architecture Overview, Version 25-April-2001 ("WAP MMS Architecture Overview")	2001
Mobile Content: Amp'd Mobile, *archived at* https://web.archive.org/web/20070927191004/http://www.wirelessweek.com/article.aspx?id=138546 ("Amp'd Mobile launched its business in late 2005 as a youth-targeted data-centric service that uses Verizon Wireless'EV-DO network.")	2007
Amp'd mobile website, *archived at* http://web.archive.org/web/20070315003328/http://get.ampd.com/	2007
Amp'd mobile website – Amp'd phones, *archived at* http://web.archive.org/web/20070706044539/https://orders.ampd.com/order/phones.jsp	2007

Amp'd Mobile Wikipedia, *archived at* https://en.wikipedia.org/wiki/Amp%27d_Mobile	
Lynnette Luna, *Amp'd Mobile: A Better Content Provider Than MVNO*, Fierce Wireless (June 4, 2007, 6:59 AM), https://www.fiercewireless.com/wireless/amp-d-mobile-a-better-content-provider-than-mvno ("Fierce Wireless Article")	2007
Rhonda Wickham, *Mobile Content; Amp'd Mobile*, WIRELESS WEEK (Apr. 1, 2007), https://www.wirelessweek.com/news/2007/04/mobile-content-ampd-mobile ("Wireless Week Article")	2007
Mobile Content: Amp'd Mobile, *archived at* https://web.archive.org/web/20070927191004/http://www.wirelessweek.com/article.aspx?id=138546 ("Amp'd Mobile launched its business in late 2005 as a youth-targeted data-centric service that uses Verizon Wireless'EV-DO network.")	2007
The Legacy of DES, *available at* https://www.schneier.com/blog/archives/2004/10/the_legacy_of_d.html	2004
Announcing The Advanced Encryption Standard (AES) (November 26, 2001), *available at* https://nvlpubs.nist.gov/nistpubs/FIPS/NIST.FIPS.197.pdf	2001
J. Salowey, et al, AES Galois Counter Mode (GCM) Cipher Suites for TLS, Network Working Group (August 2008), *available at* https://datatracker.ietf.org/doc/html/rfc5288	2008
P. Chown, et al, Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS), Network Working Group (June 2002), *available at* https://datatracker.ietf.org/doc/html/rfc3268	2002
Generic Content Download Over The Air, Version 1.0, OMA-Download-OTA-V1_0-20040625-A, Open Mobile Alliance (June 25, 2004)	2004

Moreover, the prior art non-patent publications listed on the face of the Asserted Patents discloses (i.e., anticipates and/or renders obvious) the elements of the Asserted Claims either explicitly or inherently, and Google reserves the right to rely on any such reference.

D. **Prior Art Systems and/or Knowledge**

The Asserted Claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on prior art items offered for sale or publicly used or known or prior inventions, such as prior art products, including systems embodying any alleged inventions or structures described in, and/or any knowledge disclosed by or referred to in, any of the prior art patents or prior art publications identified above in Sections III.B and III.C. Because Google has not yet completed discovery in this case, Google reserves the right to supplement theses Contentions with facts, documents, or other information learned at a later point through third-party discovery or further investigation. For example, Google expects to receive documents from additional third parties either through informal requests or under subpoenas that are believed to have knowledge, documentation, and/or corroborating evidence concerning some of the prior art listed above and below and/or additional prior art. These third parties include without limitation the authors, inventors, or assignees of the references listed in these Contentions. In addition, Google reserves the right to assert invalidity under other sections of 35 U.S.C. § 102 to the extent that discovery or further investigation yield information forming the basis for such invalidity.

Moreover, all of the systems and products listed below qualify as prior art to each of the Asserted Patents under at least pre-AIA 35 U.S.C. §§ 102(a)/(b). Such systems and products were known, used, offered for sale, and/or sold in the United States prior to the appropriate priority date corresponding to each of the Asserted Patents.

Devices
Android Devices (including HTC Dream/T-Mobile G1, Nexus One, and emulators)
Apple Devices (including iPhone, iPhone 3G, and emulators)
BlackBerry Devices (including BlackBerry Curve 8330/8900, BlackBerry Bold 9000, BlackBerry Storm 9500/9530, and emulators)
Symbian Devices (including Nokia E90, N95, and emulators)
Windows Mobile Devices (including devices with Windows Mobile installed such as HTC Ozone, Samsung C6620, and emulators)
Windows XP Devices (including devices with Windows XP installed and emulators)

Motorola 815E
Any mobile devices supporting WAP

Operating Systems
Android including Android Versions m3-rc20a (Nov 12, 2007), m3-rc22a (Nov 16, 2007), m3-rc37a (Dec 14, 2007), and m5-rc14 (Feb 12, 2008)
iPhone OS including iPhone OS 1.0 (released June 29, 2007) and iPhone OS 2.0 (released July 11, 2008)
BlackBerry OS including BlackBerry OS 4.0 (released March 2002), BlackBerry OS 4.3, 4.5, 4.6, 4.7 (released October 2007 – November 2008)
Symbian OS including Symbian OS 9.1 (released 2005), Symbian OS 9.2, 9.3 (released 2006), Symbian OS 9.4 (released 2007), and associated platforms including S60 3rd Edition (released 2001/2002), S60 3rd Edition, Feature Pack 1 and Feature Pack 2, and S60 5th Edition (released October 2008)
Windows Mobile including Windows Mobile 5.0 (released May 9, 2005), Windows Mobile 6.0 (released February 12, 2007), and Windows Mobile 6.1 (released April 1, 2008)
Windows XP including its various editions such as Home Edition and Tablet PC Edition (Windows XP was initially released October 2001)

Applications/Services/APIs
GTalkService, as implemented in Android Versions m3-rc20a (Nov 12, 2007), m3-rc22a (Nov 16, 2007), m3-rc37a (Dec 14, 2007), and m5-rc14 (Feb 12, 2008)
Apple Applications/Services (including Apple Push Notifications, App Store, iTunes, Mail, Calendar, MobileMe, and Backup)
BlackBerry Applications/Services (Mobile Data Service (MDS), BlackBerry Application Storefront / BlackBerry App World)
Microsoft Applications/Services/APIs (including Microsoft Outlook Mobile, Connection Manager, Windows Live, MyPhone, Direct Push, Messaging API (MAPI), Outlook Object Model (POOM) API, Wireless Application Protocol (WAP) API, HTTPS/SSL related APIs, CryptoAPI, Security Support Provider Interface (SSPI), Message Queuing (MSMQ) API, and Open Mobile Alliance (OMA) device management for over-the-air (OTA) provisioning)
Nokia/ProcessOne Push Platform[4]
D-BUS commit 7f0990abc74a3c6aa76211a064b57f081690d340, released December 8, 2008, *archived at* https://android.googlesource.com/platform/external/dbus/+/7f0990abc74a3c6aa76211a064b57f081690d340
Amp'd mobile
Wireless Application Protocol
MQTT
Vodafone Betavine

[4] See, e.g., https://www.process-one.net/en/customers/nokia/

Servers
Servers supporting any of the above-identified Applications/Services/APIs
Servers supporting Microsoft Exchange Server
Servers supporting BlackBerry Enterprise Server ("BES") including BES for Microsoft Exchange and BES for MDS
Servers supporting BlackBerry Application Storefront
Servers supporting Apple Push Notifications
Servers supporting Nokia/ProcessOne Push Platform
Servers supporting GTalkService
Servers supporting functionality described in U.S. Patent App. No. 2005/0169285A1 ("Wills") or related functionalities

The Federal Circuit has held that "[t]he proper test for the public use prong of the [pre-AIA] § 102(b) statutory bar is whether the purported use: (1) was accessible to the public; or (2) was commercially exploited." *See Invitrogen Corp. v. Biocrest Mfg. L.P.*, 424 F.3d 1374, 1380 (Fed. Cir. 2005). Additionally, the on-sale bar of § 102(b) is triggered when the invention is both (1) the subject of a commercial offer for sale not primarily for experimental purposes and (2) ready for patenting. *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 67 (1998). Each of the systems and products listed above meets these criteria.

The above discussion is not exclusive. Google reserves the right to rely on both the listed products as well as other products that may become known and/or relevant during the course of this matter.

Any citation to one or more of these prior art references, or other prior art references regarding any method or system, should be construed to constitute not only a citation to the prior art reference itself but also a reference to the system itself. Discovery is ongoing in this case, and Google will supplement these Contentions if and when more information becomes available. For example, Google intends to seek discovery from several non-parties, including Nokia, BlackBerry,

Apple, Openwave, and Microsoft. Accordingly, Google reserves the right to modify, amend, and/or supplement these contentions as information becomes available from non-parties.

E. Prior Art Under 35 U.S.C. §§ 102(f) and 102(g)

Each prior art patent, publication, or product identified above was either effectively filed or issued (for patents), published (for publications) or known, used, offered for sale or sold (for products) before the earliest claimed priority date of the Asserted Patents to which it is applied for invalidity, and none was abandoned, suppressed, or concealed, so each such reference also constitutes evidence of prior invention pursuant to 35 U.S.C. § 102(g), if it is in the U.S. The persons or entities involved with each such invention include the named inventors on the above-identified patents, the authors listed on the above-identified publications, and the entities and individuals identified in connection with the above-identified products. In addition, each of the prior art systems and products identified above constitutes a prior invention pursuant to 35 U.S.C. § 102(g).

Google reserves the right to assert that the Asserted Claims are invalid under 35 U.S.C. § 102(f) in the event Google obtains additional evidence that the inventors named in any of the Asserted Patents did not invent the subject matter claimed therein. Should Google obtain such evidence, it will provide the name of the person(s) from whom and the circumstances under which the alleged invention or any part of it was derived.

Because Google has not yet completed discovery in this case, including taking depositions of the named inventors of the Asserted Patents, reviewing Headwater's productions, and seeking discovery of prior inventions by third parties, Google reserves the right to supplement these Contentions with facts, documents, or other information learned at a later point through discovery or further investigation.

IV. ANTICIPATION AND OBVIOUSNESS (35 U.S.C. §§ 102 AND 103)

The Asserted Claims are anticipated by and/or rendered obvious in view of one or more items of prior art identified in these Contentions, alone and/or in combination. Based on its investigation to date, Google has provided in the lists above the prior art presently known to Google that anticipates and/or renders obvious the Asserted Claims under at least Headwater's actual and/or apparent application of those claims. The prior art identified in these Contentions discloses (i.e., anticipates and/or renders obvious) the elements of the Asserted Claims either explicitly or inherently.

Prior art patents or publications included in these Contentions may be related (such as a divisional, continuation, continuation-in-part, parent, or child) to earlier or later-filed patents or publications, may have counterparts filed in other jurisdictions, or may incorporate (or be incorporated by) other patents or publications by reference. The listed patents or publications are intended to be representative of these other patents or publications to the extent they exist. Google accordingly reserves the right to modify, amend, or supplement these Contentions with these related patents or publications, as well as other prior art references, upon further investigation. Additionally, any reference in these Contentions, including the exhibits thereto, to a specific subsection or subsections of 35 U.S.C. § 102, is merely exemplary, and Google expressly reserves the right to rely on additional or other sections of 35 U.S.C. § 102, as appropriate.

Although Google's investigation is ongoing, information available to date indicates that each prior art system disclosed above was at least (1) known or used in this country before the alleged invention of the claimed subject matter of the Asserted Patents; (2) in public use, on sale, or offered for sale in this country more than one year before the effective filing date for the Asserted Patents; or (3) invented and not abandoned, suppressed, or concealed prior to the alleged invention of the Asserted Patents.

Much of the art identified in these Contentions reflects common knowledge and the state of the art prior to the filing or asserted priority dates of the Asserted Patents. As such, the obviousness combinations in these Contentions are intended to be exemplary. There are many possible combinations of the disclosed prior art, and the inclusion of certain exemplary combinations does not exclude other combinations. For example, where a particular contention calls for combining references, any of a number of references can be combined.

Depending on the construction of the claims of the Asserted Patents, and/or positions that Headwater or its expert witnesses may take concerning claim interpretation, infringement, and/or invalidity issues, different ones of the charted prior art references in the Exhibits may be of greater or lesser relevance and different combinations of these references may be implicated. Given the uncertainty, the charts may reflect alternative applications of the prior art against the Asserted Claims.

Citations to particular excerpts from the prior art are likewise exemplary and not exhaustive of the evidentiary support for the invalidity of the Asserted Patents contained in and/or concerning a particular piece of prior art. Google may rely on uncited portions of the prior art references, other documents or operational systems, the "Background of the Invention" and other relevant portions of the Asserted Patents, the prosecution histories of the Asserted Patents (including all cited references) and their related patents and applications, and forthcoming fact and expert testimony to provide context to aid in understanding the prior art reference and/or the cited portions of the references. Where Google cites to a particular figure in a reference, the citation encompasses the caption and description of the figure and any text relating to or discussing the figure. Likewise, where Google cites text referring to a figure, the citation includes the figure as well (and vice versa).

A. Prior Art Under 35 U.S.C. § 102

Google contends that at least the primary prior art references (Exs. A-1 to A-22 and Exs. B-1 to B-22) identified below, by themselves, anticipate one or more of the Asserted Claims:

Exhibits	Primary References and/or Systems
A-1	GTalkService
A-2	Apple Push Notifications
A-3	OpenWave MAG
A-4	MQTT
A-5	Vodafone Betavine
A-6	Amp'd
A-7	BlackBerry
A-8	Microsoft Exchange Server
A-9	Wireless Application Protocol
A-10	Nokia
A-11	MMS
A-12	Houghton
A-13	Chickering
A-14	Herzog
A-15	Kalibjian
A-16	Lee
A-17	Munson
A-18	Shell
A-19	Wills
A-20	Qian
A-21	Tyhurst
A-22	Lazaridis
A-23	Ogawa
A-24	Shen
A-25	Chia
B-1	GTalkService
B-2	Apple Push Notifications
B-3	OpenWave MAG
B-4	MQTT
B-5	Vodafone Betavine
B-6	Amp'd
B-7	BlackBerry
B-8	Microsoft Exchange Server
B-9	Wireless Application Protocol
B-10	Nokia
B-11	MMS
B-12	Houghton
B-13	Chickering

B-14	Herzog
B-15	Kalibjian
B-16	Lee
B-17	Munson
B-18	Shell
B-19	Wills
B-20	Qian
B-21	Tyhurst
B-22	Lazaridis
B-23	Ogawa
B-24	Shen
B-25	Chia

Specifically, Google contends that at least the references and/or systems in the table above independently anticipate the Asserted Claims under 35 U.S.C. §§ 102(a), (b), (e), (f), and/or (g), as set forth in the charts attached as:

- Exhibits A-1 through Exhibits A-25 for the asserted claims of the ’192 patent;
- Exhibits B-1 through Exhibits B-25 for the asserted claims of the ’320 patent;

Google’s claim charts provide exemplary citations to the prior art references that teach or suggest every element of each of the Asserted Claims of the Asserted Patent. To the extent that an element of an Asserted Claim is not shown in a chart, the Asserted Claims would have been obvious based on a combination of one or more other prior art references, as set forth below and in the “A” and “B” Exhibits.

These charts, however, are exemplary. The claimed features are similarly described and suggested in other places (including in all of the documents cited during prosecution of each piece of prior art), and also were present when prior-art systems practicing the described prior art were used before the application that ultimately led to the Asserted Patents. Thus, where patents or other printed materials are disclosed, Google reserves the right to also rely on those materials as descriptions of systems, devices, or methods referenced therein, publicly used, and/or on sale or

known in the United States. Further, Google reserves the right to rely on other evidence of the prior art beyond merely the exemplary references cited in the charts attached as Exhibits.

Where patents or other printed materials are disclosed, Google reserves the right to also rely on those materials as descriptions of systems, devices, or methods referenced therein, publicly used, and/or on sale or known in the United States. Google reserves the right to also use those references to invalidate the claim under 35 U.S.C. § 103.

B. Prior Art Under 35 U.S.C. § 103

To the extent that a primary reference is deemed, by itself, not to anticipate or render obvious a claim for failing to teach one or more limitations, the claim would nonetheless have been obvious to a POSITA at the time of the invention by the combination of the primary reference with one or more other primary references and/or the knowledge of someone skilled in the art.

Moreover, Exhibits A-Obviousness and B-Obviousness list secondary prior art references and identify, on limitation-by-limitation bases, exemplary disclosures where each secondary reference teaches the limitations of the asserted claims. To the extent that a primary reference is deemed, by itself, not to anticipate or render obvious a claim for failing to teach one or more limitations, the claim would nonetheless have been obvious to a POSITA at the time of the invention by the additional combination of the primary reference with one or more of the references listed as disclosing those alleged missing limitations in A-Obviousness and B-Obviousness. To the extent that an element of an Asserted Claim is not shown in a chart, the Asserted Claims would have been obvious based on a combination of one or more other prior art references, as set forth below and in the "A" and "B" Exhibits.

As such, a POSITA would have been motivated to combine any reference set forth in at least the following charts:

- Exhibit A-1 through Exhibit A-25 and Exhibit A-Obviousness for the asserted claims of the ’192 patent;
- Exhibit B-1 through Exhibit B-25 and Exhibit B-Obviousness for the asserted claims of the ’320 patent;

Such combinations would be achieved, for example, by merely combining the disclosures described in the respective claim charts for each reference.

These charts, however, are exemplary. The claimed features are similarly described and suggested in other places (including in all of the documents cited during prosecution of each piece of prior art), and also were present when prior-art systems practicing the described prior art were used before the application that ultimately led to the Asserted Patents. Where patents or other printed materials are disclosed, Google reserves the right to also rely on those materials as descriptions of systems, devices, or methods referenced therein, publicly used, and/or on sale or known in the United States. Further, Google reserves the right to rely on other evidence of the prior art beyond merely the exemplary references cited in the charts attached as Exhibits.

Google’s assertion that the combinations above render the asserted claims obvious under 35 U.S.C. § 103 is not, and is not intended to be, an admission or suggestion that each reference does not independently anticipate the Asserted Claims under 35 U.S.C. § 102. *See Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983) (“‘[A]nticipation is the epitome of obviousness.’”) (quoting *In re Fracalossi*, 681 F.2d 792, 794 (CCPA 1982)). Further, the fact that certain secondary references are listed solely in Exhibits A-Obviousness, B-Obviousness, C-Obviousness, D-Obviousness, E-Obviousness is not intended to be an admission or suggestion that each individual reference cited therein does not also independently anticipate and/or render obvious the Asserted Claims under 35 U.S.C. §§ 102 and 103. Google expressly reserves the right to rely on any secondary reference cited in A-Obviousness and B-Obviousness as if it were set forth as a primary reference in Section IV.A, *supra*. Finally, the inclusion of the exemplary

combinations in the attached Exhibits does not exclude other combinations of prior art disclosed in this or previous sections.

C. Exemplary Combinations

Exemplary combinations of prior art references that render the Asserted Claims invalid as obvious under 35 U.S.C. § 103 are described in:

- Exhibit A-Obviousness for the asserted claims of the ’192 patent;
- Exhibit B-Obviousness for the asserted claims of the ’320 patent;

Moreover, each prior art reference or system may be combined with (1) information known to persons skilled in the art at the time of the alleged invention; (2) any other anticipatory prior art references or systems; and (3) any of the additional prior art identified above or in the prosecution of the Asserted Patents and related applications.

Below are examples of prior art references and/or systems that would have been combined by one of ordinary skill in the art at the time of the alleged invention. These combinations are merely examples.

1. ’192 patent

The Asserted Claims of the ’192 patent are rendered obvious by:

- GTalkService alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Apple Push Notifications alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- OpenWave MAG alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- MQTT alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Vodafone Betavine alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;

- Amp'd alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- BlackBerry alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Microsoft Exchange Server alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Wireless Application Protocol alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Nokia alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- MMS alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Houghton alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Chickering alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Herzog alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Kalibjian alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Lee alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Munson alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Shell alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Wills alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Qian alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;
- Tyhurst alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;

- Lazaridis alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;

- Ogawa alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;

- Shen alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;

- Chia alone or in combination with one or more of the references identified in Exhibits A1-A25 and A-Obviousness;

- Any combination of one or more of the references and/or systems identified in Exhibits A1-A25 and A-Obviousness.

2. ’320 patent

- GTalkService alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;

- Apple Push Notifications alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;

- OpenWave MAG alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;

- MQTT alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;

- Vodafone Betavine alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;

- Amp’d alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;

- BlackBerry alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;

- Microsoft Exchange Server alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;

- Wireless Application Protocol alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;

- Nokia alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;

- MMS alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Houghton alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Chickering alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Herzog alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Kalibjian alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Lee alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Munson alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Shell alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Wills alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Qian alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Tyhurst alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Lazaridis alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Ogawa alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Shen alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Chia alone or in combination with one or more of the references identified in Exhibits B1-B25 and B-Obviousness;
- Any combination of one or more of the references and/or systems identified in Exhibits B1-B25 and B-Obviousness.

D. Motivations to Combine

To the extent a finder of fact finds that any primary prior art reference does not disclose one or more limitations of an asserted claim, the asserted claim is nevertheless obvious because the allegedly missing limitations contain nothing beyond ordinary improvements. In other words, the asserted claim combines known elements to achieve predictable results or chooses between clear alternatives known to those of skill in the art, particularly in view of the state of the art as reflected in the relevant prior art.

Moreover, as explained above, it would have been obvious to a person of skill in the art at the time of the alleged invention of the asserted claims to combine any primary reference with any combination of other primary references or secondary references so as to practice the asserted claims. To the extent that Headwater argues that any concept claimed in the asserted claims is not disclosed in a primary reference, it would, at a minimum, have been obvious to adapt the primary reference to include the concept or combine it with other primary references or secondary references that disclose the concept. Each concept described and claimed in the Asserted Patents was known to those of skill in the art as available design choices for various network data saving features, battery saving features, and network connectivity management functions.

The Supreme Court has held that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). "When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one." *Id*. at 417. As the Supreme Court made clear, "[f]or the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *Id*.

To determine whether there is an apparent reason to combine the known elements in the fashion claimed by the patent at issue, a court can "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." *Id*. at 418. For example, obviousness can be demonstrated by showing "there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims." *Id*. at 420. "[A]ny 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*. Common sense also teaches that "familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*.

However, the Supreme Court in *KSR* held that a claimed invention can be obvious even if there is no explicit teaching, suggestion, or motivation for combining the prior art to produce that invention. In summary, *KSR* holds that patents that are based on new combinations of elements or components already known in a technical field may be found to be obvious. *See, generally*, *KSR*, 127 S.Ct. 1727. Specifically, the Court in *KSR* rejected a rigid application of the "teaching, suggestion, or motivation [to combine]" test. *Id*. at 1741. "In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. What matters is the objective reach of the claim." *Id*. at 1741-1742. "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 1742. A key inquiry is whether the "improvement is more than the predictable use of prior art elements according to their established functions." *Id*. at 1740.

The rationale to combine or modify prior art references is significantly stronger when, as here, the references seek to solve the same problem, come from the same field, and correspond well to each other. *In re Inland Steel Co*., 265 F.3d 1354, 1362 (Fed. Cir. 2001). The Federal Circuit has held that two references may be combined as invalidating art under similar circumstances, namely "[the prior art] focus[es] on the same problem that the . . . patent addresses: enhancing the magnetic properties of . . . steel. Moreover, both [prior art references] come from the same field . . . . Finally, the solutions to the identified problems found in the two references correspond well." *Id*. at 1364 (concerning patents and prior art relating to improving the magnetic and electrical properties of steel).

In view of the Supreme Court's *KSR* decision, the PTO issued a set of Examination Guidelines. 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). Those Guidelines summarized the *KSR* decision and identified various rationales for finding a claim obvious, including those based on other precedents. Those rationales include:

> (A) Combining prior art elements according to known methods to yield predictable results;
>
> (B) Simple substitution of one known element for another to obtain predictable results;
>
> (C) Use of known technique to improve similar devices (methods, or products) in the same way;
>
> (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
>
> (E) "Obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
>
> (F) 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;

> (G) 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.

Id. at 57529. The above rationales likewise apply in rendering obvious the asserted claims of the Asserted Patents.

The references disclosed herein, alone or in combination, contain an explicit and/or implicit teaching or motivation to combine them due to the following: (1) the knowledge generally available to a POSITA; (2) the prior art references as understood by a POSITA; (3) the nature of the problem to be allegedly solved; (4) the fact that each prior art reference addresses similar alleged problems; and (5) the knowledge of a POSITA that the disclosed elements had been or could be used together.

As an example of those reasons and motivations to combine, the cited prior art generally relates to transmitting information from a server to a client on an end user device over a network, and thus constitutes analogous art within the same field of endeavor. *See* Exs. A-1 through A-25, A-Obviousness, B-1 through B-25, B-Obviousness. The prior art references depict, disclose, and discuss similar components and techniques for pushing notifications, buffering content, communicating with devices, and allowing encryption of those communications. *Id.* Thus, a person of ordinary skill in the art would understand the teachings of the references to be applicable to one another. A POSITA would have also found it obvious to implement (i.e., obvious to try) such combinations in order to utilize these well-known networking techniques in end-user devices capable communicating data for Internet service activities over both wireless wide area networks and wireless local area networks. *Id.*

For example, a POSITA would look to the primary and secondary references discussed above to improve or tailor the disclosures thereof to help device manufacturers, wireless carriers,

and customers reduce data usage and network congestion, extend battery life by decreasing power consumption, secure client-server communications, and enable users to stay connected. A POSITA would have understood and been aware of motivations to conserve system resources, increase battery life, reduce network congestion, secure communications, and cut cost by limiting data usage when communicating over a network. Accordingly, a POSITA would seek to combine or modify the disclosure of any given primary and secondary references to achieve those goals, and would have readily understood that doing so could increase device/network performance, improve user interactions and/or satisfaction, and reduce cost. *See, e.g.*, Houghton at Abstract ("This mobile-initiated permanent connection allows the server to pass or push messages from outside the operator's firewall to the mobile terminal at any time."); TS-23.140 at 17 ("Figure 2 shows that multimedia messaging may encompass many different network types. . . . This approach enables messaging in 2G and 3G wireless networks to be compatible with messaging systems found on the Internet."); Herzog at Abstract (disclosing facilitation of client-server communications through gateway); Kalibjian at [0001]-[0004] (disclosing improvements in security); Lee at [0008] (providing integrated push service); Munson at 2:3-9; Shell at [0002]-[0007] (discussing security improvements); Wills at [0003]-[0013] (addressing problems with wasted resources); Qian at Abstract (providing reliable intersystem message notification); *see also* Exs. A-1 through A-25, A-Obviousness, B-1 through B-25, B-Obviousness.

In particular, a POSITA would have been motivated to allow information to be pushed down from a server to a client—to conserve power, reduce network congestion, timely update a user and reduce costly data usage associated with data-limited carrier service plans. *See, e.g.*, Houghton at 1-3 ("Push technology is characterized by the server proactively sending documents or information to a client or user. E-mail (Electronic mail) is actually a special kind of push

technology that has been prevalent for a long time. The first and most common general category of mobile content push technologies is SMS (Short Message Service) based technologies. SMS and MMS (Multimedia Messaging Service) are the most common forms of 'push' messaging in the mobile industry."); TS-23.140 at 162; Herzog at Abstract; Wills at [0003]-[0013]; *see also* Exs. Exs. A-1 through A-25, A-Obviousness, B-1 through B-25, B-Obviousness.

One of skill in the art would also have been motivated to combine the different publications and patents that were authored by employees of a given company or assigned to the same assignee and/or related to the same subject matter. Additionally, one of skill in the art would have been motivated to combine different references that were authored, developed, or invented by the same individual(s) related to the same subject matter. The common inventor/author/architect of the references demonstrate that they relate to continued work in a common field of effort and continued related developments in that field. One of skill in the art would, therefore, combine the references related to each individual. Additionally, based on the teachings of the references and/or the knowledge of one of ordinary skill, one of skill in the art would have been motivated to combine different references from the same company. For example, a POSITA would have been motivated to combine prior art systems or products (e.g., GTalkService, Apple Applications/Services (e.g., Apple Push Notifications), BlackBerry Devices, Microsoft Applications/Services/APIs, Nokia Devices with ProcessOne, and Openwave Devices) with any related or applicable patent or non-patent documentation or literature relating to that system or owned by the same entity, including for the reason that these materials are related.

Further, below are additional motivations to combine prior art for particular claim limitations. The following discussions of specific claim limitations are merely examples and are not limiting. For example, where a POSITA would have been motivated to combine references

which together render obvious limitations from the independent claims, a POSITA would have also been motivated to combine said references in such a way as to render obvious various asserted dependent claims. The motivations identified with respect to any one Asserted Patent apply with equal force to any of the other Asserted Patents by virtue of their relationship and similarities.

1. '192 patent

Google sets forth below a summary of their current understanding of the state of the art as understood as of the asserted priority date of the '192 patent for the general subject matter of the '192 patent. The information discussed in this section may have formed the background knowledge of a person of ordinary skill in the art at the time the '192 patent was filed and may have been used in determining whether and how to combine references to achieve the claimed inventions. *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"). Google expressly reserve the right to rely on each of the prior art references, systems, concepts, and technologies discussed in this Section with respect to the Asserted Patent.

Google contends that, to the extent the primary references identified in these Preliminary Invalidity Contentions do not anticipate the Asserted Claims of the '192 patent, it would have been obvious to combine any of the references, systems, concepts, or technologies discussed in this Section or in Google's obviousness charts with those primary references. Google also reserves the right to rely on the discussions of the state of the art and prior art in the '192 patent specification and its file history including file histories of related patents and foreign file histories of related patents in explaining the state of the art. Google further expressly reserve the right to supplement its summary of the background and state of the art, including, for example, with information from any of the authors or named inventors on any of the prior art references, by personnel familiar with

systems based on any of the prior art references, or any prior art systems related to prior art references, or by technical experts retained on behalf of any party. Google also expressly reserve the right to rely on any admissions by any of the named inventors, institutions with which they were associated, and Plaintiff, regarding the state of the art.

To the extent that any primary reference is deemed not to anticipate a claim for failing to teach secure message links, it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses encryption protocols. For example, as demonstrated with respect to limitations [1a] and 2], several prior art references, including at least TS-23.140, Houghton, WAP, GTalkService, Ogawa, Cohen, Tyhurst, Lu, Herzog, Lonnfors, TLS, SSL, and OMA, disclose this limitation. It would have been obvious to a person skilled in the art to incorporate such functionality, components, and/or features. For example, a POSITA would understand that each of these references generally relates to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that encryption protocols, like TLS, SSL, IpSec, and forms of symmetric key encryption, were routine design choices available for mobile systems as of the critical date. SSL, for instance, was introduced and known for over a decade by the time of the alleged invention. *See, e.g.*, The SSL Protocol Version 3.0 (November 18, 1996), *available at* https://datatracker.ietf.org/doc/html/draft-ietf-tls-ssl-version3-00. Moreover, encryption protocols were well known as of the critical date and commonly used to ensure that communications used by mobile devices and servers were kept confidential and authentic. Thus, design and market forces would have motivated a POSITA to modify any of the primary references to include encryption protocols. Further, the primary references contemplate implementations which use encryption protocols like TLS, SSL, IpSec to secure its system communication links.

E.g., javax.net.ssl.SSLSocket – Android, *archived at* https://web.archive.org/web/20080421122852/http://code.google.com/android/reference/javax/net/ssl/SSLSocket.html. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations. Further, such combinations simply utilize familiar, known encryption protocols to achive predictable results of increased security.

As another example, to the extent that any primary reference is deemed not to anticipate a claim for failing to teach networks elements or distributing messages to software components, it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses these features. For example, as demonstrated with respect to limitations [1a], [1b], [1f], [5], several prior art references, including at least Stage, Cohen, Lonnfors, Herzog, and Huskins, disclose this limitation. It would have been obvious to a person skilled in the art to incorporate such functionality, components, and/or features. For example, a POSITA would understand that each of these references generally relates to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that exchanging messages between network elements and software components on client devices, including use of TCP, UDP, IP, and other protocols, were routine design choices available for mobile systems as of the critical date. *See Google APIs and Services in Android*, Google, *available at* https://web.archive.org/web/20071203160805/http://code.google.com/android/toolbox/google-apis.html) ("Applications will frequently need to communicate between devices. . . . Google

provides an API that uses the XMPP protocol to pass messages."). Moreover, client-server applications, including the use of identifiers to direct communications to target applications on target client devices, were well known as of the critical date and commonly used to provide useful features to mobile devices to the internet. Likewise, support for of both asynchronous and periodic transmissions were known mechanisms to exchange useful communications between clients and servers. Thus, design and market forces would have motivated a POSITA to modify any of the primary references to support such communications. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations.

As another example, to the extent that any primary reference is deemed not to anticipate a claim for failing to teach buffering requests and transmitting those requests upon occurrence of various triggers, it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses these features. For example, as demonstrated with respect to limitations [1c], [1d], [1e], [9], [13], [11], [12] several prior art references, including at least Houghton, Hämäläinen, White, Holbrook, Bobo, and Munson, disclose this limitation. *See* Exs. A-Obviousness, B-Obviousness. It would have been obvious to a person skilled in the art to incorporate such functionality, components, and/or features. For example, a POSITA would understand that each of these references generally relates to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that buffering data to be transmitted at a later time in accordance with TCP, UDP, IP, and other protocols, were routine design choices available

for mobile systems as of the critical date. Moreover, client-server applications, including the use of buffers and triggers were well known as of the critical date and commonly used to provide useful features to mobile devices to the internet. Likewise, support for of both asynchronous and periodic transmissions were known mechanisms to exchange useful communications between clients and servers and could be used as triggers. Thus, design and market forces would have motivated a POSITA to modify any of the primary references to support such communications. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations.

As another example, to the extent that any primary reference is deemed not to anticipate a claim for failing to teach use of a secure execution environment, it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses this feature. For example, as demonstrated with respect to claim 4 in the attached exhibits, several prior art references, including at least Chou, Anderson, Ellison, James, and Taylor, disclose this limitation. It would have been obvious to a person skilled in the art to incorporate such functionality, components, and/or features. For example, a POSITA would understand that each of these references generally relates to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that secure execution environments were well known as of the critical date and commonly used to ensure the integrity and of processing and data carried out by certain applications where security was particularly important. At the same time a POSITA would understand that other applications, that were for example of lower priority, could execute outside

of such environments. Thus, design and market forces would have motivated a POSITA to modify any of the primary references to include authentication related features, such as use of device credentials during a service authorization sequence. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations.

As another example, to the extent that any primary reference is deemed not to anticipate a claim for failing to teach use of authentication, it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses this feature. For example, as demonstrated with respect to claim 8, several prior art references, including at least Zhilong, Chou, Rakic, and Isomursu, disclose this limitation. It would have been obvious to a person skilled in the art to incorporate such functionality, components, and/or features. For example, a POSITA would understand that each of these references generally relates to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that authentication was well known as of the critical date and commonly used to ensure the integrity and verify the identity mobile devices connected to the internet. Thus, design and market forces would have motivated a POSITA to modify any of the primary references to include authentication related features, such as use of device credentials during a service authorization sequence. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge,

disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations.

As another example, to the extent that any primary reference is deemed not to anticipate a claim for failing to teach the trigger is an "asynchronous event" (claim 1) or the expiration of a "periodic timer" (claim 9), it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses this feature. For example, several prior art references, including at least TS-23.140, Shell, WAP, Amp'd, GTalkService, Herzog, Chou, Rakic, Shenfield, Hwang, and TCP/IP disclose this limitation. It would have been obvious to a person skilled in the art to incorporate such functionality, components, and/or features. For example, a POSITA would understand that each of these references generally relates to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that asynchronous events periodic timers were foundational concepts in a data network that were well known as of the critical date and commonly used to establish data communications. *See, e.g.*, L. Parziale et al, TCP/IP Tutorial and Technical Overview, IBM (December 2006) at 114, 176, 205; W. Richard Stevens, TCP/IP Illustrated, Volume 1, The Protocols at 142, 144, 352; TCP/IP For Dummies, 6th Ed. at 149, 171; B. Forouzan, TCP/IP Protocol Suite, 4th Ed. at 295-296, 300-301, 362-363, 517. Thus, design and market forces would have motivated a POSITA to modify any of the primary references to employ asynchronous or periodic transmissions. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations.

As another example, to the extent that any primary reference is deemed not to anticipate a claim for failing to teach any limitation from the dependent claims, it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses these features. For example, various applications published prior to the critical date disclose all the limitations in the dependent claims. *See In Pictures: 15 Killer Android Apps for the G1*, PCWorld, *available at* https://www.pcworld.com/article/537123/android_apps-3.html, archived at https://web.archive.org/web/20081020041608/http://www.pcworld.com/article/152384-11/in_pictures_15_killer_android_apps_for_the_g1.html; *The Best Android Apps of 2009*, WSJ (December 22, 2009), *available at* https://www.wsj.com/articles/BL-DGB-9571; *Paid Android Apps Coming Early 2009*, Phandroid (October 22, 2008), *available at* https://phandroid.com/2008/10/22/paid-android-apps-coming-early-2009/; *iTunes Rewind Highlights The Best Apps Of 2009*, TechCrunch+ (December 8, 2009), *available at* https://techcrunch.com/2009/12/08/itunes-rewind-highlights-the-best-apps-of-2009/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAABwpWGIQMLH9RH4dCLei90rUZtxchUu69NlOPHAlf1E37FwRi6Z2Z7VkFWpumOCGRD-kUeR6GisiHEuV6-t01ttp6uEvYkqyLd4uzUO1K-ZmrcvqRg5cVL3a5Ll8-wTJcGr2NVllDrFmCtqFJbl010i5YewT03omj6v2Uf68Ov44. It would have been obvious to a person skilled in the art to incorporate the functionality, components, and/or features of these various applications. For example, a POSITA would understand that each of these references and various apps generally relate to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that the features of these various applications were well known and commonly used as

of the critical date. Thus, design and market forces would have motivated a POSITA to modify and combine any of the primary references to include features from these various applications. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations.

2. '320 patent

Google sets forth below a summary of their current understanding of the state of the art as understood as of the asserted priority date of the '192 patent for the general subject matter of the '192 patent. The information discussed in this section may have formed the background knowledge of a person of ordinary skill in the art at the time the '192 patent was filed and may have been used in determining whether and how to combine references to achieve the claimed inventions. *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"). Google expressly reserve the right to rely on each of the prior art references, systems, concepts, and technologies discussed in this Section with respect to the Asserted Patent.

Google contends that, to the extent the primary references identified in these Preliminary Invalidity Contentions do not anticipate the Asserted Claims of the '192 patent, it would have been obvious to combine any of the references, systems, concepts, or technologies discussed in this Section or in Google's obviousness charts with those primary references. Google also reserves the right to rely on the discussions of the state of the art and prior art in the '192 patent specification and its file history including file histories of related patents and foreign file histories of related patents in explaining the state of the art. Google further expressly reserve the right to supplement

its summary of the background and state of the art, including, for example, with information from any of the authors or named inventors on any of the prior art references, by personnel familiar with systems based on any of the prior art references, or any prior art systems related to prior art references, or by technical experts retained on behalf of any party. Google also expressly reserve the right to rely on any admissions by any of the named inventors, institutions with which they were associated, and Plaintiff, regarding the state of the art.

To the extent that any primary reference is deemed not to anticipate a claim for failing to teach secure message links, it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses encryption protocols. For example, several prior art references, including at least TS-23.140, Houghton, WAP, GTalkService, Ogawa, Cohen, Tyhurst, Lu, Herzog, Lonnfors, TLS, SSL, and OMA, disclose this limitation. It would have been obvious to a person skilled in the art to incorporate such functionality, components, and/or features. For example, a POSITA would understand that each of these references generally relates to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that encryption protocols, like TLS, SSL, IpSec, and forms of symmetric key encryption, were routine design choices available for mobile systems as of the critical date. SSL, for instance, was introduced and known for over a decade by the time of the alleged invention. *See, e.g.*, The SSL Protocol Version 3.0 (November 18, 1996), *available at* https://datatracker.ietf.org/doc/html/draft-ietf-tls-ssl-version3-00. Moreover, encryption protocols were well known as of the critical date and commonly used to ensure that communications used by mobile devices and servers were kept confidential and authentic. Thus, design and market forces would have motivated a POSITA to modify any of the primary references to include encryption

protocols. Further, the primary references contemplate implementations which use encryption protocols like TLS, SSL, IpSec to secure its system communication links. *E.g.*, javax.net.ssl.SSLSocket – Android, *archived at* https://web.archive.org/web/20080421122852/http://code.google.com/android/reference/javax/net/ssl/SSLSocket.html. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations. Further, such combinations simply utilize familiar, known encryption protocols to achive predictable results of increased security.

As another example, to the extent that any primary reference is deemed not to anticipate a claim for failing to teach network elements or distributing messages to particular software components, it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses these features. For example, as demonstrated with respect to limitations [1a], [1b], [1f], [5], several prior art references, including at least Stage, Cohen, Lonnfors, Herzog, and Huskins, disclose this limitation. It would have been obvious to a person skilled in the art to incorporate such functionality, components, and/or features. For example, a POSITA would understand that each of these references generally relates to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that exchanging messages between network elements and software components on client devices, including use of TCP, UDP, IP, and other protocols, were routine design choices available for mobile systems as of the critical date. *See Google APIs and Services in Android*, Google, *available at*

https://web.archive.org/web/20071203160805/http://code.google.com/android/toolbox/google-apis.html) ("Applications will frequently need to communicate between devices. . . . Google provides an API that uses the XMPP protocol to pass messages."). Moreover, client-server applications, including the use of identifiers to direct communications to target applications on target client devices, were well known as of the critical date and commonly used to provide useful features to mobile devices to the internet. Likewise, support for of both asynchronous and periodic transmissions were known mechanisms to exchange useful communications between clients and servers. Thus, design and market forces would have motivated a POSITA to modify any of the primary references to support such communications. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations.

As another example, to the extent that any primary reference is deemed not to anticipate a claim for failing to teach buffering requests and transmitting those requests upon occurrence of various triggers, it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses these features. For example, as several prior art references, including at least Houghton, Hämäläinen, White, Holbrook, Bobo, and Munson, disclose this limitation. *See* Exs. A-Obviousness, B-Obviousness. It would have been obvious to a person skilled in the art to incorporate such functionality, components, and/or features. For example, a POSITA would understand that each of these references generally relates to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that buffering data to be

transmitted at a later time in accordance with TCP, UDP, IP, and other protocols, were routine design choices available for mobile systems as of the critical date. Moreover, client-server applications, including the use of buffers and triggers were well known as of the critical date and commonly used to provide useful features to mobile devices to the internet. Likewise, support for of both asynchronous and periodic transmissions were known mechanisms to exchange useful communications between clients and servers and could be used as triggers. Thus, design and market forces would have motivated a POSITA to modify any of the primary references to support such communications. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations.

As another example, to the extent that any primary reference is deemed not to anticipate a claim for failing to teach use of a secure execution environment, it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses this feature. For example, as demonstrated with respect to claim 4 in the attached exhibits, several prior art references, including at least Chou, Anderson, Ellison, James, and Taylor, disclose this limitation. It would have been obvious to a person skilled in the art to incorporate such functionality, components, and/or features. For example, a POSITA would understand that each of these references generally relates to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that secure execution environments were well known as of the critical date and commonly used to ensure the integrity and of processing and data carried out by certain

applications where security was particularly important. At the same time a POSITA would understand that other applications, that were for example of lower priority, could execute outside of such environments. Thus, design and market forces would have motivated a POSITA to modify any of the primary references to include authentication related features, such as use of device credentials during a service authorization sequence. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations.

As another example, to the extent that any primary reference is deemed not to anticipate a claim for failing to teach use of authentication, it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses this feature. For example, as demonstrated with respect to claim 8, several prior art references, including at least Zhilong, Chou, Rakic, and Isomursu, disclose this limitation. It would have been obvious to a person skilled in the art to incorporate such functionality, components, and/or features. For example, a POSITA would understand that each of these references generally relates to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that authentication was well known as of the critical date and commonly used to ensure the integrity and verify the identity mobile devices connected to the internet. Thus, design and market forces would have motivated a POSITA to modify any of the primary references to include authentication related features, such as use of device credentials during a service authorization sequence. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A

POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations.

As another example, to the extent that any primary reference is deemed not to anticipate a claim for failing to teach the trigger is an "asynchronous event" (claim 1) or the expiration of a "periodic timer" (claim 9), it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses this feature. For example, several prior art references, including at least TS-23.140, Shell, WAP, Amp'd, GTalkService, Herzog, Chou, Rakic, Shenfield, Hwang, and TCP/IP disclose this limitation. It would have been obvious to a person skilled in the art to incorporate such functionality, components, and/or features. For example, a POSITA would understand that each of these references generally relates to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that asynchronous events periodic timers were foundational concepts in a data network that were well known as of the critical date and commonly used to establish data communications. *See, e.g.*, L. Parziale et al, TCP/IP Tutorial and Technical Overview, IBM (December 2006) at 114, 176, 205; W. Richard Stevens, TCP/IP Illustrated, Volume 1, The Protocols at 142, 144, 352; TCP/IP For Dummies, 6th Ed. at 149, 171; B. Forouzan, TCP/IP Protocol Suite, 4th Ed. at 295-296, 300-301, 362-363, 517. Thus, design and market forces would have motivated a POSITA to modify any of the primary references to employ asynchronous or periodic transmissions. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated

teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations.

As another example, to the extent that any primary reference is deemed not to anticipate a claim for failing to teach secure interprocess communication services, it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses these features. For example, as demonstrated in the attached exhibits several prior art references, including at least Huskins, Rakic, Ellison, Shenfield, Novack, and D-Bus Specification V0.12, disclose this limitation. It would have been obvious to a person skilled in the art to incorporate such functionality, components, and/or features. For example, a POSITA would understand that each of these references generally relates to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that interprocess communications, were a standard feature of operating systems, including those that support claim-server architectures, that allow processes to share data. An interprocess communication service was thus a routine design choice available for mobile systems as of the critical date. Moreover, client-server applications, including the use of identifiers to direct communications to target applications on target client devices, were well known as of the critical date and commonly used to provide useful features to mobile devices to the internet. Thus, design and market forces would have motivated a POSITA to modify any of the primary references to support such communications. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations.

As another example, to the extent that any primary reference is deemed not to anticipate a claim for failing to teach any limitation from the dependent claims, it would have been obvious to a POSITA at the time of the invention to combine the primary reference with any of the prior art that discloses these features. For example, various applications published prior to the critical date disclose all the limitations in the dependent claims. *See In Pictures: 15 Killer Android Apps for the G1*, PCWorld, *available at* https://www.pcworld.com/article/537123/android_apps-3.html, archived at https://web.archive.org/web/20081020041608/http://www.pcworld.com/article/152384-11/in_pictures_15_killer_android_apps_for_the_g1.html; *The Best Android Apps of 2009*, WSJ (December 22, 2009), *available at* https://www.wsj.com/articles/BL-DGB-9571; *Paid Android Apps Coming Early 2009*, Phandroid (October 22, 2008), *available at* https://phandroid.com/2008/10/22/paid-android-apps-coming-early-2009/; *iTunes Rewind Highlights The Best Apps Of 2009*, TechCrunch+ (December 8, 2009), *available at* https://techcrunch.com/2009/12/08/itunes-rewind-highlights-the-best-apps-of-2009/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAABwpWGIQMLH9RH4dCLei90rUZtxchUu69NlOPHAlf1E37FwRi6Z2Z7VkFWpumOCGRD-kUeR6GisiHEuV6-t01ttp6uEvYkqyLd4uzUO1K-ZmrcvqRg5cVL3a5Ll8-wTJcGr2NVllDrFmCtqFJbl010i5YewT03omj6v2Uf68Ov44. It would have been obvious to a person skilled in the art to incorporate the functionality, components, and/or features of these various applications. For example, a POSITA would understand that each of these references and various apps generally relate to networking and/or client-server communications, and thus constitutes analogous art within the same field of endeavor. In addition, a POSITA would understand that the features of these various applications were well known and commonly used as

of the critical date. Thus, design and market forces would have motivated a POSITA to modify and combine any of the primary references to include features from these various applications. A POSITA would also have had a reasonable expectation of success in making such modifications to any primary reference. A POSITA would have understood that these references, as well as the POSITA's knowledge, disclose interrelated teachings based on routine technologies and would have been amenable to various well-understood and predictable combinations.

E. Lack of Secondary Indicia of Nonobviousness

Google is not aware of any evidence that would tend to establish any secondary considerations of non-obviousness. This lack of evidence further renders the Asserted Claims obvious. Proving any such secondary considerations is Headwater's burden. *See, e.g., ZUP, LLC v. Nach Mfg., Inc.*, 896 F.3d 1365, 1373 (Fed. Cir. 2018) ("[A] patentee bears the burden of production with respect to evidence of secondary considerations of nonobviousness."). Accordingly, Google reserves all rights regarding its full contention in this respect until after Headwater completes its final and binding disclosure of any such evidence and contentions. In the meantime, Google note the complete lack of any such evidence in the record.

Headwater has disclosed no evidence of, and Google knows of no viable evidence to suggest:

- **The alleged invention's commercial success**. Indeed, no products are known to practice the Asserted Claims. To the extent Headwater asserts that Google's products practice the Asserted Patents, Google denies that assertion and incorporates its responses to date and any future contentions, expert reports, and testimony. Further, Google knows of no nexus between any commercial success and the Asserted Claims. *See, e.g., Windsurfing Int'l Inc. v. AMF* , 782 F.2d 995 (Fed. Cir. 1986) (considerations such as intervening, non-covered technological innovations, popularity of accessories, and

advertising expense are all relevant to the nexus determination). If any commercial success is due to any of the concepts discussed in the Asserted Patents, those concepts are also present in the prior art, as described above, and thus do not support any commercial success that is relevant to the question of obviousness. *See Tokai Corp. v. Easton Enters, Inc.* , 632 F.3d 1358, 1369–70 (Fed. Cir. 2011) ("If commercial success is due to an element in the prior art, no nexus exists."); *In re Huai-Hung Kao* , 639 F.3d 1057, 1068 (Fed. Cir. 2011) ("Where the offered secondary consideration actually results from something other than what is both claimed and *novel* in the claim, there is no nexus to the merits of the claimed invention."); *Ormco Corp. v. Align Tech., Inc.* , 463 F.3d 1299, 1312 (Fed. Cir. 2006) ("[I]f the feature that creates the commercial success was known in the prior art, the success is not pertinent.").

- **Alleged commercial success via licensing**. Headwater has presented no evidence of commercial success via a licensing program.
- **Long felt but unresolved needs**. Headwater has presented no evidence of any long felt and unresolved need. Indeed, Google itself had implemented the accused functionality before the priority dates of the Asserted Patents.
- **No industry praise.** There is also no evidence of industry praise for the alleged invention of the Asserted Patents or any novel functionality that allegedly practices the Asserted Patents. To the extent any praise is related to any functionality that allegedly practices the Asserted Patents, that praise is not due to the allegedly novel features of the Asserted Patents, but instead only to features present in the prior art, which is not a sufficient nexus to be relevant to the question of industry praise for purposes of obviousness. *See Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1328 (Fed. Cir.

2008). Praise of Google's mobile phones or of certain Google Android features is not praise of the Asserted Patents.

- **Unexpected results**: No evidence of any such unexpected results is known. As discussed above, the concepts contained in the Asserted Claims were already combined in the same manner as the asserted. These prior art systems, as described in the above-referenced exhibits, disclosed the same combination of elements, and the same result of that combination, that is recited in the claim. Thus, there were no unexpected results that arose from combining the well-known elements in the Asserted Claims.
- **The failure of others**. No evidence of any such failure is known. Indeed, Google itself had implemented the accused functionality before the priority dates of the Asserted Patents.
- **Skepticism by experts**. No experts or person of skill expressed skepticism about implementing the alleged inventions. Indeed, Google itself had implemented the accused functionality before the priority dates of the Asserted Patents.
- **Teaching away by others**. No evidence of any such teaching is known.
- **Recognition of a problem**. As discussed above, the industry recognized the problem and had already discussed multiple approaches that implemented the Asserted Claims to solve that problem. Indeed, Google itself had implemented the accused functionality before the priority dates of the Asserted Patents.
- **Copying of the alleged invention by competitors**. No evidence of any such copying is known. *See Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1366 (Fed. Cir. 2001) (allegedly copied feature must be an embodiment of the patented claims). If anything, it was the named inventor of the asserted patents that likely copied Google.

Google itself had implemented the accused functionality before the priority dates of the Asserted Patents.

V. OBVIOUSNESS-TYPE DOUBLE PATENTING

The asserted claims are invalid due to obviousness-type double patenting.

As the Federal Circuit discussed in *In re Hubbell*, obviousness-type double patenting has two separate and independent rationales:

> There are two justifications for obviousness-type double patenting. The first is "to prevent unjustified timewise extension of the right to exclude granted by a patent no matter how the extension is brought about." *Van Ornum*, 686 F.2d at 943-44 (quotation and citation omitted). The second rationale is to prevent multiple infringement suits by different assignees asserting essentially the same patented invention. *Fallaux*, 564 F.3d at 1319 (recognizing that "harassment by multiple assignees" provides "a second justification for obviousness-type double patenting"); *see also* Chisum on Patents § 9.04[2][b][ii] ("The possibility of multiple suits against an infringer by assignees of related patents has long been recognized as one of the concerns behind the doctrine of double patenting.").

See In re Hubbell, 709 F.3d 1140, 1145 (Fed. Cir. 2013).

Analyzing obviousness-type double patenting takes a two-step process. First, the differences between the claims of the patent being used as a reference and the claims at issue are identified. *Georgia-Pacific v. US Gypsum*, 195 F.3d 1322, 1326 (Fed. Cir. 1999) ("[A]nalysis of the claims at issue is the first step in determining if the second invention is merely an obvious variation of the first.... Because these two claims are so similar, we must look to see if there is anything to distinguish claim 1 of the '989 patent from claim 1 of the '569 patent. There are two differences between these claims."), *amended on rehearing*, 204 F.3d 1359 (Fed. Cir. 2000).

Second, whether those differences raise a patentable distinction must be determined. *Georgia-Pacific*, 195 F.3d at 1328 (finding that "[t]hese differences are not sufficient to render the claims patentably distinct"). "A later patent claim 'is not patentably distinct from an earlier claim

if the later claim is obvious over, or anticipated by, the earlier claim.'" *Hubbell*, 709 F.3d at 1145 (*quoting Eli Lilly & Co. v. Barr Labs., Inc.*, 251 F.3d 955, 968 (Fed. Cir. 2001)). Where the recited claims at issue are not explicitly disclosed in the claims of the patent being used as a reference, Google may rely on the knowledge of a person of ordinary skill in the art, admitted prior art, or disclosure in the prior art references relied upon by Google.

VI. INVALIDITY UNDER 35 U.S.C. § 112

Headwater has not yet provided a claim construction for many of the terms and phrases that Google anticipates will be in dispute. Google, therefore, cannot provide a complete list of its § 112 defenses because Google does not know whether Headwater will proffer a construction for certain terms and phrases that is broader than, or inconsistent with, the construction that would be supportable by the disclosure set forth in the specification.

Nevertheless, Google contends that, at least under Headwater's actual and/or apparent application of the claims, the Asserted Claims are invalid based on inadequate written description and/or a lack of enablement under 35 U.S.C. § 112 ¶ 1, and/or based on indefiniteness under 35 U.S.C. § 112 ¶ 2.

Google's aforementioned identification of prior art that anticipates and/or renders obvious particular claim elements, including the attached claim charts, should not be deemed as an admission that any claim element satisfies the requirements of 35 U.S.C. § 112. While Google asserts below that a claim is invalid under 35 U.S.C. § 112 (such as because of a failure to particularly point out and distinctly claim the alleged invention, failure to provide written description support in the specification, and/or failure to enable one of ordinary skill in the art to make and use the alleged invention), Google has nonetheless provided prior art disclosures that anticipate or render obvious the claim on the assumption that Headwater will contend those claims are definite, are supported by an adequate written description, and are adequately enabled.

A. Lack of Written Description and Enablement Under 35 U.S.C. § 112 ¶ 1

Certain claims in the Asserted Patents are invalid for lack of written description. Section 112 requires that a patent specification "contain a written description . . . of the manner and process of making and using [the 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." 35 U.S.C. § 112 ¶ 1. A patent's written description "must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed." *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). The disclosure must "convey to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Id.* The level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology, but a "mere wish or plan" for obtaining the alleged invention does not satisfy the written description requirement. *Novozymes A/S v. DuPont Nutrition Biosciences APS*, 723 F.3d 1336, 1344 (Fed. Cir. 2013). Put another way, "a description that merely renders the invention obvious does not satisfy the requirement." *Ariad*, 598 F.3d at 1351. Instead, "all the limitations must appear in the specification." *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997). Google contends that, at least under Headwater's actual and/or apparent application of the claims, the specifications of at least one or more of the Asserted Patents do not include a sufficient written description supporting the claims. Moreover, Google contends that Headwater's actual and/or apparent application of the Asserted Claims covers a broader scope than is justified and/or supported by the written description provided in the specifications of at least one or more of the Asserted Patents. *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1159 (Fed. Cir. 1998); *LizardTech, Inc. v. Earth Res. Mapping, Inc.*, 424 F.3d 1336, 1346 (Fed. Cir. 2005); *ICU Med., Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368 (Fed. Cir. 2009).

Section 112 likewise requires that the specification "enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the" alleged invention. 35 U.S.C. § 112 ¶ 1. A claim is not enabled if, "at the effective filing date of the patent, one of ordinary skill in the art could not practice their full scope without undue experimentation." *Wyeth and Cordis Corp. v. Abbott Labs.*, 720 F.3d 1380, 1384 (Fed. Cir. 2013). "This important doctrine prevents both inadequate disclosure of an invention and overbroad claiming that might otherwise attempt to cover more than was actually invented." *MagSil Corp. v. Hitachi Global Storage Techs., Inc.*, 687 F.3d 1377, 1381 (Fed. Cir. 2012). Google contends that, at least under Headwater's actual and/or apparent application of the claims, the specifications of at least one or more of the Asserted Patents do not enable any person skilled in the relevant art to make and use the alleged inventions of the Asserted Claims without undue experimentation.

Furthermore, under Headwater's actual and/or apparent application of the claims, the specifications of at least one or more of the Asserted Patents do not enable the broad scope of the Asserted Claims as Headwater asserts. Google contends that Headwater's actual and/or apparent application of the Asserted Claims covers a broader scope than is justified, and certainly broader than is enabled in the specifications. As explained below, the specifications of at least one or more of the Asserted Patents have not enabled a person of ordinary skill in the art at the time of the alleged invention to perform the full scope of all Asserted Claims.

Each of the asserted claims below are invalid because, at least to the extent Headwater contends any of the following limitations should be construed to encompass Google's accused instrumentalities, the specifications fail to provide written description and/or an enabling disclosure of at least the following limitations:

1. '192 patent

- Claims 1-15: "message link server"

- Claims 1-5, 11-13, 15: “device link agent”
- Claims 1, 2, 5, 10, 11, 15: “secure message link”
- Claim 1, 8, 15: “secure message link messages”
- Claim 1, 15: “network element messages”
- Claim 1, 5, 13, 15: “network elements”
- Claim 1, 15: “message content”
- Claim 1, 15: “requests for delivery”
- Claim 1, 15: “data for, and an identification of, a respective one of the authorized software components”
- Claim 1: “message buffer system”
- Claim 1: “the receipt of such a message by the message buffer system is not a message delivery trigger, and for at least one of the message delivery triggers”
- Claim 5: “upload messages forwarded by the respective device link agents from at least a subset of the device software components”
- Claim 5: “upload messages identifying a corresponding one of the network elements to which the device respective software component has requested delivery”
- Claim 6: “multiple identifier/data pairs”
- **Claims 1, 15:** “multiple software components authorized to receive and process data from secure message link messages received via a device link agent on that device”
- **Claim 1:** “an interface to a network to receive network element messages from a plurality of network elements”
- **Claim 1:** “a message buffer system including a memory and logic”
- **Claim 1:** “to buffer content from the received network element messages”

- **Claim 1:** “the logic to determine when one of a plurality of message delivery triggers for the given one of the wireless end-user devices has occurred”
- **Claims 1, 15:** “the trigger is an occurrence of an asynchronous event with time-critical messaging needs”
- **Claim 1:** “upon determining that one of the message delivery triggers has occurred, the logic further to supply one or more messages comprising the buffered content to the transport services stack for delivery on the secure message link maintained between the transport services stack and a device link agent on the given one of the wireless end-user devices”
- **Claims 1, 9, 11, 13, 15:** “message delivery triggers”
- **Claim 2:** “an encrypt function to encrypt the one or more messages supplied to the transport services stack”
- **Claim 5:** “the network server system using the interface to a network to deliver content from the upload messages to the respective identified network elements”
- **Claim 6:** “the one or more messages for delivery by the transport services stack comprises multiple identifier/data pairs”
- **Claim 7:** “the device messaging agent on at least one of the wireless end-user devices further to initiate the respective secure Internet data message link to the transport services stack.
- **Claim 8:** “the secure authorization signatures indicating the authorized software components that are allowed to receive data from secure message link messages via the message link server”

- **Claim 15:** "the received network element messages comprising respective message content and requests for delivery of the respective message content to respective wireless end-user devices, the respective message content including data for, and an identification of, a respective one of the authorized software components"
- **Claim 15:** "buffering content from the received network element messages for which delivery is requested to a given one of the wireless end-user devices"
- **Claim 15:** "determining when one of a plurality of message delivery triggers for the given one of the wireless end-user devices has occurred"

2. '320 patent

- **Claims 1, 8:** "a network server system"
- **Claim 1:** "a link interface to maintain a respective secure Internet data message link between the link interface and a respective device link agent on each of a plurality of wireless end-user devices"
- **Claim 1:** "device link agent"
- **Claim 1:** "multiple software components authorized to receive messages via the device link agent on that device"
- **Claim 1:** "a network interface to receive messages from a plurality of network elements, for delivery to respective ones of the software components identified in the messages, each network element authorized to send messages via the link interface to one or more of the software components on one or more of the wireless end-user devices"
- **Claim 1:** "message buffer system"
- **Claim 1:** "the receipt of such a message by the message buffer system is not a message delivery trigger, and for at least one of the message delivery triggers"

- **Claim 1:** “a message buffer system including a memory and logic”
- **Claim 1:** “to buffer content from the received network element messages”
- **Claim 1:** “the logic to determine when one of a plurality of message delivery triggers for the given one of the wireless end-user devices has occurred”
- **Claims 1:** “the trigger is an occurrence of an asynchronous event with time-critical messaging needs”
- **Claim 1:** “upon determining that one of the message delivery triggers has occurred for the given one of the wireless end-user devices, the logic further to supply one or more messages comprising the buffered content for the given one of the wireless end-user devices to the transport services stack for delivery on the secure message link maintained between the transport services stack and a device link agent on the given one of the wireless end-user devices”
- **Claim 1:** “device link agents configured to maintain the respective secure Internet data message link over a wireless network to the link interface”
- **Claim 1:** “receive secure Internet data messages from the network server system over the respective secure Internet data message link, including messages collected from multiple ones of the network elements and messages corresponding to multiple ones of the software components authorized to receive messages via the device link agent on that respective device”
- **Claim 1:** “a unique identifier”
- **Claim 1:** “a first subset of the secure Internet data messages contain both a unique identifier for a corresponding one of the software agents and data to be consumed by that software

component, the data supplied from a respective network element corresponding to that software component"

- **Claim 1:** "software components that are authorized to access messages received via the device link agent"
- **Claim 1:** "cause messages with a unique identifier corresponding to a given one of those software applications to be securely delivered to a software process corresponding to the given software component"
- **Claim 2:** "when one of a plurality of message delivery triggers has occurred, at least one of the triggers for each given device specific to one or more states of that given device"
- **Claims 2-3, 5-7:** "message delivery triggers"
- **Claim 5:** "the message delivery triggers is the receipt of a transmission on the respective secure Internet data message link from the device link agent of the given one of the wireless end-user devices, or a response generated to a transmission received from that device link agent"
- **Claim 6:** "the message delivery triggers is a heartbeat message generated by the given device link agent, or a request received from the given device link agent"
- **Claim 7:** "the message delivery triggers is the receipt of a particular message from one of the network elements"
- **Claim 8:** "a secure server to store a secure authorization list, the secure authorization list indicating the authorized software components and the authorized network elements that are allowed to communicate using the network server system"
- **Claim 9:** "the respective device link agent on each wireless end-user device receiving access authorization information from the secure server, the access authorization

indicating, respectively for each wireless end-user device, the software components authorized to receive messages via the device link agent on that device"

- **Claim 10:** "a second subset of the secure Internet data messages contain a user message from a network element, the user message intended for display on a user interface of a given one of the wireless end-user devices"
- **Claim 11:** "one of the software components on a given one of the wireless end-user devices is a policy control agent, and the data to be consumed by the policy control agent comprises service settings and/or configuration information for the given device"
- **Claim 12:** "the link interface to encrypt messages identified for delivery to each given one of the wireless end-user devices to create secure Internet data messages, the device link agent on each given device further configured to decrypt the received secure Internet data messages for that device prior to delivering those messages to a respective software process"
- **Claim 13:** "the encrypted messages are transported to the device link agent using one or more of encryption on a transport services stack, IP (Internet Protocol) layer encryption, and tunneling"
- **Claim 14:** "the device link agent on a given device executes in a secure execution environment, and at least one of the software components on that device executes outside of the secure execution environment"
- **Claim 15:** "upload messages, each of the upload messages identifying a corresponding one of the network elements to which the device respective software component has requested delivery, the device link agent on that device transmitting the upload messages to the

network message server over the respective secure Internet data message link, for delivery by the network message server to the respective identified network elements"

- **Claim 16:** "the device link agent on the given device further configured to buffer one or more of the upload messages for transmission to the network message server at a time selected by a heartbeat mechanism"
- **Claim 17:** "a secure interprocess communication service separately secured from the secure Internet data message link"
- **Claim 17:** "the device link agent for the given device causing messages to be securely delivered to a software process by initiating delivery of each such message on the secure interprocess communication service"
- **Claim 18:** "multiple identifier/data pairs"

B. <u>Indefiniteness Under 35 U.S.C. § 112 ¶ 2</u>

35 U.S.C. § 112, ¶ 2 requires that a patent claim "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention." 35 U.S.C. § 112, ¶ 2. Claim terms that fail to inform those skilled in the art "with reasonable certainty . . . about the scope of the invention" fail the definiteness requirement of 35 U.S.C. § 112, ¶ 2. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). Google contends that, at least under Headwater's actual and/or apparent application of the claims, the Asserted Claims of the Asserted Patents fail to distinctly claim what the inventors regard as their alleged invention.

Each of the asserted claims are invalid as indefinite under 35 U.S.C. § 112 because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the following limitations, read in light of the intrinsic evidence, fail to inform those skilled in the art with reasonable certainty about the scope of the claimed inventions:

3. ’192 patent

- **Claim 1:** “logic”
- **Claims 1, 9, 11, 13:** “message delivery trigger”
- **Claims 1, 15:** “the received network element messages”
- **Claims 1, 15:** “an asynchronous event”
- **Claims 1, 15:** “the received network element messages comprising respective message content and requests for delivery of the respective message content to respective wireless end-user devices, the respective message content including data for, and an identification of, a respective one of the authorized software components”
- **Claims 1, 15:** “the trigger is an occurrence of an asynchronous event with time-critical messaging needs”
- **Claim 1:** “the logic to determine when one of a plurality of message delivery triggers for the given one of the wireless end-user devices has occurred”
- **Claim 1:** “the logic further to supply one or more messages comprising the buffered content to the transport services stack for delivery on the secure message link maintained between the transport services stack and a device link agent on the given one of the wireless end-user devices”
- **Claim 2:** “an encrypt function to encrypt the one or more messages”
- **Claim 3:** “the encrypted one or more messages are transported to the device link agent on the given one of the wireless end-user devices using one or more of encryption on the transport services stack, IP (Internet Protocol) layer encryption, and tunneling”
- **Claim 4:** “secure execution environment”

- **Claim 4:** "at least one of the software components executes outside of the secure execution environment on that device"
- **Claim 5:** "each of the respective secure message links"
- **Claim 5:** "the transport services stack is further to receive, over each of the respective secure message links, upload messages forwarded by the respective device link agents from at least a subset of the device software components, each of the upload messages identifying a corresponding one of the network elements to which the device respective software component has requested delivery, the network server system using the interface to a network to deliver content from the upload messages to the respective identified network elements"
- **Claim 6:** "multiple identifier/data pairs"
- **Claim 6:** "at least one of the one or more messages for delivery by the transport services stack comprises multiple identifier/data pairs"
- **Claim 7:** "to initiate the respective secure Internet data message link"
- **Claim 7:** "device messaging agent"
- **Claim 8:** "the secure authorization signatures indicating the authorized software components that are allowed to receive data from secure message link messages via the message link server"
- **Claim 10:** "wherein the period of the timer is fractionally shorter than a maximum data message interval beyond which the secure message link is taken down"
- **Claim 11:** "the receipt of a transmission on the respective secure message link from the device link agent of the given one of the wireless end-user devices"

- **Claim 12:** "the transmission is a heartbeat message generated by the given device link agent, or a request received from the given device link agent"
- **Claim 13:** "the receipt of a particular network element message from one of the network elements"
- **Claim 15:** "buffering content from the received network element messages for which delivery is requested to a given one of the wireless end-user devices"
- **Claim 15:** "supplying one or more messages comprising the buffered content for delivery on the secure message link maintained between the message link server and a device link agent on the given one of the wireless end-user devices"

4. '320 patent (claim 1)

- **Claim 1:** "a link interface to maintain a respective secure Internet data message link between the link interface and a respective device link agent on each of a plurality of wireless end-user devices"
- **Claim 1:** "logic"
- **Claims 1, 2, 3, 5-7:** "message delivery trigger"
- **Claims 1:** "the received network element messages"
- **Claims 1:** "an asynchronous event"
- **Claims 1:** "the trigger is an occurrence of an asynchronous event with time-critical messaging needs"
- **Claim 1:** "the logic to determine when one of a plurality of message delivery triggers for the given one of the wireless end-user devices has occurred"
- **Claim 1:** "the logic further to supply one or more messages comprising the buffered content for the given one of the wireless end-user devices to the transport services stack

for delivery on the secure message link maintained between the transport services stack and a device link agent on the given one of the wireless end-user devices"

- **Claim 1:** "messages collected from multiple ones of the network elements and messages corresponding to multiple ones of the software components authorized to receive messages via the device link agent on that respective device"
- **Claim 1:** "a first subset of the secure Internet data messages contain both a unique identifier for a corresponding one of the software agents and data to be consumed by that software component, the data supplied from a respective network element corresponding to that software component"
- **Claim 1:** "cause messages with a unique identifier corresponding to a given one of those software applications to be securely delivered to a software process corresponding to the given software component"
- **Claim 2:** "the message buffer system logic to determine, for each of the wireless end-user devices, when one of a plurality of message delivery triggers has occurred, at least one of the triggers for each given device specific to one or more states of that given device"
- **Claim 4:** "the period of the timer is fractionally shorter than a maximum data message interval beyond which the Internet data message link to the given device is taken down"
- **Claim 5:** "the message delivery triggers is the receipt of a transmission on the respective secure Internet data message link from the device link agent of the given one of the wireless end-user devices, or a response generated to a transmission received from that device link agent"
- **Claim 8:** "indicating the authorized software components and the authorized network elements that are allowed to communicate using the network server system"

- **Claim 9:** "access authorization information from the secure server, the access authorization indicating, respectively for each wireless end-user device, the software components authorized to receive messages via the device link agent on that device"
- **Claim 10:** "a second subset of the secure Internet data messages contain a user message from a network element, the user message intended for display on a user interface of a given one of the wireless end-user devices"
- **Claim 11:** "a policy control agent, and the data to be consumed by the policy control agent comprises service settings and/or configuration information for the given device"
- **Claim 12:** "the link interface to encrypt messages identified for delivery to each given one of the wireless end-user devices to create secure Internet data messages, the device link agent on each given device further configured to decrypt the received secure Internet data messages for that device prior to delivering those messages to a respective software process"
- **Claim 13:** "the encrypted messages are transported to the device link agent using one or more of encryption on a transport services stack, IP (Internet Protocol) layer encryption, and tunneling"
- **Claim 14:** "executes in a secure execution environment"
- **Claim 14:** "executes outside of the secure execution environment"
- **Claim 15:** "each of the upload messages identifying a corresponding one of the network elements to which the device respective software component has requested delivery, the device link agent on that device transmitting the upload messages to the network message server over the respective secure Internet data message link, for delivery by the network message server to the respective identified network elements"

- **Claim 16:** "buffer one or more of the upload messages for transmission to the network message server at a time selected by a heartbeat mechanism"
- **Claim 17:** "a secure interprocess communication service separately secured from the secure Internet data message link, the device link agent for the given device causing messages to be securely delivered to a software process by initiating delivery of each such message on the secure interprocess communication service"
- **Claim 18:** "one of the secure Internet data messages comprises multiple identifier/data pairs"

VII. INVALIDITY UNDER 35 U.S.C. § 101

Google contends that all claims of the Asserted Patents are invalid under 35 U.S.C. § 101 because the claims are not directed to patent-eligible subject matter, and do not include an inventive concept that transforms the nature of the claims into a patent-eligible application. Google's contentions that the Asserted Claims are invalid under 35 U.S.C. § 101 do not constitute, and should not be interpreted as, admissions regarding the construction or scope of the claims of the Asserted Patents, or that any of the claims of the Asserted Patents are not anticipated or rendered obvious by prior art.

35 U.S.C. § 101 provides that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor[.]" Because abstract ideas form the "basic tools of scientific and technological work," they are unpatentable subject matter under 35 U.S.C. § 101. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014). The Supreme Court provided a two-part test for assessing patent eligibility under Section 101. *See generally id.*

Under the first step of *Alice* ("Step One"), a court must decide whether the claims are directed to ineligible subject matter, such as an abstract idea. *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1326 (Fed. Cir. 2017); *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015). To do so, a court examines the claims to determine whether their "character as a whole," or their "focus," is an abstract idea. *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016). This examination entails "identify[ing] and defin[ing] whatever fundamental concept appears wrapped up" in the claims. *Accenture Glob. Servs., GmbH v. Guidewire Software, Inc.*, 728 F.3d 1336, 1341 (Fed. Cir. 2013) (internal quotation marks and citations omitted). Once ascertained, the court then determines whether that character is "directed to excluded subject matter," such as an abstract idea. *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016) (internal citation omitted). This inquiry often asks whether the claims' character is directed to "a specific means or method" for improving technology or whether it is simply directed to an abstract end-result. *RecogniCorp*, 855 F.3d at 1326. If the claims are not directed to an abstract idea, the inquiry ends. *Thales Visionix Inc. v. United States*, 850 F.3d 1343, 1349 (Fed. Cir. 2017). To resolve this question, "it is often helpful to ask whether the claims are directed to 'an improvement in the functioning of a computer,' or merely 'adding conventional computer components to well-known business practices.'" *Affinity Labs. of Texas, LLC v. Amazon.com Inc.*, 838 F.3d 1266, 1270 (Fed. Cir. 2016) (quoting *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1338 (Fed. Cir. 2016)). "Generalized steps to be performed on a computer using conventional computer activity are abstract[.]" *RecogniCorp*, 855 F.3d at 1326 (internal quotation marks omitted). And "[c]laims directed to generalized steps to be performed on a computer using conventional computer activity are not patent eligible." *Affinity Labs.*, 838 F.3d at 1270 (citing *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1348-49 (Fed. Cir. 2015)).

If the claims, as here, are directed to one or more abstract ideas, then the court advances to the second step of *Alice* ("Step Two"), where the claim elements must be scrutinized "both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application." *Enfish*, 822 F.3d at 1354 (*quoting Alice*, 573 U.S. at 217). At Step Two, the court searches for an "'inventive concept' sufficient to 'transform the nature of the claim into a patent-eligible application.'" *RecogniCorp*, 855 F.3d at 1327 (quoting *Alice*, 573 U.S. at 217). To save a patent at Step Two, an inventive concept must be evident in the claims. *See Alice*, 573 U.S. at 221; *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1149 (Fed. Cir. 2016). The "inventive concept" must also "involve more than performance of well-understood, routine, and conventional activities previously known to the industry." *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1367 (Fed. Cir. 2018); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 73 (2012); *Certain Elec. Devices*, 2020 WL 6441422 at *4. The Federal Circuit's "precedent is clear that merely adding computer functionality to increase the speed or efficiency of the process does not confer patent eligibility on an otherwise abstract idea." *Ericsson Inc. v. TCL Commc'n Tech. Holdings Ltd.*, 955 F.3d 1317, 1330 (Fed. Cir. 2020) (citing *Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1370 (Fed. Cir. 2015)). In addition, limitations that simply restrict the invention to a single field of use or merely add "token post-solution" requirements also fail to impart patentability. *Bilski v. Kappos*, 561 U.S. 593, 612 (2010).

All Asserted Claims are invalid under 35 U.S.C. § 101 because they fail to claim patent-eligible subject matter, including the following claims:

- Claims 1-15 of the '192 patent; and
- Claims 1-18 of the '320 patent.

B. Alice Step One: The Asserted Claims Embody Abstract Concepts

At Step One, the court must "identify and define whatever fundamental concept appears wrapped up in the claim." *Accenture Glob. Servs.*, 728 F.3d at 1341.

All asserted independent claims are substantially similar and related to optimizing and/or prioritizing traffic and resources of mobile phones. At the most basic level, the Asserted Claims are linked to the same abstract idea of prioritizing information flow and resource allocation, which is a long prevalent human activity. "The Supreme Court has held that 'fundamental . . . practice[s] long prevalent in our system of commerce' are abstract ideas." *BSG Tech LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1285 (Fed. Cir. 2018) (quoting *Alice*, 134 S.Ct. at 2356.).

The independent claims of the asserted patents are directed to this abstract idea of managing information flow. For example, the '320 patent specification (which has the same relevant disclosures as the '192 patent) states that the patent is directed at "management of user network services to provide consumer choice of more refined service plan offerings and efficient management of network capacity." 5:57-61. The patent specifies that "managing service consumption in a user friendly manner, the overall service capacity required to satisfy the user device needs can be tailored more closely to the needs of a given user." 6:30-38. Again, this is merely the abstract idea of managing information flow. For example, the independent claim of the '320 patent (claim 1) merely recites conventional components of a computer system, such as a network server system, a link interface, device link agent, end-user devices, software components, a network interface, a message buffer system, and a transport services stack, performing generic functions such as transmitting messages and buffering. All of the dependent claims merely add additional generic functions or characteristics, such as specific buffer triggers, use of encryption, or a secure execution environment. For example, the independent claims of the '192 patent (claims 1 and 15) merely recites conventional components of a computer system, such as a message link

server, network elements, devices, a transport services stack, and software components, performing generic functions such as transmitting messages and buffering. All of the dependent claims merely add additional generic functions or characteristics, such as specific buffer triggers, use of encryption or a secure execution environment.

Computerizing generic human activities and mental processes though an application or computer system does not save generic claims from abstractness. *In re Killian*, 45 F.4th 1373, 1379–80 (Fed. Cir. 2022) ("That these steps, with the exception of the step of the caseworker obtaining additional information, . . . are performed on a generic computer does not save the claims from being directed to an abstract idea."). Also, limiting the technical field to digital communications and networks does not make the claims directed to managing information any less abstract. *Affinity Labs of Texas, LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1259 (Fed. Cir. 2016) (limiting the field to a particular technological environment does not make claims less abstract). Moreover, as the claim language itself makes evident, both the '320 and '192 patents claim results-oriented functional elements with nothing more and accordingly have very broad scope. To the extent the Asserted Claims would cover any system or method for delivering and buffering information to device link agents, it would be improperly overbroad and disproportionately preempt the entire abstract idea. As the Supreme Court warned, the presence of such patents "would risk disproportionally tying up the use of the underlying" ideas. *Mayo*, 566 U.S. at 89. *see also Alice*, 573 U.S. at 223 (noting "the preemption concern that undergirds our § 101 jurisprudence"); *Ariosa Diagnostics v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015) ("The Supreme Court has made clear that the principle of preemption is the basis for the judicial exceptions to patentability."). Such broad preemption certainly confirms that the Asserted Claims are directed to a patent ineligible subject matter.

Because the Asserted Claims fail to offer anything more than using generic pre-existing computer functionality to carry out the abstract idea of prioritizing information flow and resource allocation, the Asserted Claims are abstract at Step One. *See, e.g.*, '192 pat. at 5:7-24 ("[T]hese implementations, or any other form that the invention may take, may be referred to as ***techniques***. . . . Unless stated otherwise, a component such as a processor or a memory described as being configured to perform a task may be implemented as a ***general component*** that is temporarily configured to perform the task…").

C. Alice Step Two: The Asserted Claims Do Not Recite an Inventive Concept

For a claim to be patent eligible under *Alice* Step Two, "an inventive concept must be evident in the claims," *RecogniCorp*, 855 F.3d at 1327, and it must provide "significantly more" than the abstract idea itself, *BSG Tech LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1289-90 (Fed. Cir. 2018). In performing this analysis, a court must scrutinize the claim elements "both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application." *Enfish*, 822 F.3d at 1354 (quoting *Alice*, 573 U.S. at 217). Elements that are "well-understood, routine, conventional," or "purely functional" cannot confer patent-eligibility. *Alice*, 573 U.S. at 225-26 (citation omitted). Admittedly, the claims relate to the same "general communication device" described in generic terms in the specification and the claimed process carried out on a generic processor is performed using well-known standards. Thus, there is no particularized solution to any problem, and nothing that can pass Step 2 of *Alice*.

The Asserted Claims recite only conventional, well known components and functionalities, and do not recite any purportedly novel arrangement of those components. The Asserted Claims generally recite a conventional flow of message transmission: a server transmits a message over an encrypted communication link to an end-user device, and the end-user device decrypts and

routes the message to the destination application. There is nothing in the claim language that contributes an inventive concept to such a routine flow of information. *Ultramercial Inc v. Hulu*, 772 F.3d 709, 716 (Fed. Cir. 2014) ("Adding routine[,] additional steps . . . does not transform an otherwise abstract idea into patent-eligible subject matter."). For example, the independent claims of the '320 and '192 patents are implemented on generic computer and networking technology, doe not improve the conventional technology, and therefore do not contain an inventive concept sufficient to confer eligibility. For example, there is nothing inventive about "a network server system," "a link interface," a "secure Internet data message link," "wireless end-user devices," "software components," "device link agent," "a network interface," "network elements," or "a message buffer system," "message link server" with a "transport services stack," "interface," and a "message buffer system."

None of the elements of the asserted claims save the claims from abstractness. Nothing in the claim, understood in light of the written description, requires anything other than off-the-shelf, conventional computer and networking technology, which is not "significantly more." *Elec. Power Group, LLC v. Alstom S.A*, 830 F.3d 1350, 1355 (Fed. Cir. 2016). These conventional steps or components, as recited in a generic way, are no better equipped to save the claim from abstractness than were, for example, the conventional computer used in *Alice* or the scanner used in *Content Extraction & Transmission LLC v. Wells Fargo Bank, National Ass'n*. 776 F.3d 1343, 1347 (Fed. Cir. 2014). "What is claimed is simply a generic environment in which to carry out the abstract idea." *See In re TLI Commc'ns*, 823 F.3d at 611 ("[T]he recited physical components merely provide a generic environment in which to carry out the abstract idea of classifying and storing digital images in an organized manner.") the ordered combination of elements in claim 1 does not provide any inventive concept. Nothing in the ordered combination of elements in the claims

understood in light of the specification improves any specific technology from a technical perspective, which is not 'significantly more." Thus, this is simply "an abstract-idea-based solution implemented with generic technical components in a conventional way." *See Bascom Global Internet Services v. AT&T Mobility*, 827 F. 3d 1341, 1351 (Fed. Cir. 2016). As set forth in Exhibits A-1 through A-25, A-Obviousness, B-1 through B-25, B-Obviousness, and/or through any applicant admitted prior art disclosed in the asserted patents, individually and/or collectively, these features were well known, routine, and/or conventional, and known in the prior art as set forth herein.

VIII. DOCUMENT PRODUCTION

Pursuant to the scheduling order, Google is concurrently producing the prior art identified in these Invalidity Contentions. However, source code for Google's GTalkService prior art is highly sensitive and confidential. While Google's invalidity chart for GTalkService includes specific citations and references to the source code, Google will produce and make available for inspection the GTalkService source code pursuant to the forthcoming to-be-entered protective order in this case with source code provisions and protocols.

In addition, based on investigations to date, Google is concurrently producing technical documentation sufficient to show the operation of the Accused Products.

Google reserves the right to supplement these productions with additional documentation, in accordance with the Federal Rules of Civil Procedure, the Local Rules, the Court's orders and other applicable rules and statutes.

DATED: November 3, 2025 QUINN EMANUEL URQUHART & SULLIVAN, LLP

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CERTIFICATE OF SERVICE

Pursuant to the Federal Rules of Civil Procedure and Local Rule CV-5, the undersigned hereby certifies that, on November 3, 2025, all counsel of record who have appeared in this case were served with a copy of the foregoing document via email.

BY: */s/ Brady Huynh*
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