UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner

v.

VOIP-PAL.COM, INC.,
Patent Owner

Patent No. 8,630,234

PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 8,630,234

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Page(s)

Cases

Statutes

LIST OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 8,630,234 ('234 Patent)
1002	File History of U.S. Patent No. 8,630,234
1003	Declaration of Dr. Vijay Madisetti
1004	Curriculum vitae of Dr. Vijay Madisetti
1005	U.S. Patent No. 7,668,159 ("Buckley")
1006	U.S. Patent No. 7,995,565
1007	U.S. Patent No. 6,954,654 ("Ejzak")
1008	U.S. Patent App. Pub. No. 2009/0047922
1009	U.S. Patent No. 8,731,163 ("Bates")
1010	IETF RFC 3261, *available at* https://datatracker.ietf.org/doc/html/rfc3261
1011	U.S. Patent No. 7,245,609
1012	Claim Construction Order (Dkt. No. 67) in Case No. 6:21-cv-00668-ADA (W.D. Tex.)
1013	Joint Claim Construction Statement (Dkt. No. 59) in Case No. 3:22-CV-03202 (N.D. Cal)
1014	U.S. Patent Pub. No. 2008/0167039
1015	U.S. Patent Pub. No. 2002/0102973
1016	U.S. Patent No. 8,542,815
1017	Exhibit 2016 in *Apple, Inc. v. VoIP-Pal.com, Inc.*, IPR 2016-01201 (P.T.A.B. Feb. 10, 2017)
1018	Email with attachment from Counsel for Patent Owner Regarding Claim Construction, dated March 2, 2022
1019	"Convergence Technologies for 3G Networks IP, UMTS, EGPRS and ATM", by Jeffery Bannister *et al.*, Wiley, England (2004)
1020	IETF RFC 3986, *available at* https://datatracker.ietf.org/doc/html/rfc3986

Exhibit No.	Description
1021	IETF RFC 2543, *available at* https://datatracker.ietf.org/doc/html/rfc2543
1022	U.S. Patent No. 7,283,507
1023	Excerpts from Microsoft Computer Dictionary, 5th ed. (2002)
1024	Excerpts from Wireless Encyclopedia, Althos Publishing (2007)
1025	International Patent Publication No. WO 01/89145 A2
1026	Excerpt from the File History of U.S. Patent No. 10,880,721 – "Roaming – Wikipedia" (submitted along with IDS on September 24, 2013)
1027	Comparison between This Petition and Petition in IPR2022-01232
1028	Parallel Litigation – N.D. Cal. Stay Order
1029	Parallel Litigation – Transfer from W.D. Tex. to N.D. Cal.
1030	Parallel Litigation – Defendants' Preliminary Invalidity Contentions
1031	Parallel Litigation – Plaintiffs' Preliminary Infringement Contentions

TABLE OF ABBREVIATIONS

Term	Abbreviation
Application Server	AS
Circuit-Switched	CS
Domain Name System	DNS
E.164 Number Mapping	ENUM
Internet Protocol	IP
IP Multimedia Routing Number	MRN
IP Multimedia Subsystem	IMS
Packet-Switched	PS
Person of Ordinary Skill in the Art	POSITA
Public Safety Answering Point	PSAP
Public Switched Telephone Network	PSTN
Session Initiation Protocol	SIP
Uniform Resource Indicators	URI
User Equipment	UE
Voice-over-IP	VoIP
wireless Local Area Network	WLAN

I. INTRODUCTION

Google LLC ("Google" or "Petitioner") requests *inter partes* review of claims 30-33, 35, 37-40, 43, 45-48, 51, 53-54, 61-62, 64-65, 67, 69-70, 72, and 75 ("Challenged Claims") of U.S. Patent No. 8,630,234 (EX1001). This Petition is being submitted concurrently with a Motion for Joinder, requesting institution and joinder with *Meta Platforms, Inc. v. VoIP-PAL.com, Inc.*, Case No. IPR2022-01232 ("the Meta IPR Proceeding"). This Petition is substantively identical to the petition in the Meta IPR Proceeding. *See* EX1027. The '234 patent is the subject of another *inter partes* review petition seeking to join the Meta IPR Proceeding—*Samsung Electronics Co. v. VoIP-PAL.com, Inc.*, Case No. IPR2022-01391, which was filed on August 23, 2022.

The Challenged Claims address a technique for routing phone calls. The technique starts when a phone sends to a server a message that includes the phone's location and a callee identifier. The server responds with a temporary, local number selected from a pool. The temporary number is used to establish a call between the phone and a callee. The patent's purpose for using this technique is to help avoid long distance and roaming charges by routing the call over an IP network. But the patented technique was well-known in the prior art. This includes art that disclosed using the phone's location to select a temporary, local number from a pool, and using that number to route calls to a callee. The art also disclosed temporary number use

in Voice-over-IP ("VoIP") calls and calls made when mobile phones were roaming away from their home networks. The Challenged Claims should therefore be canceled.

II. MANDATORY NOTICES

A. Real Party-In-Interest

Petitioner identifies the following real party-in-interest: Google LLC.[1]

B. Related Matters

VoIP-Pal.com ("Patent Owner" or "VoIP-Pal") is asserting the '234 Patent and related U.S. Patent 10,880,721 ("'721 Patent") against Petitioner in Case No. 3:22-cv-03199 (N.D. Cal.) (the "Litigation"). Both patents are also asserted in other pending litigations:

- *VoIP-Pal v. Amazon*, No. 6-21-cv-00668 (W.D. Tex.)
- *VoIP-Pal v. Verizon*, No. 6-21-cv-00672 (W.D. Tex.)
- *VoIP-Pal v. T-Mobile*, No. 6-21-cv-00674 (W.D. Tex.)
- *VoIP-Pal v. Samsung*, No. 6-21-cv-01246 (W.D. Tex.)
- *VoIP-Pal v. Huawei*, No. 6-21-cv-01247 (W.D. Tex.)

[1] Google LLC is a subsidiary of XXVI Holdings Inc., which is a subsidiary of Alphabet Inc. XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding.

- *Verizon v. VoIP-Pal*, No. 3-21-cv-05275 (N.D. Cal.)
- *Twitter v. VoIP-Pal*, No. 3-21-cv-09773 (N.D. Cal.)
- *VoIP-Pal v. Meta Platforms*, Case No. 3-22-cv-03202 (N.D. Cal.)
- *VoIP-Pal v. Huawei*, Case No. 3-23-cv-00151 (N.D. Tex.)

Both patents were also asserted in completed litigations:

- *VoIP-Pal v. Apple*, No. 6-21-cv-00670 (W.D. Tex.)
- *Apple v. VoIP-Pal*, No. 3:21-cv-05110 (N.D. Cal.)
- *VoIP-Pal v. AT&T*, No. 6-21-cv-00671 (W.D. Tex.)
- *AT&T v. VoIP-Pal*, No. 3-21-cv-05078 (N.D. Cal.)

Petitioner is simultaneously filing one other petition challenging different '234 Patent claims and two other petitions challenging the '721 Patent.

Certain claims of the '234 Patent are or were subject to a petition for IPR in *Google LLC v. VoIP-Pal.com, Inc.*, No. IPR2022-01072 (P.T.A.B.); *Google LLC v. VoIP-Pal.com, Inc.*, No. IPR2022-01073 (P.T.A.B.); *Amazon.com, Inc. v. VoIP-Pal.com, Inc.*, No. IPR2022-01178 (P.T.A.B.); *Amazon.com, Inc. v. VoIP-Pal.com, Inc.*, No. IPR2022-01179 (P.T.A.B.); *Meta Platforms, Inc. v. VoIP-Pal.com, Inc*, No. IPR2022-01231 (P.T.A.B.); *Meta Platforms, Inc. v. VoIP-Pal.com, Inc*, No. IPR2022-01232 (P.T.A.B.); *Samsung Electronics Co. v. VoIP-Pal.com, Inc*, No. IPR2022-01390 (P.T.A.B.); *Samsung Electronics Co. v. VoIP-Pal.com, Inc*, No. IPR2022-01391 (P.T.A.B.). Certain claims of the related '721 Patent are subject to

a petition for IPR in *Google LLC v. VoIP-Pal.com, Inc.*, No. IPR2022-01074 (P.T.A.B.); *Google LLC v. VoIP-Pal.com, Inc.*, No. IPR2022-01075 (P.T.A.B.); *Amazon.com, Inc. v. VoIP-Pal.com, Inc.*, No. IPR2022-01180 (P.T.A.B.); *Amazon.com, Inc. v. VoIP-Pal.com, Inc.*, No. IPR2022-01181 (P.T.A.B.); *Meta Platforms, Inc. v. VoIP-Pal.com, Inc*, No. IPR2022-01234 (P.T.A.B.); *Meta Platforms, Inc. v. VoIP-Pal.com, Inc*, No. IPR2022-01235 (P.T.A.B.); *Samsung Electronics Co. v. VoIP-Pal.com, Inc*, No. IPR2022-01392 (P.T.A.B.); *Samsung Electronics Co. v. VoIP-Pal.com, Inc*, No. IPR2022-01393 (P.T.A.B.).

Petitioner, Patent Owner, Amazon, Meta, Twitter, AT&T, and Verizon are also involved in pending and closed litigations involving U.S. Patent No. 10,218,606.[2]

[2] Meta, No. 6-20-cv-00267 (W.D. Tex.) and No. 3-22-cv-04279 (N.D. Cal.); Amazon, No. 6:20-cv-00272 (W.D. Tex.); Google, No. 6:20-cv-00269 (W.D. Tex.) and No. 3-22-cv-05419 (N.D. Cal.); Twitter, Nos. 3:21-cv-02769 and 3:20-cv-02397 (N.D. Cal.); Apple, No. 5:20-cv-02460 (N.D. Cal.) and No. 6:20-cv-00275 (W.D. Tex.); AT&T, No. 5:20-cv-02995 (N.D. Cal.) and No. 6:20-cv-00325 (W.D. Tex.); Verizon, No. 5:20-cv-03092 (N.D. Cal.) and No. 6:20-cv-00327 (W.D. Tex.).

To Petitioner's knowledge, there are no other judicial or administrative matters that would affect or be affected by a decision here.

C. Lead and Back-Up Counsel under §42.8(b)(3)

Lead counsel: Naveen Modi (Reg. No. 46,224). Backup counsel: (1) Joseph E. Palys (Reg. No. 46,508), (2) Daniel Zeilberger (Reg. No. 65,349).

D. Service Information

Service information is Paul Hastings LLP, 2050 M Street NW, Washington, D.C. 20036, Tel.: 202.551.1700, Fax: 202.551.1705, email: Google-VoIP-Pal-IPR@paulhastings.com. Petitioner consents to electronic service.

III. PAYMENT OF FEES UNDER 37 C.F.R. §42.103

Review of 26 claims is requested. The undersigned authorizes the Office to charge to Deposit Account No. 50-2613 the 37 C.F.R. §42.15(a)(1) fee and any additional fees due for this Petition.

IV. CERTIFICATION OF GROUNDS FOR STANDING

Petitioner certifies under Rule 42.104(a) that the '234 Patent is available for IPR and that Petitioner is not barred or estopped from requesting IPR of the Challenged Claims on the grounds in this Petition. Petitioner certifies: (1) Petitioner does not own the '234 Patent; (2) Petitioner (or any real party-in-interest) has not filed a civil action challenging the validity of any '234 Patent claim; (3) estoppel provisions of 35 U.S.C. §315(e)(1) do not prohibit this IPR; and (4) this Petition is filed after the '234 Patent was granted.

V. OVERVIEW OF CHALLENGE AND RELIEF REQUESTED

A. Prior-Art References

1. **U.S. Patent No. 7,668,159 ("Buckley") (EX1005),** filed on August 3, 2007 and granted on February 23, 2010, is prior-art under at least pre-AIA 35 U.S.C. §102(e).

2. **U.S. Patent No. 6,954,654 ("Ejzak") (EX1007),** filed on July 31, 2001 and granted on October 11, 2005, is prior-art under at least pre-AIA 35 U.S.C. §§102(a) and 102(b).

3. **U.S. Patent No. 8,731,163 ("Bates") (EX1009),** filed on May 9, 2007 and granted on May 20, 2014, is prior-art under at least pre-AIA 35 U.S.C. §102(e).

B. Relief Requested

Petitioner requests cancellation of the Challenged Claims as follows:

Ground	Claims	Proposed Statutory Rejection
I	30-33, 35, 38-40, 43, 45-48, 51, 54, 61-62, 64-65, 67, 70, 72, and 75	Obvious under §103 over Buckley
II	38-39, 54, and 70	Obvious under §103 over Buckley in view of Ejzak
III	30-33, 35, 37-40, 43, 45-48, 51, 53-54, 61-62, 64-65, 67, 69-70, 72, and 75	Obvious under §103 over Buckley in view of Bates
IV	38-39, 54, and 70	Obvious under §103 over Buckley in view Bates and further in view of Ejzak

VI. NO DISCRETIONARY DENIAL

Petitioner respectfully requests that the Board decline to exercise its discretion to deny institution under §§ 314(a) or 325(d).

§314(a): On June 1, 2022, the co-pending district court litigation was transferred from the Western District of Texas to the Northern District of California. EX1029. At the time of filing of this Petition, no trial date has been set. To the contrary, the district court has entered a stay of the proceedings. EX1028. Moreover, this Petition is being submitted concurrently with a Motion for Joinder, requesting institution and joinder with the Meta IPR Proceeding, which the Board instituted on January 31, 2023. This Petition raises identical issues to those in the Meta IPR Proceeding. And to alleviate any concerns of duplicative efforts between the district court and the Board, Petitioner hereby stipulates that it will not pursue, in district court, invalidity based on any instituted IPR ground.

§325(d): Where a petitioner files a me-too / copycat petition in conjunction with a timely motion for joinder and agrees to assume a "passive understudy role," the *General Plastic* factors are "effectively neutraliz[ed]." *Apple Inc. v. Uniloc 2017 LLC*, IPR2018-00580, Paper 13 at 10 (Aug. 21, 2018); *see also id.* at 10-11 (discussing lack of burden or prejudice). While Google previously challenged the '234 patent, this case is distinguishable from *Apple Inc. v. Uniloc 2017 LLC*, IPR2020-00854, Paper 9 at 4 (Oct. 28, 2020) (precedential) ("*Uniloc II*").

***General Plastic* Factor 1**: Factor 1 weighs in favor of institution. Although Petitioner previously filed two petitions challenging the claims of the '234 patent, *see supra* Section II.B, this Petition incudes Petitioner's first challenge to claims 67 and 69 of the '234 patent. On balance and based on the particular facts, factor 1 thus weighs in favor of institution. *See Advanced Micro Devices, Inc. v. Monterey Research, LLC*, IPR2021-00776, Paper 13 at 12 (Oct. 13, 2021) (finding factor 1 did not weigh against institution when the "me-too" petition challenged different claims that the petitioner did not challenge in its two previous petitions).

***General Plastic* Factors 2, 4, and 5**: Factors 2, 4, and 5 do not weigh in favor of discretionary denial. In *Uniloc II*, the Board noted that petitioner Apple failed to provide any context by which to ascertain Apple's knowledge of the prior art used in the instituted petition that Apple sought to join. *Uniloc II* at 10-11. In this case, Google knew of the Buckley, Bates, and Ejzak prior art references when filing its prior IPR petitions. EX1030. However, Google was not aware of the specific Buckley, Bates, and Ejzak analysis used in this Petition until June 30, 2022, when the Meta IPR Proceeding was filed. Indeed, Google's first petitions for the '234 patent, which were filed earlier that month, did not rely on the Buckley, Bates, and Ejzak prior art. Google did not seek joinder to the Meta IPR Proceeding until after (1) Google's first petitions were denied, and (2) the Meta IPR Proceeding was instituted, thereby minimizing use of the Board's resources. *See Atlassian Corp. v.*

Express Mobile Inc., IPR2022-00783, Paper 16 at 10 (Oct. 7, 2022) (finding that factors 2, 4, and 5 did not weigh against institution when the petitioner "was not aware of . . . the specific combinations, raised in the grounds" of the instituted petition).

***General Plastic* Factor 3**: Factor 3 weighs in favor of institution. In *General Plastic*, the Board said that "[t]he absence of any restrictions on follow-on petitions would allow petitioners the opportunity to strategically stage their prior art and arguments in multiple petitions, using our decisions as a roadmap, until a ground is found that results in the grant of review." *General Plastic Indus. Co. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 17 (Sept. 6, 2017). But roadmapping concerns are "minimized" when "a petitioner files a later petition that raises unpatentability challenges substantially overlapping with those" in an earlier petition and "the later petition is not refined based on lessons learned from later developments." *Code200, UAB v. Bright Data Ltd.*, IPR2022-00861, Paper 18 at 5 (Aug. 23, 2022) (precedential); *see Expedia, Inc. v. Express Mobile, Inc.*, IPR2022-00785, Paper 16 at 9 (Sept. 27, 2022).

Here, roadmapping concerns are minimized because Petitioner presents substantively identical challenges to claims 30-33, 35, 37-40, 43, 45-48, 51, 53-54, 61-62, 64-65, 67, 69-70, 72, and 75 of the '234 patent based on the same prior art and the same unpatentability theories as presented in the Meta IPR Proceeding. *See*

EX1027. Moreover, the Meta IPR Proceeding was filed before the Board or Patent Owner addressed the merits of any '234 petition. Permitting Google to join the Meta IPR Proceeding in this context would be the "common" and "accepted approach." *Expedia*, IPR2022-00785, Paper 16 at 7-9. Thus, factor 3 also weighs in favor of institution.

***General Plastic* Factor 6**: Factor 6 weighs in favor of institution for two reasons. First, the Board has already allocated resources to complete the Meta IPR Proceeding. *See Advanced Micro Devices, Inc. v. Monterey Research, LLC*, IPR2021-00776, Paper 13 at 17 (Oct. 13, 2021). And while the Board need not speculate whether Meta Platforms, Inc. ("Meta") will settle with the Patent Owner, *see id.*, the Meta IPR Proceeding could continue even if Meta were to settle because Google (via this IPR proceeding) and Samsung (via IPR2022-01391) are both vying to join the Meta IPR proceeding. Thus, as a second reason, Petitioner submits that any potential strain on Board resources is minimized because the Meta IPR Proceeding could reach its conclusion regardless of the constitution of the petitioner. *See Expedia*, IPR2022-00785, Paper 16 at 10.

***General Plastic* Factor 7**: The seventh *General Plastic* factor also weighs in favor of institution because Petitioner merely seeks to join an ongoing proceeding as an understudy, and the Board will not face difficulty in timely issuing a final written decision in that proceeding. *See id.*

Moreover, the seven *General Plastic* factors are "a non-exhaustive list," and "additional factors may arise in other cases for consideration, where appropriate." *General Plastic Indus. Co. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 16, 18 (Sept. 6, 2017). One additional factor that the Board may consider is whether a petitioner's parallel district court litigation has been stayed. *See Google LLC v. Express Mobile, Inc.*, IPR2022-00598, Paper 13 at 9-10 (Aug. 19, 2022). Here, Google's district court litigation in the Northern District of California has been stayed (except with respect to a motion for judgment on the pleadings), at least as of the time of the filing of this Petition. EX1028. This stay further "alleviates concerns about potential issues that may arise from having Board and district court proceedings occurring in parallel," *Google*, IPR2022-00598, Paper 13 at 9-10, which provides any additional support needed for the Board to grant institution.

VII. THE '234 PATENT

The '234 Patent issued on January 14, 2014, from U.S. Application No. 13/056,277, filed January 27, 2011. It claims priority to Provisional Application No. 61/129,898 (filed July 28, 2008) and PCT Application No. PCT/CA2009/001062 (filed July 28, 2009).

A. Technology Summary

Traditional **P**ublic **S**witched **T**elephone **N**etworks (PSTNs) route calls over circuit-switched telephone (aka "voice") networks.[3] *See* EX1007, 1:19-22. The '234 Patent uses a sequence of messages sent over a "non-voice" network (such as a packet-switched Internet Protocol (IP) network) to route voice calls over an IP network (aka Voice-over-IP or VoIP). EX1001, 8:33-39, 9:6-13.

The '234 Patent's call routing process begins when a mobile telephone (purple[4] element 12 in Figure 1 below) sends an "access code request message" to an access server (orange element 14) belonging to a telecommunications service provider (such as AT&T). EX1001, 11:44-48. The access code request message includes the intended callee's identifier, such as a telephone number, and the caller's

[3] Such networks are known as "circuit-switched" because they can involve a particular, dedicated circuit connection to transmit data (in the form of electrical signals) between the caller and callee. This stands in contrast to "packet-switched" networks (such as the Internet) that break data into smaller packets that are separately routed over network connections to the recipient, which reassembles the packets once they are received. *See* EX1003 ¶40.

[4] Color in the diagrams herein are Petitioner's annotations. All emphasis herein is added, unless indicated otherwise.

"location identifier." *Id.* 11:59-62, 12:13-15. Based on that information in the access code request message, the access server responds with an "access code" in an "access code reply message." *Id.* 12:55-59. The "access code" is a temporary number, such as a local telephone number, used to route the call. *Id.* 12:63-66.

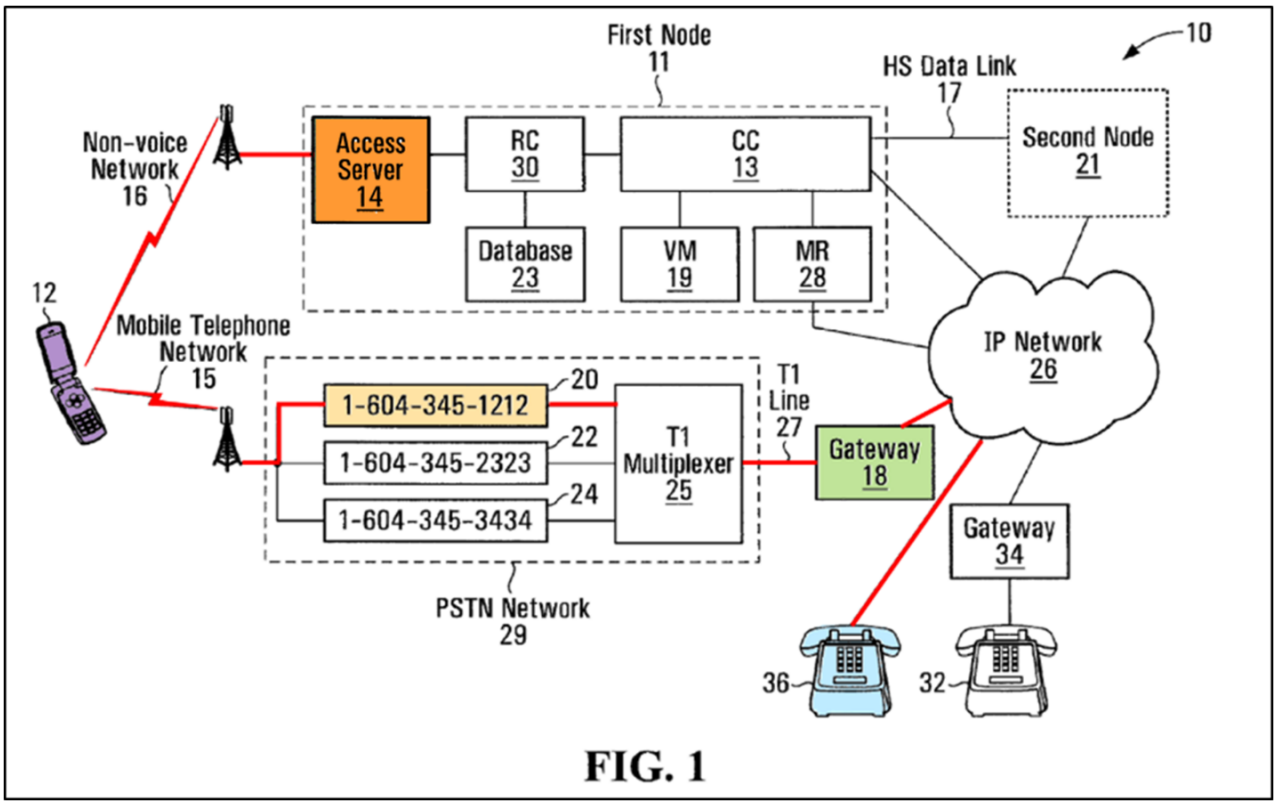


FIG. 1

In Figure 1, the "access code" is the temporary telephone number in yellow-highlighted element 20 (*i.e.*, 1-604-345-1212). This temporary number is used to route the call within the phone's home network towards a gateway (green element 18). The gateway bridges the PSTN (element 29) to an IP Network (element 26), so that calls originating or terminating on the PSTN (element 29) can be routed over IP network (element 26) to a callee's IP phone (blue element 36). *Id.*, 13:40-47. As was

well-known in the art, IP networks such as the Internet do not apply long-distance or roaming charges, so routing a call over such networks in the manner described above avoids such charges. *See, e.g.*, EX1011 (prior art), 1:7-19 ("By moving voice traffic to IP networks, companies may reduce or eliminate certain toll charges associated with transporting calls over [PSTN]"). The access server (element 14) may receive the access code request message "over a non-voice network, such as an internet using WiFi or GPRS technology for example" EX1001, 11:51-52.

The purported invention is summarized in Figure 3, which depicts the process from the telephone's perspective as found, e.g., in claim 1:

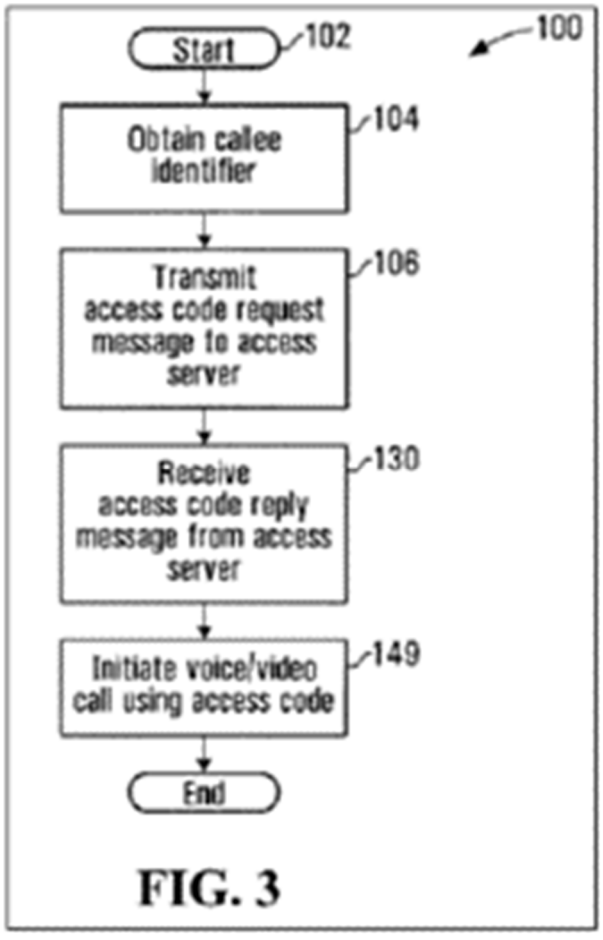


FIG. 3

The ’234 Patent also contains symmetric claims from the access server’s perspective, e.g., in claim 30.

B. Person of Ordinary Skill in the Art

A POSITA at the time of the ’234 Patent would have had a Bachelor’s degree in Computer Science or Electrical Engineering, or an equivalent field, and approximately two years of experience with networks. Additional education might compensate for less experience, and vice-versa. EX1003, ¶¶ 45-47.

VIII. CLAIM CONSTRUCTION

A. Agreed constructions

This Petition applies the constructions agreed to by the parties in Case No. 5:22-cv-03202 (N.D. Cal.) for the following terms governed by 35 U.S.C. §112 ¶ 6:

Claim Term	Agreed Construction
“means for receiving from the mobile telephone an access code request message” (claim 46)	Function: receiving from the mobile telephone an access code request message Structure: a network interface
“means for transmitting an access code reply message including said	Function: transmitting an access code reply message including said access code to the mobile telephone Structure: a network interface

access code to the mobile telephone" (claim 46)	

B. "means for producing an access code … wherein said means for producing said access code comprises means for selecting said access code from a pool of access codes" (Claim 46)

The Board should construe this term as performing the function of "producing an access code by selecting said access code from a pool of access codes" and incorporating a structure of "a processor (of the routing controller), a memory storing table memory in a form given in FIG. 10, a temporary memory containing a local calling area identifier and an access code store, and a clock for selecting an access code from a pool of access codes using the algorithm given in FIG. 12." EX1001, 14:30-54, 16:7-11, 17:33-36, 20:39-21:61, Figure 12; EX1003 ¶¶49-51.

A court in W.D. Tex. essentially adopted Patent Owner's previously proposed construction, which differs in that it incorporates the structure of "Access server 14 and/or a routing controller 30 having a microprocessor (152 or 232) programmed to implement the algorithm illustrated in FIG. 7 including step 196 and/or FIG. 12. A memory stores the pool of access codes that is selected from. Various embodiments of a routing controller selecting an access code from the pool of access codes are disclosed at col. 15, line 7 to col. 22 line 60. In some embodiments, the routing

controller is part of or integrated with the access server as described in col. 17 lines 19-30." EX1012, 3.

The asserted grounds satisfy both constructions, as explained below.

***

Petitioner does not contend that any other claim terms require construction for purposes of resolving the issues raised by the prior art in this Petition.

IX. OVERVIEW OF THE PRIOR ART

A. Buckley

Buckley teaches routing PSTN calls over packet-switched networks. EX1005, Abstract. Buckley's Figure 1 depicts example components involved, including: mobile phones (*i.e.* **U**ser **E**quipment (UE) (element 102)); **C**ircuit-**S**witched (CS) networks (*e.g.* PSTN (element 110)); and **P**acket-**S**witched (PS) networks (*e.g.* wireless **L**ocal **A**rea **N**etwork (WLAN) Broadband Access (element 108), and **I**nternet protocol **M**ultimedia **S**ubsystem (IMS) Core Network (element 112)). *Id*., 3:19-65.

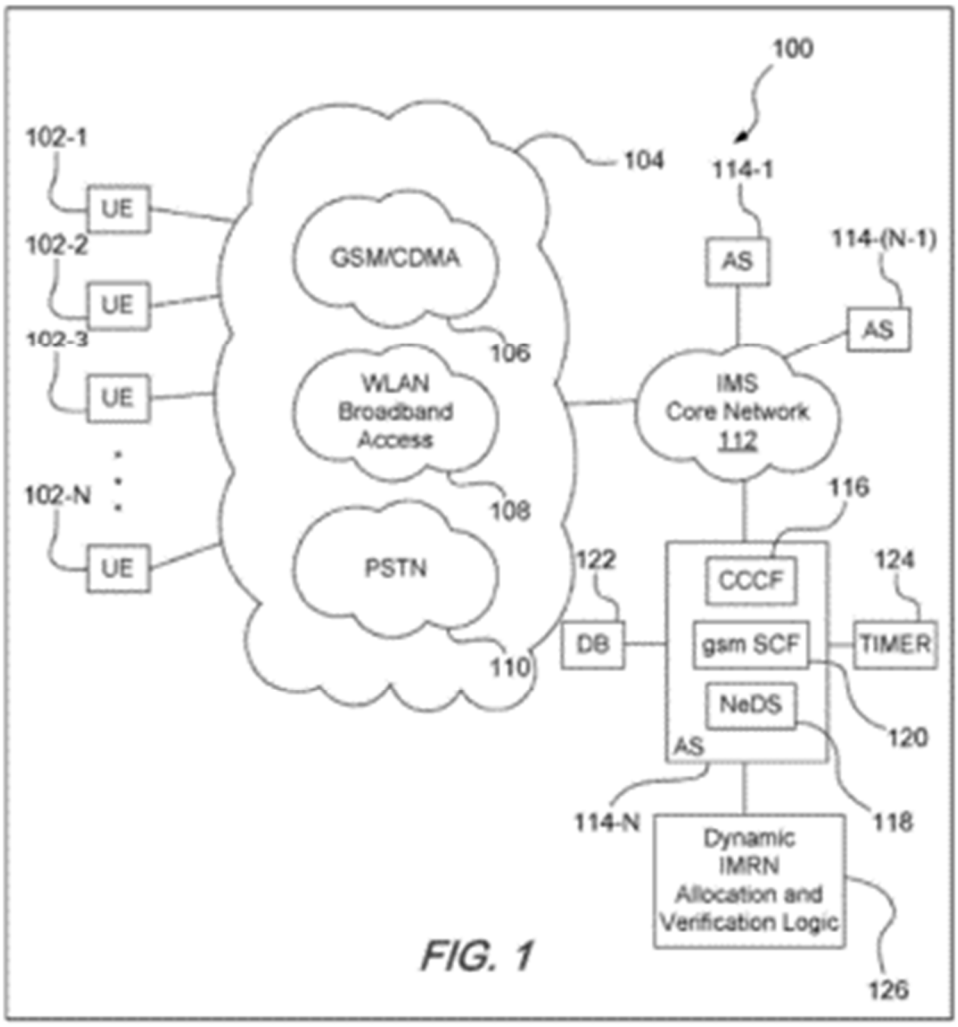
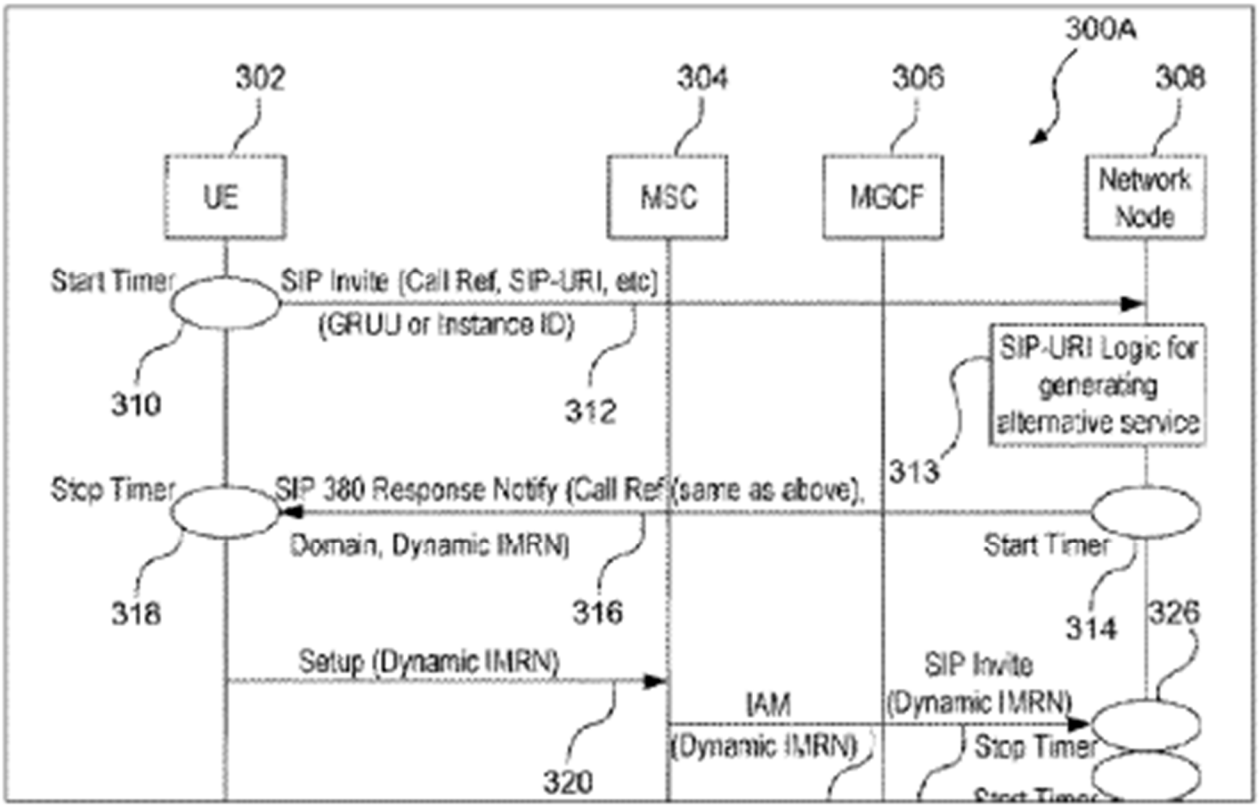


FIG. 1

Buckley's **A**pplication **S**erver (AS) uses well-known **S**ession **I**nitiation **P**rotocol (SIP) messaging (access code request and reply messages) to assign a temporary **I**P **M**ultimedia **R**outing **N**umber (IMRN) (access code) that allows CS-originated calls to be routed over IMS (IP) networks. *Id*. For example, Figure 3A (excerpted below) depicts this process, which begins when the calling mobile phone (UE, element 302) sends a SIP Invite message (element 312) to the home AS (network node 308). *Id*., 6:55-63. The AS selects a temporary IMRN from a pool and sends it back to the mobile telephone (UE) in a SIP Response message (element

316). *Id*., 4:31-40, 7:29-42. The UE then uses the IMRN to initiate a call (element 320) that an AS routes to the callee. *Id*., 4:15-40, 7:47-64. The SIP messaging includes caller and callee **U**niform **R**esource **I**ndicators (URI) that identify location. *Id*., 2:62-3:12, 5:18-58, Figures 3A, 3B.

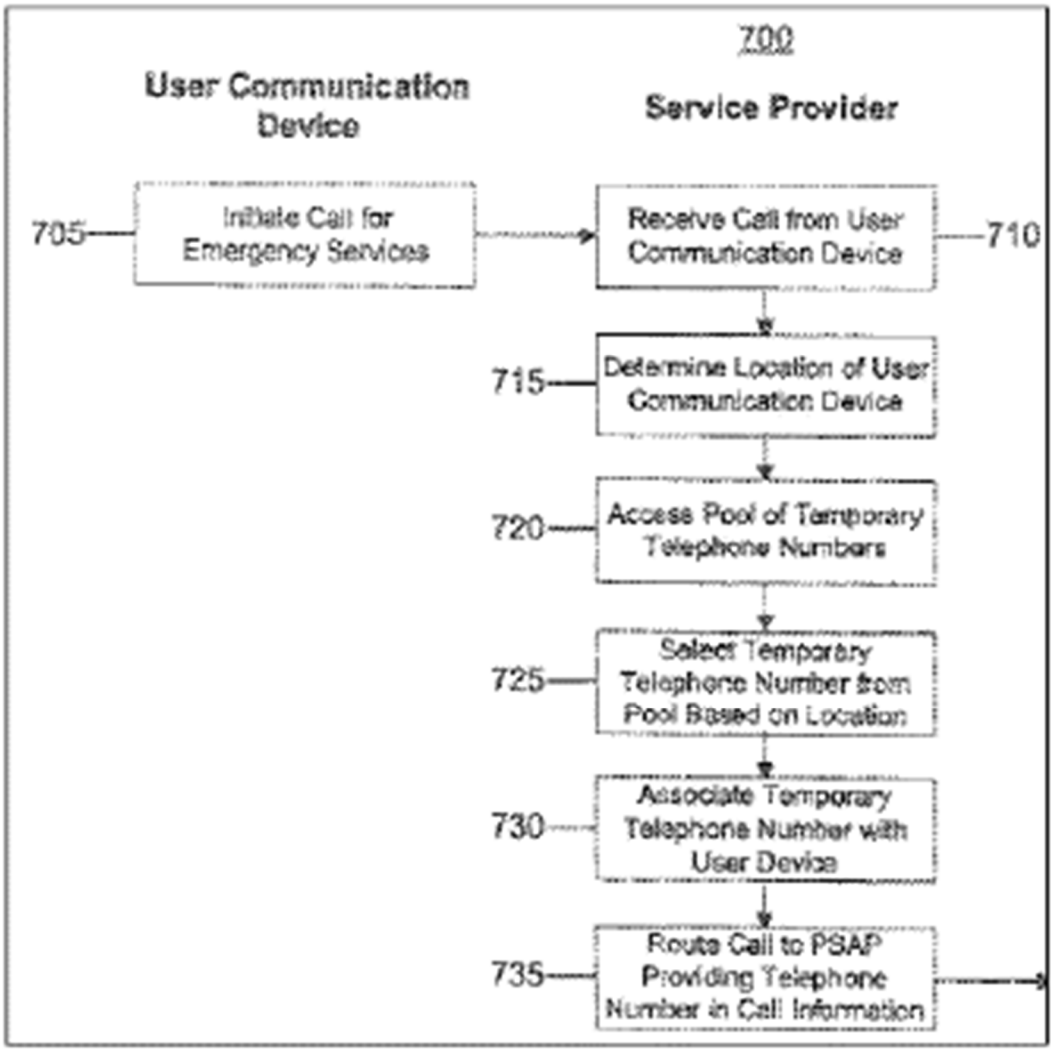


B. Bates

Bates "relates to identifying and assigning correct location information to callers in a communications system." EX1009, 1:12-13. Bates involves routing calls to the appropriate **P**ublic **S**afety **A**nswering **P**oint (PSAP) (*i.e.*, emergency services, such as 9-1-1), which involves "circuit-switched voice network[s] [such as the PSTN,] and packet-switched data networks [that] may include networks based on

the Internet protocol (IP)." *Id*., 6:32-38. Bates teaches how to improve such routing decisions by teaching a process of selecting a temporary number for those calls. See EX1009, Abstract, 12:25-31.

Notably, the context in which Bates's process for selecting a temporary number applies is directly related to Buckley's procedure for setting up calls. Bates's Figure 7 (excerpted below), for example, depicts a process highly analogous to that in the portion of Buckley's Figure 3A excerpted above (and analogous portions of Buckley's Figure 3B). As shown below, in Bates, a mobile telephone (a "User Communication Device," corresponding to Buckley's UE 302) initiates a call by sending an access code request message (element 705 below) to a Service Provider's node (corresponding to Buckley's AS network node 308). Based on the location of the caller's mobile telephone, Bates teaches a process for selecting a temporary number from a pool of numbers that enable a local call to be made (elements 715-725 below, applicable to element 313 in Buckley's Figure 3A above, as well as element 204 in Buckley's Figure 2).



C. Ejzak

Ejzak teaches techniques for use in a communication system having many of the same network entities and associated functionalities taught in Buckley. *Compare* EX1005, Figure 3A, *with* EX1007 Figure 1 (element 141) and Figure 3 (both including, e.g., IP Multimedia Subsystem (IMS), Mobile Switching Center (MSC), Mobile Gateway Control Functions (MGCF), Interrogating Call State Control Function (I-CSCF), and Serving Call State Control Functions (S-CSCF)). Like Buckley and Bates, Ejzak teaches PSTN and VoIP call interoperability such that

calls can traverse packet-switched networks (like an IP network) and circuit-switched networks (like a PSTN). See EX1007, 2:36-40. Ejzak further teaches functionality to use access codes, such as E.164 numbers, to identify IP addresses that are used to route calls over IP networks. *Id*., 8:43-48. It also teaches services to establish emergency service calls, and services that use a mobile phone's location to route call traffic over the least-cost path. *Id*., 7:28-36, 4:52-60.

Like Buckley, Ejzak further teaches using SIP messaging within this architecture. *Id*., 8:58-66. For example, during Ejzak's call messaging and routing process, a callee identifier (such as an E.164 telephone number) is received in a SIP Invite message, and Ejzak's network entities are able to select from, and analyze, sets of attributes associated with that callee identifier. *Id*. Ejzak's servers determine from those attributes whether the callee identifier is associated with a device that can receive calls routed over packet-switched networks (*e.g*., IMS or IP) or circuit-switched networks (*e.g*., PSTN). *Id*.

X. SPECIFIC GROUNDS FOR PETITION

A. Ground I: Claims 30-33, 35, 38-40, 43, 45-48, 51, 54, 61-62, 64-65, 67, 70, 72, and 75 Are Obvious Over Buckley.

1. Claim 30[5]

[5] The complete text of the claims' corresponding portions is available in the claim listing attached hereto as Appendix A.

a. **Element 30[preamble]**

Buckley teaches a method for enabling mobile telephone roaming. EX1003 ¶¶64-66. Buckley teaches methods for UEs (User Equipment), in particular "mobile communication device[s] (e.g. cellular phones …)," that are "untethered," "capable of operating in multiple modes," and "can transition from one mode of communications to another mode of communications without loss of continuity." EX1005, 3:25-40. A POSITA would have understood that an "untethered" UE performing such transitions would commonly be roaming across different geographic locations, and that Buckley's methods would be applied during such roaming. EX1001, 1:16-19; EX1015 [0029]; EX1003 ¶65.

Further, Buckley was specifically designed for use across different "wireless technologies such as Global System for Mobile Communications (GSM) networks and Code Division Multiple Access (CDMA) networks", which were typically operated by different service providers. EX1005, 3:41-53; EX1002, 1962; EX1003 ¶66. In fact, Buckley "envisaged that the teachings hereof may be extended to ***any*** 3rd Generation Partnership Project (3GPP)-compliant cellular network," and such networks and 3GPP standards were well-understood to provide for roaming by being in another mobile telephone service provider's network and not the mobile telephone's home network. EX1005, 3:41-53; EX1003 ¶66. Indeed, Buckley teaches performing its methods in situations where UEs had to "register" with new networks,

where the AS was "required" to provide "inter-operator" functions for UEs to communicate over different service operator networks, and where UEs would communicate with servers in the user's "***home*** IMS network." EX1005, Fig. 2 (element 202), 2:34-47, 4:1-6, , 4:22-25, 8:22-47. A POSITA would have understood that such steps occur when the UE was roaming in another mobile telephone service provider's network and not in the mobile telephone's home network, as recited in the preamble. EX1003 ¶66.

b. **Element 30[a]**

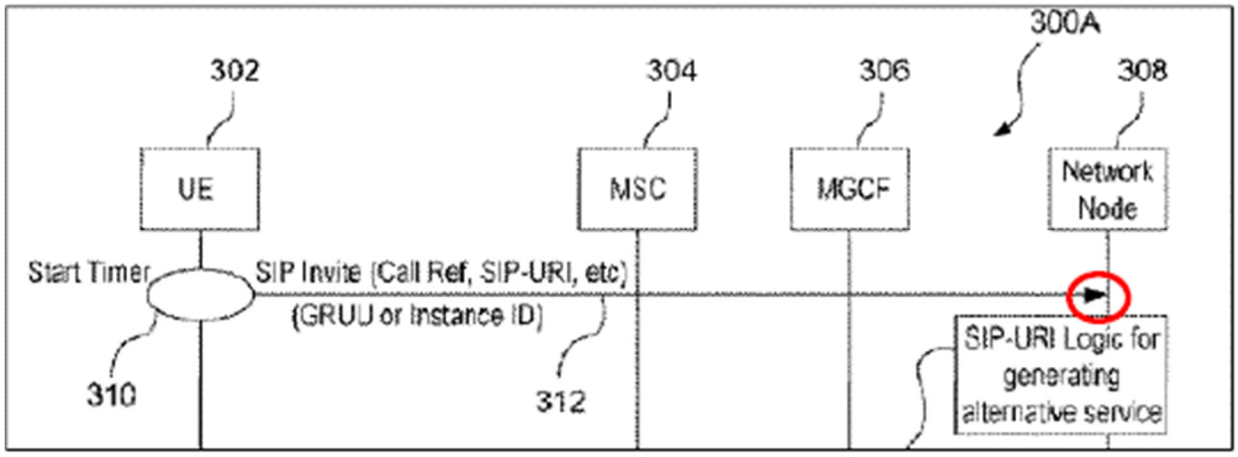
Buckley teaches this element. See EX1003 ¶¶67-73.

i. **"receiving from the mobile telephone an access code request message including a callee identifier associated with the callee…"**

As shown, for example, in Figure 3A (cropped in relevant part below),[6] Buckley teaches that after a UE (mobile phone) 302 initiates a call, it transmits an SIP Invite (access code request) message 312 to a specific network node 308 called an Application Server (AS) (access server) that receives the SIP Invite message 312 (access code request message). EX1003 ¶68; EX1005, 6:58-63 ("A Wireless UE

[6] References herein to Buckley Figure 3A also include the analogous portions of Figure 3B "wherein certain intermediary nodes in a home network 350 are exemplified." EX1005, 8:22-26.

device 302 … is operable to generate a SIP Invite message 312 towards an application server (AS) node 308 in response to detecting that a SIP call is being initiated from UE device 302").



The SIP Invite message (access code request message) invites (*i.e.*, requests) the AS to provide an IP multimedia routing number (IMRN) (access code, as explained below). The IMRN identifies, for example, a telephone number known as an E.164 number. EX1005, 4:47 ("E.164 numbers [] are operable as IMRNs"), 4:63-67 ("E. 164 is indicative of the International Telecommunications Union (ITU) telephone numbering plan…."). The IMRN telephone numbers are access codes because they provide access to call the callee. EX1003 ¶69; EX1001, 2:44 ("The access code may include a telephone number."). For example, the IMRN is required for the UE to have access to a communication channel set up as a CS-network call. EX1003 ¶69; EX1005, 9:61-63 ("[T]he UE shall use the IMRN … as the E.164 number to set up a CS call"). Moreover, the IMRN telephone number is a code of

digits used by the mobile telephone in place of the original callee identifier (*i.e*. the URI) to connect to the AS node so that the AS node can complete the call to the callee's original URI; indeed, that is the AS node's purpose in providing the IMRN. EX1005, 6:38-40 ("[T]he UE sets up a call using the IMRN that terminates on the AS node. The IMRN is then interrogated against the record to retrieve the called party's URI"). Thus, the SIP Invite message that requests such an IMRN be provided is an access code request message.

Buckley's SIP Invite message (access code request message) also includes a callee identifier associated with the callee. Buckley teaches that a "called party" (callee) can be "identified with a Uniform Resource Indicator (URI)" (callee identifier, which is associated with the callee). EX1005, 1:51-53. The SIP Invite (access code request message) includes the callee's URI (callee identifier). EX1005, 6:63-65 ("[T]he SIP Invite message 312 includes applicable call information such as [the] called party's SIP URI….").

ii. **"… and a location identifier separate and distinctive from said callee identifier, identifying a location of the mobile telephone;"**

The SIP Invite message (access code request message) also includes the UE's (mobile telephone's) location information. For example, it includes the "calling party's SIP URI." *Id*. 5:25-27, 47-53. Buckley teaches that a "typical" form of "the URI (or SIP address)" is in "the form of sip:<username>@<hostname>" (EX1005,

5:25-27, 7:1-2), and provides an example showing that the hostname can be an IP address (EX1005, 9:27: "Contact: sip:alice@***192.0.2.1***"); *see also* EX1010[7], 149 (teaching that the host name can contain a IP address). Thus, Buckley teaches that a "typical" calling party's SIP URI can be in the form of a network address that includes an IP address, which a POSITA would recognize (as the '234 Patent admits was well known) is a location identifier. EX1005, 19:37-38 ("network address [] identifies [a] network location"); EX1001, 12:19-20 ("[T]he location identifier in the location identifier field [] may include an IP address").

The caller's URI is different than the callee's URI for all calls (except for the rare instance when the caller has dialed himself or herself). EX1003 ¶72. So, the callee's URI (callee identifier) is necessarily separate and distinctive from the caller's URI (location identifier) for all outbound calls. EX1003 ¶72.

As a further example, the SIP Invite (access code request) message can also include a P-Preferred-ID. EX1005, 8:67-9:20. "The P-Preferred-ID is set to the calling line identity (CLI) associated with the user or subscriber of the UE device for identification in the CS network"—in other words, a telephone number. *Id*., 9:3-6, 9:20 (example "P-Preferred-Identity: <tel: +1-555-1001>"). A POSITA would have recognized that the telephone number includes a location identifier (e.g. a

[7] EX1010 (RFC 3261) is cited in Buckley. EX1005, 5:29-33.

country or area code) for a telephone's network location in a circuit-switched (CS) network such as a PSTN. EX1003 ¶73. A POSITA would have also recognized that the country code and area code, and in some situations the telephone prefix (*i.e.*, the three digits in a telephone number before the final four digits), are each associated with the phone's location. See EX1001, 12:32-34 "([T]he location identifier may include a … local calling area where the mobile telephone [] is or may be situated."); EX1003 ¶73. The P-Preferred-ID is thus a location identifier that identifies the location of the caller's mobile telephone, and because it identifies the caller rather than the callee, it is also separate and distinctive from the callee identifier (*i.e.*, the callee's URI). *See id*.

c. **Element 30[b]**

Buckley teaches this element. *See* EX1003 ¶¶74-80.

i. **"producing an access code identifying a communication channel based on said location identifier and/or based on a location pre-associated with the mobile telephone, …"**

Buckley teaches that the IMRN is based on the location identifier (which, as discussed above, can be either the caller's URI or P-Preferred ID) and/or based on a location pre-associated with the caller's mobile telephone. Specifically, Buckley teaches the IMRN can be constructed based on "some relationship(s) to one or more of the parameters received in a message … from the UE device" or "may be mapped to ***all the received SIP call information***" in the SIP Invite message. EX1005, 3:4-

12, 4:41-49, 6:1-3. And, "all the received SIP call information" would include the caller's SIP URI and, additionally, the P-Preferred-Identity. *Id*., 5:47-53 ("The call information may include information such as … [the] calling party's SIP URI…."), 6:63-66 ("[T]he SIP Invite message 312 includes applicable call information such as … the P-Preferred-Identity"). The SIP URI and P-Preferred Identity both include location identifiers for the caller's mobile phone as discussed above in Element 30[a]. Thus, this mapping to "***all*** the received SIP call information" bases the IMRN on the location identifiers and/or locations pre-associated with the caller's mobile telephone, namely the caller's SIP URI and/or P-Preferred ID. EX1003 ¶75.

Buckley's IMRN identifies a communication channel. A POSITA would have understood that an E.164 telephone number (used in Buckley as an IMRN (access code) identifies a communications channel. EX1003 ¶76. Moreover, the '234 Patent itself confirms that a telephone number identifies a communication channel. *See, e.g*., EX1001 3:30-32 ("[t]he access code may include a telephone number identifying a channel operably configured to cooperate with an IP network."). Further, Buckley's SIP messaging process described above creates a "SIP session" based on the IMRN (E.164 number), and a SIP session is a channel because it establishes the end-to-end communication pathway for the duration of the communication "session." EX1005, 7:50-56, Figure 3A, 6:39-43 ("The IMRN is then interrogated against the record to retrieve the called party's URI for

establishing a SIP session with the called party (i.e. between the calling party (UE device) … and the called party….”); EX1003 ¶76.

ii. **“… said access code being different from the callee identifier and useable by the mobile telephone to initiate a call to the callee using the channel, and …”**

The SIP Response includes an IMRN (access code) that the UE uses to initiate a call to the callee using the channel identified by the IMRN. EX1005, 7:36-42 (“[T]he network node (in this example, the IMS AS node) dynamically allocates or otherwise identifies a selected IMRN mapped to the call information or parameters … and returns it back to UE device 302 via SIP 380 [Response] message 316.”); EX1005, 6:37-43 (“Upon correlating the IMRN with the call reference number, the ***UE sets up a call using the IMRN*** that terminates on the AS node. The IMRN is then interrogated against the record to ***retrieve the called party’s URI*** for establishing a SIP session with the called party”); EX1003 ¶77. The IMRN (access code) is an E.164 number that is different from, and hence at the AS it must be “mapped to,” the callee’s URI (callee identifier). EX1005, 4:41-51; EX1003 ¶77. For example, Buckley teaches “dynamically allocating or otherwise selecting the E.164 number [IMRN] to a received called party’s URI (e.g. SIP URI or Tel URI) and other received information; and providing the selected E.164 number to the originating UE device via a SIP 380 (Alternative Service) Response message” to provide access to reach the called party. EX1005, 4:52-57.

iii. **"…wherein said access code expires after a period of time and …."**

Buckley teaches that the IMRN (E.164 number) (access code) expires after a period of time, using the "Timer" mechanisms identified, for example, in Figure 3A (elements 314, 326, 328, and 330). EX1005, 2:51-59 ("If the timer has expired, the mobile device may refrain from utilizing the E.164 number [access code] (now deassigned due to timer expiration) in the CS call setup message and alternatively obtain an utilize a new E.164 number…."); EX1003 ¶78; *see also* EX1005, 21:18-21.

iv. **"… wherein producing said access code comprises selecting said access code from a pool of access codes, wherein each access code in said pool of access codes identifies a respective telephone number or Internet Protocol (IP) network address; and"**

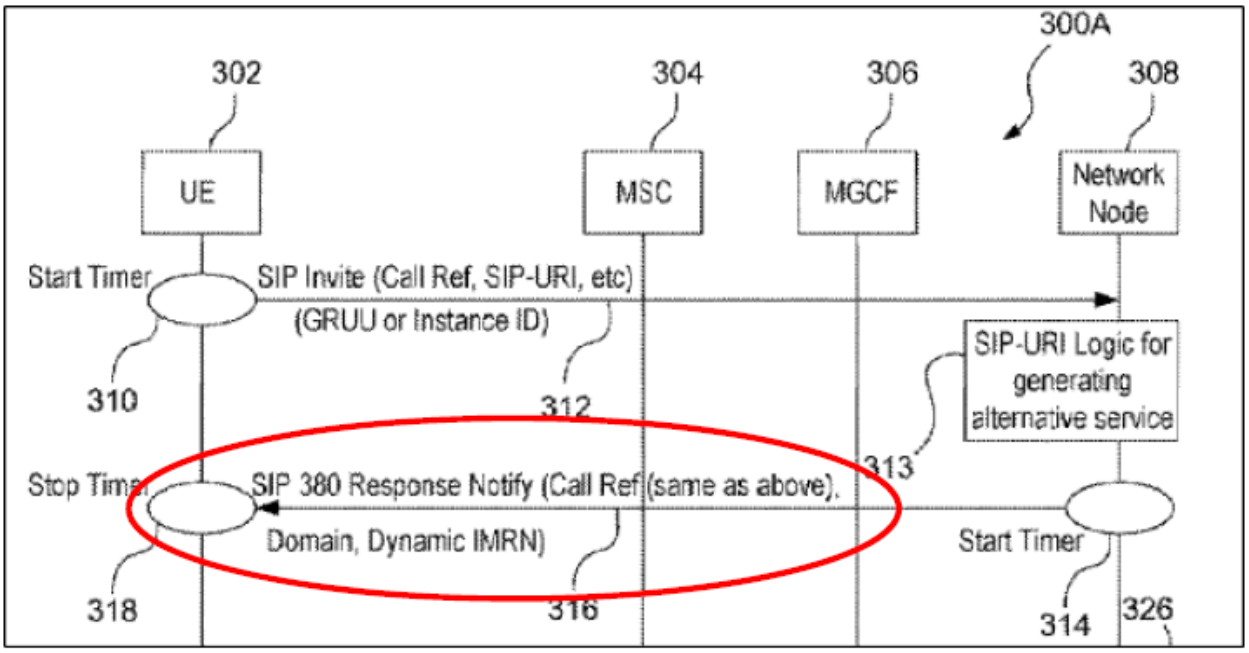
Buckley's home AS node selects the IMRN (access code) from a pool of IMRNs (access codes). EX1005, 8:54-61 ("[W]hen the UE device detects that it needs to invoke CS call origination, it may produce and send a SIP Invite message. [T]he SIP Invite message is set to indicate that the call needs to be set up over CS."); *id*., 4:34-37 (AS node capable of "configuring and managing ***a pool of IP multimedia routing numbers (IMRNs)*** from which a select IMRN may be dynamically-allocated or otherwise selected for purposes of SIP call routing….").

Each IMRN in Buckley's pool of IMRNs identifies a respective telephone or Internet Protocol (IP) network address, specifically a E.164 telephone number. *See* EX1005, 4:46-47 ("maintaining a pool of E.164 numbers that are operable as IMRNs"). Additionally, a POSITA would at least find it obvious that each access code in Buckley's pool of access codes identifies a respective telephone number of IP network address because Buckley's system is operational even if the pool only comprised one of those two options (namely E.164 numbers, as discussed above), let alone both, so is there no need to include anything other than such types of access codes to enjoy the benefits of Buckley's teachings. EX1003 ¶80. To the extent that Buckley's pool was not comprised of access codes that ***each*** identify a respective telephone number of IP network address (or a POSITA would not have found that obvious), another pool asserted in this ground is the subset of Buckley's IMRNs that each identify a respective telephone number of IP network address. EX1005, 5:5-7 ("[I]t may be desirable to provide for different pools of IMRNs"); EX1003 ¶80.

d. **Element 30[c]:**

Buckley teaches this element. *See* EX1003 ¶¶81-82.

As shown, for example, in Figure 3A below (cropped in relevant part), Buckley teaches that AS network node 308 (access server) transmits a SIP Response 316 (access code reply) message back to the UE 302 (mobile telephone):



As shown within the circled portion of the figure above, the SIP Response message (access code reply message) includes an IMRN (access code). EX1005, 7:36-42 ("[T]he network node (in this example, the IMS AS node) dynamically allocates or otherwise identifies a selected IMRN mapped to the call information or parameters … and returns it back to UE device 302 via SIP 380 [Response] message 316."); EX1003 ¶82.

2. Claim 31

Buckley teaches this claim. *See* EX1003 ¶¶83-86.

For example, Figure 1 depicts a UE (mobile telephone) connected to an AS (114-N) (access server) via a non-voice, packet switched (PS) network including a WLAN Broadband Access network (108) and the IMS Core Network (112) as annotated in red. EX1005, 3:23-24 ("[A]ccess space 104 [is] comprised of a number

of access technologies available to a plurality of UE devices"), 3:41-43 ("The access space 104 may be comprised of both CS and ***PS networks***, which may involve wireless technologies, wireline technologies, broadband access technologies, etc.").

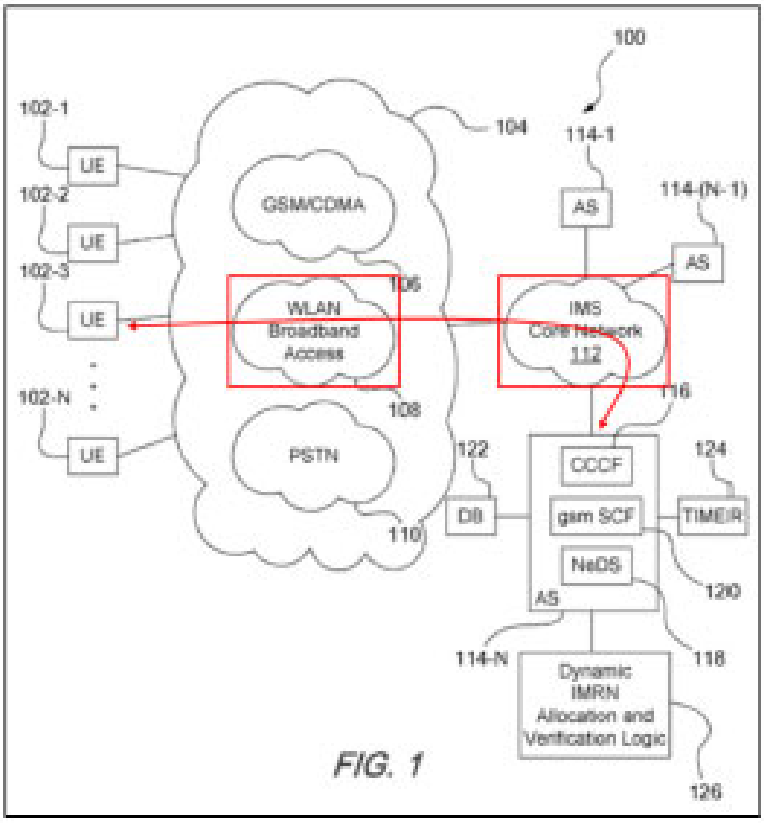


FIG. 1

The UE transmits its SIP Invite (access code request message) "to an application server (AS) node in the IMS network" through this WLAN Broadband Access network, and thus the AS receives the SIP Invite message (access code request message). *Id*. 14:33-36. PS networks, including the IMS and WLAN Broadband Access networks, are non-voice networks in the '234 patent's parlance because they carry IP data packets, not voice signals. EX1001, 11:51-52 ("non-voice network, such as an Internet, using WiFi or GPRS technology for example");

EX1003 ¶85. A POSITA would also have found it obvious for the SIP Invite to be received through a non-voice network because the SIP Invite is not a voice signal, so there is no specific need for a voice network to transmit the message, and a non-voice network would more efficiently handle such data communication. EX1003 ¶86.

3. Claim 32

Buckley teaches this element. *See* EX1003 ¶¶87-89.

As the '234 Patent describes, "the access server 14 and the routing controller 30 need not be separate, but may, for example, be combined in a single component" and "the routing controller 30 executes a process to facilitate communication between callers and callees." EX1001, 15:4-10. Buckley teaches a network node (308 in Figs 3A and 3B) where an AS (access server) is "provided with appropriate logic/structure/software/firmware module(s)." EX1005, 4:42-45; EX1003 ¶88. A POSITA would have understood that these modules comprise a routing controller operably configured to route a call between the caller and callee because these modules execute the process to facilitate communication between callers and callees described above with respect to Claim 1 where, for example, an E.164 number is used as an IMRN (access code). EX1005, 4:31-40 ("IP multimedia ***routing*** numbers (IMRNs) from which a select IMRN may be dynamically-allocated or otherwise selected for purposes of SIP call ***routing***"); EX1003 ¶88. For example, the AS

contains modules that: "maintain[] a pool of E.164 numbers that are operable as IMRNs which terminate on the AS node," select an E.164 number and map it a "called party's" URI (callee identifier), "provid[e] the selected E.164 number to the originating UE device," and "verify[] that the selected E.164 number has not timed out when that selected E.164 number is returned" during CS call set up. *Id*., 4:46-58. These modules are AS components that establish a call to the callee by, *inter alia*, verifying the IMRN has not timed out. EX1005, 4:57-60 (The modules "verify[] that the selected E.164 number has not timed out when that selected E.164 number is returned (via conventional CS call setup) to AS 114-N for effectuating a SIP call session with respect to the called party."); *Id*. 8:2-4, ("If the IMRN has not timed out, the AS node [] may establish the SIP session based on the IMRN correlation."); EX1003 ¶88.

These modules that comprise the routing controller produce the access code by selecting it from the pool of IMRNs. EX1005, *e.g*., 4:31-37 ("Appropriate database structures (e.g. DB 122), timer mechanisms (e.g. timer 124) and suitable logic 126 may be provided in association with AS [] for purposes of configuring and managing a pool of IP multimedia routing numbers (IMRNs) from which a select IMRN may be dynamically-allocated or otherwise selected for purposes of SIP call routing….").

4. Claim 33

Buckley teaches this claim. *See* EX1003 ¶¶90-92.

The IMRN "terminate[s] on the AS node" (EX1005, 4:46-48), which is "disposed in the user's ***home*** IMS network" and thus enables a local call matching the local calling area, because routing a call to the "home" node is inherently different from routing a call to something other than the "home" node. *Id*., 7:29-34, 6:44-54 (teaching "message flow between the UE device ***and the home IMS network's AS node***" such that "the UE device and its ***home IMS AS node [are] operable to facilitate CS-originated SIP calls***"), 8:22-47; EX1003 ¶91. A POSITA would also recognized that a benefit of including location information (such as the caller's SIP URI and P-Preferred ID) in the SIP Invite message was that the AS could facilitate assigning a number matching the local calling area such that a local call can be made based on such information to, for example, avoid needless long distance and roaming charges. *See* EX1014 at Abstract, [0036]; EX1001 at 1:20-28; EX1003 ¶91. Indeed, a POSITA would recognize that enabling such a local call is one of the benefits of "mapp[ing]" the IMRN to "***all*** the received SIP call information," as Buckley teaches, and not ignoring the location information included in the SIP invite message. *See* EX1005, 6:2-3; EX1003 ¶91. At a minimum, a POSITA would therefore at least have found it obvious that the selected IMRN would enable a local call to be made to achieve these benefits, using the location information that Buckley

already required in an IMRN selection process that it teaches. EX1005, 6:2-3; EX1003 ¶91. The IMRN (access code) is associated with a calling area matching the local calling area associated with the mobile telephone, which is how the IMRN enables a local call as discussed above. *See* EX1003 ¶91.

As discussed above in Element 30[a][ii], the location identifier (the SIP URI and/or P-Preferred ID) identifies the location of the mobile telephone, so in Buckley's process of selecting an IMRN that enables a local call as discussed above, the local calling area associated with the mobile telephone must be determined from the location identifier. *See* EX1003 ¶92.

5. Claim 35

Buckley teaches this claim. *See* EX1003 ¶¶93-95.

As discussed in Element 30[a], Buckley teaches that the SIP Invite message (*i.e.*, the access code requests message) includes the "calling party's SIP URI," which "may take on the form of sip: <username>@<hostname>." EX1005, 5:47-53, 5:25-27. A POSITA would have recognized that the hostname can "contain … [a] numeric IPv4 or IPv6 address." EX1010 (RFC 3261)[8], 148-49). EX1003 ¶94. Buckley teaches an exemplary SIP URI of "sip:alice@***192.0.2.1***," which includes an IP address as the hostname, namely "192.0.2.1". EX1005, 9:27. This IP address is a

[8] RFC 3261 is cited in relevant part in Buckley. EX1005, 5:29-33.

location identifier of the mobile telephone, as a POSITA would have recognized that an IP address is a network address, and "a network address [] identifies [a] network location" (*id*. 19:37-38), and thus identifies the network location of the mobile telephone. EX1003 ¶94.

As discussed in Claim 31, Buckley teaches that the SIP Invite message (access code request message) is sent through a WLAN Broadband Access network, which includes "wireless local area networks," and a POSITA would have understood this to include, or at least obviously include, a wireless IP network. EX1005, 3:51; EX1003 ¶95.

6. Claim 38

Buckley teaches this claim. *See* EX1003 ¶¶96-99.

Buckley teaches that the IMRN (access code) identifies an IP network address of the called party such that the AS (access server) can set up a SIP session (channel) for the call. *See* EX1003 ¶97. The IMRN (access code) is mapped to the called party's URI (callee identifier), which allows the AS (access server) to translate the IMRN to called party's URI when the UE sets up the call. EX1005, 6:38-40 ("[T]he UE sets up a call using the IMRN that terminates on the AS node. The IMRN is then interrogated against the record to retrieve the called party's URI"). The called party's URI can be a SIP URI, which Buckley teaches "typically" includes an IP network address. *See* EX1005, 6:63-65 ("[T]he SIP Invite message 312 includes applicable

call information such as … [the] called party's SIP URI…."); EX1005, 5:25-27 ("As is well known, a ***typical*** SIP addresss may take on the form of sip:<username>@<hostname>...."); EX1005, 9:27 (Buckley teaches an exemplary SIP URI of "sip:alice@***192.0.2.1***," which includes an IP address in the hostname field.). In these situations, the AS establishes a SIP session (channel, as discussed in Element 30[b]) using the IMRN to identify the called party's SIP URI. EX1005, 7:50-56, Figure 3A, 6:39-43 ("The IMRN is then interrogated against the record to retrieve the called party's URI for ***establishing a SIP session with the called party*** (i.e. between the calling party (UE device) … and the called party….").

Also, it would have been obvious to alternatively use an IP address as the access code (IMRN) (in addition to, or instead of, an E.164 telephone number) because an IMRN is an "***IP*** multimedia routing number" and hence is ordinarily expected to carry an IP address. EX1005, 4:31-38; EX1003 ¶98. Buckley teaches that E.164 numbers are just one ***example*** of what an IMRN may comprise. EX1005, 15:56 ("a pool of IMRNs, (**e.g.**, the E.164 numbers)"). Moreover, Buckley's system has as its core an "***IP*** multimedia subsystem (IMS) core network" that "is coupled to the various access networks … including any CS-based networks." EX1005, 3:56-58. As was "well known, the IMS standard defined by the 3GPP is designed to allow service providers [to] manage a variety of services that can be delivered via IP over

any network type, wherein IP is used to transport both bearer [voice] traffic and SIP-based signaling traffic." *Id*., 3:58-62.

Further, Buckley's mobile telephone (UE) was preferably able to operate over both PSTN (CS) and IP (PS) networks in order to "transition from one mode of communications to another mode of communications without loss of continuity." *Id*., 3:35-40. "Furthermore, in order to effectuate call control of a SIP call using CS as the voice bearer," Buckley's IMS application server element in the home IMS network includes functionality that "tracks all call sessions and related mobile Voice-over-IP (VoIP) bearer traffic, between CS and IMS domains." EX1005, 4:18-25. It would have been obvious that Buckley's AS should provide an IMRN (access code) that included, or at least identified, an appropriate IP address to take advantage of Buckley's UE's ability to transition from a PSTN (circuit-switched) mode to an IP (packet-switched) communication mode to reach the callee over Buckley's IMS network. EX1003 ¶99.

7. Claim 39

Buckley teaches this claim. *See* EX1003 ¶¶100-101.

Buckley teaches the AS converts the CS call setup initiated by the UE with the IMRN (access code) to a SIP call setup on a PS network with the original callee URI. EX1005, 6:14-23 ("[A]ppropriate call setup is then initiated by the UE device using the selected IMRN, whereby the accepted IMRN is returned to the AS node

since it terminates thereat. Upon receipt of the IMRN at the AS node … the called party's SIP URI or Tel URI … is utilized by the AS node for effectuating the SIP session with the called party by producing and sending a SIP Invite message"); EX1003 ¶101. Indeed, teaching the transition of calls initiated on a CS network to a PS network is Buckley's purported invention. *See id*., 1:24-28 (disclosing "managing call routing in a network environment including a circuit-switched (CS) network and an IP multimedia subsystem (IMS) network [which is a PS network]"). The SIP call setup on a POS network establishes the call through a packet-switched IP network in response to a call received at the IP address that is or is mapped to the IMRN (as discussed above in Claim 38), as SIP is a process designed for IP networks. EX1003 ¶101.

8. Claim 40

Buckley teaches this claim. *See* EX1003 ¶¶102-103.

Buckley teaches that the SIP Invite message (access code request message) includes the caller identifier, namely the caller's SIP URI. EX1005, 5:47-52 ("[T]he call information may include information such as … [the] calling party's SIP URI…."). Buckley further teaches the IMRN "may be ***mapped to all the received SIP call information***," which includes the caller's SIP URI, and thus the caller's SIP URI (caller identifier) included within the SIP Invite message (access code request

message) is associated with the IMRN (access code) via a mapping. *Id*., 3:10-12, 6:1-3; *See* EX1003 ¶103.

9. Claim 43

Buckley teaches this claim. *See* EX1003 ¶¶104-105.

Buckley teaches that the AS can send a timestamp associated with the IMRN (access code) to the mobile telephone, where such timestamp can be used to determine when the access code expires. *See* EX1005, 20:21-25 ("[N]etwork node [] sends UE device [] a SIP 200 OK message [] which has the selected E.l64 number contained within it. A time or timer value which defines a time period for which the selected E. l 64 number remains assigned to UE device [] may also be included."); *id*., 21:18-21 ("[A]fter assignment of the E.164 number to the UE device, the network node and/or UE device initializes a timer with the timer value and runs the timer. If the timer expires, the E.164 number becomes deassigned"). Buckley teaches including the timestamp in the SIP Response message (access code reply message) because the UE needs the timestamp for the "UE device [to] initialize[] a timer with the timer value" (EX1005, 21:18-21), and Buckley teaches that timer information is "normal[ly]" included in SIP Response messages. EX1005, 7:25-28 ("It should be appreciated that this timer may be provided in addition to normal SIP timers as this operation is known to provide a SIP 380 Response with specific information within a certain timeframe."); EX1003 ¶105. At a minimum, a POSITA would have found

it obvious to include such timer information in the SIP Response message (access code reply message) to provide the UE (mobile phone) with the time information Buckley teaches the UE needs to initialize a timer, and because time information is already included in the SIP Response message such that it would be efficient to additionally include similar time information. EX1003 ¶105.

10. Claim 45

Buckley teaches this claim. *See* EX1003 ¶¶106-108.

Buckley teaches a UE and AS (access server) connect via a non-voice, packet-switched network. *See* EX1003 ¶107; Claim 31.

Buckley teaches the IMRN is transmitted from the network node via a packet-based SIP 380 Response (access code reply message) over a non-voice PS network. *See id*., 30:23-34 (The mobile communication device "receive[s] a SIP 380 (Alternative Service) Response message from the IMS [***IP*** Multimedia Subsystem] network"). A POSITA would also have found it obvious that the access code reply message could be transmitted through another type of non-voice network because the access code reply message is not a voice signal, so there is no specific need for a voice network to transmit the message, as a non-voice network could efficiently handle such data communication. EX1003 ¶108.

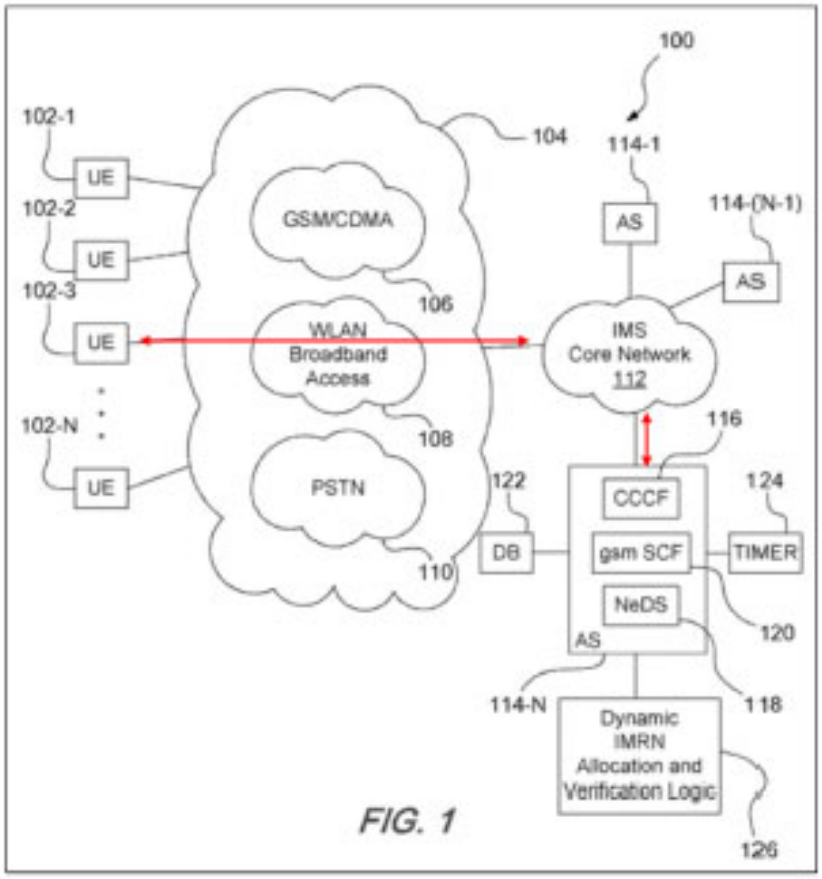
11. Claim 46

a. Element 46[preamble]

Buckley teaches a system for enabling mobile telephone roaming. *See* EX1003 ¶109 Element 30 [preamble]; EX1005, 1:23 ("a system").

b. Element 46[a]

Buckley teaches means for receiving, which the parties agree incorporates the structure of "a network interface." Buckley teaches the application server or AS has a network interface that allows communication with the UE via the IMS core network, as depicted, for example, in Figure 1. A POSITA would have understood that the AS depicted in Figure 1 contains a network interface to connect to the "IMS Core Network" and ultimately to the UE, as annotated in red below. *See* EX1003 ¶110.



Buckley teaches the remaining portions of this element. *See* EX1003 ¶111; Element 30[a].

c. **Element 46[b]**

Buckley teaches this element. *See* EX1003 ¶¶112-113.

Buckley teaches an access server in the form of its AS. *See* Element 30[b]. Moreover, the application server has "one or more ***processors***" (EX1005, Cl. 34) and is "provided with ***appropriate logic/structure/software/firmware module(s)***" (*id*., 4:2-3, 4:42-43) that act as a routing controller (*see* Claim 32). *See* EX1003 ¶113. The AS and associated routing controller produce an IMRN (access code) that

identifies a communication channel based on the location identifier (caller's SIP URI and/or P-Preferred ID), where the IMRN (access code) is different from the callee identifier and useable by the mobile telephone to initiate a call to the callee using the channel and wherein the IMRN (access code) expires after a period of time. *See* Element 30[b]. The IMRN enables a local call matching the local calling area. *See* Claim 33. Buckley further teaches a means for selecting said access code from a pool of access codes, wherein each access code in said pool of access codes identifies a respective telephone number or Internet Protocol (IP) network address. *See* Element 30[b]. Buckley also teaches "[a]ppropriate database structures (e.g. DB 122), timer mechanisms (e.g. timer 124) and suitable logic 126 may be provided in association with AS 114-N for purposes of configuring and managing a pool of [IMRNs]." EX1005, 4:31-35. A POSITA would have recognized appropriate database structures to include a table with defined ranges from which the IRMNs are assigned. *Id*., ("a particular E.164 number may be provided as a 'starting address' number of an IMRN range. Another E.164 number may operate as a range delimiter."). This is performed by the AS with its associated "appropriate logic/structure/software/firmware module(s)" (routing controller) that have a processor that perform the algorithm of Figure 7 of the '234 Patent. *See* Elements 30[a]-[c].

d. **Element 46[c]**

Buckley teaches this element. *See* Elements 30[c], 46[a]; EX1003 ¶114.

12. Claim 47

Buckley teaches this claim. *See* EX1003 ¶115; Claim 31; Element 46[a].

13. Claim 48

Buckley teaches this claim. *See* EX1003 ¶116; Claim 32; Element 46[b].

14. Claim 51

Buckley teaches this claim. *See* EX1003 ¶117; Claim 35.

15. Claim 54

Buckley teaches this claim. *See* EX1003 ¶118; Claim 38.

16. Claim 61

Buckley teaches this claim. *See* EX1003 ¶119; Claim 45; Element 46[c].

17. Claim 62

a. **Element 62[preamble]**

Buckley teaches a system for enabling mobile telephone roaming. *See* EX1003 ¶120; Element 46[preamble].

b. **Element 62[a]**

Buckley teaches this element. *See* EX1003 ¶121; Element 46[b].

c. **Element 62[b]**

Buckley teaches this element. *See* EX1003 ¶¶122-123; Element 46[a]-[b]. Moreover, Buckley teaches the processors are "adapted to process the CS call by being further adapted to: receive a SIP Invite message," which requires a network interface to receive. EX1005, 28:43-46; EX1003 ¶123. A POSITA would have understood that that network interface would be in communication with a processor to make network communications, because the network interface by itself is not sufficient to "process the CS call"—a processor is needed to process calls. *See* EX1003 ¶123; EX1005, 18:33-38 ("When the network node receives the SIP Invite message from the UE device, it correlates it with the additional SIP Invite message from the network based on the stored mapping, the identification of the UE device, and the assigned E.164 number, for further ***processing*** of the SIP call.").

d. **Element 62[c]**

Buckley teaches this element. *See* EX1003 ¶124; Element 46[b].

e. **Element 62[d]**

Buckley teaches this element. *See* EX1003 ¶125; Element 30[a].

f. **Element 62[e]**

Buckley teaches this element. *See* EX1003 ¶126; Element 30[b]; Claim 32.

g. **Element 62[f]**

Buckley teaches this element. *See* EX1003 ¶127; Element 30[c].

18. Claim 64

Buckley teaches this element. *See* EX1003 ¶128; Claim 32.

19. Claim 65

Buckley teaches this element. *See* EX1003 ¶129; Claim 33.

20. Claim 67

Buckley teaches this element. *See* EX1003 ¶130; Claim 35.

21. Claim 70

Buckley teaches this element. *See* EX1003 ¶131; Claim 38.

22. Claim 72

Buckley teaches this element. *See* EX1003 ¶132; Claim 40.

23. Claim 75

Buckley teaches this element. *See* EX1003 ¶133; Claim 43.

B. Ground II: Claims 38-39, 54, and 70 Are Rendered Obvious over Buckley in View of Ejzak.

1. Motivation to Combine

A POSITA would have been motivated to modify Buckley with Ejzak because both references are in the field of call routing and are directed to the same problem of improving call routing, including specifically across packet-switched and circuit-switched networks. *Compare* EX1005 (Buckley), Abstract ("Methods and apparatus for use in processing Session Initiation Protocol (SIP) calls in a network environment which includes a circuit-switched (CS) network and an Internet Protocol (IP)

multimedia subsystem (IMS) network"), *with* EX1007 (Ejzak), 2:35-38 ("[T]he present invention provides a communication system that … allows for interworking between CS domains and PS domains."); EX1003 ¶134. Further, as described in the background sections above, Buckley and Ejzak rely on a substantially similar network architecture, employing network entities with substantially the same functionality throughout. *Compare* EX1005 (Buckley), Figure 3A *with* EX1007 (Ejzak), Figure 1 (element 141) and Figure 3.

A POSITA also would be motivated to combine the references to use Ejzak's know technique to improve Buckley and to help achieve Buckley's expressly desired advantages. As background, Ejzak teaches responding to a SIP Invite message by determining how to route a call that may transition between PS and CS networks. *See* EX1007 (Ejzak), 8:58-9:12. Buckley's preferred embodiment specifically desires that capability of seamless transitions between such two networks. *See* EX1005 (Buckley), 3:35-40 ("Preferably, the UE device is capable of operating in multiple modes in that it can engage in both circuit-switched (CS) as well as packet-switched (PS) communications, and can transition from one mode of communications to another mode of communications without loss of continuity."). A POSITA would thus be motivated to combine Ejzak with Buckley to help achieve such transitions "without loss of continuity" by determining how to route a call that

may transition between such networks in accordance with Ejzak's teachings. *See* EX1003 ¶135.

A POSITA also would have been motivated to modify Buckley to query Ejzak's DNS/ENUM server with an E.164 address to identify a corresponding IP address that enables routing a call over an IP network, because an IP address would help ensure that calls can be completed to VoIP phones, and packet-switched IP networks, that lack direct PSTN access. EX1003 ¶136. This further achieves Buckley's goal of "managing call routing in a network environment including a circuit-switched (CS) network and an IP multimedia subsystem (IMS) network" where a PSTN call may be completed over an IP network or where a particular user device may be operating over only an IP network. EX1005 (Buckley), 1:22-28, 1:51-57. Thus, basic market forces for enhanced reach and operability would prompt enhancing Buckley's design in accordance with Ejzak's teachings. *See* EX1003 ¶136.

A POSITA would have had a reasonable expectation of success in combining Buckley with Ejzak. *See* EX1003 ¶137. Buckley's system takes place in the context of SIP messaging, which Ejzak also employs. EX1005, 2:30-34 ("Methods and apparatus suitable for use in processing ***Session Initiation Protocol (SIP)*** calls in a network environment which includes a circuit-switched (CS) network and an Internet Protocol (IP) multimedia subsystem (IMS) network are described.");

EX1007, 3:16-20 ("[T]he present invention is designed to utilize emerging Internet standards and protocols. An example of this is the use of ***Session Initiation Protocol (SIP)*** for IMS signaling for establishing a call."). As Ejzak expressly recognizes and a POSITA would have understood, SIP is flexible by design and can accommodate the addition of new features. EX1007, 15:30-43 ("SIP has sufficient protocol features and extensibility to allow realization of enhanced features and services. … It is possible to define new features and provision their availability per subscriber, along with any parameters governing operation of the feature…. SIP option tags allow for independent definition of arbitrary new features, parameters associated with those features, and procedures associated with those features.").

Further, Ejzak teaches that its architecture "enables ***home control*** of all services—whereby the IMS provides feature and service ***control from the home network*** rather than the serving network—to be available for all circuit-switched services," and Buckley's preferred messaging protocol expressly requires using the "home IMS network's AS node." EX1007, 1:64-67; EX1005, 6:45-46. Buckley further expressly teaches that its "message flow between the UE device and the home IMS network's AS node may be mediated through a number of other appropriate network infrastructure elements" including a "mobile switching center (MSC) and a media gateway control function (MGCF) element" in the network. EX1005, 6:45-47; 6:51-53. Ejzak provides implementations for such "appropriate network

infrastructure elements" that can map numbers to IP addresses and route bearer (voice) traffic over an IP network, including a Mobile Switching Center (MSC), an enhanced "interworking MSC (iMSC)," Mediate Gateway Control Functions (MGCF), and Domain Name Service (DNS) entities. EX1007, Figure 1, 1:11-12; 5:14; 4:40; 8:30; 8:36-43. The teachings of Ejzak are thus readily incorporated into Buckley's network and SIP messaging, which is by its nature sufficiently flexible to accommodate the adoption of features such as Ejzak's. EX1003 ¶138.

Additionally, a POSITA would have had a reasonable expectation of success in combining Buckley with Ejzak because Buckley teaches that it would "be further recognized by those skilled in the art that the message flow between the UE device and the home IMS network's AS node may be mediated through a number of other appropriate network infrastructure elements, and may be implemented in a number of ways depending on the device capabilities as well as the network features and protocols being used." EX1005, 6:44-50. Buckley thus teaches that a POSITA would have readily understood how to implement the system in a matter that routes the traffic appropriately across the specific types of networks being used; as a result, a POSITA would have understood that Ejzak's DNS could be readily used to map a E.164 telephone number to an IP address (*i.e.*, for the E.164 access code to identify an IP address) in order to have the bearer traffic (the voice call) traverse an IP network, as taught in both Buckley and Ejzak. EX1005, *e.g.*, 6:50-54 (teaching one

"typical[]" message flow for "CS-originated SIP calls" that could terminate on a VoIP phone); EX1003 ¶139.

2. Claim 38

Buckley in view of Ejzak renders this claim obvious. *See* EX1003 ¶¶140-143; Ground I, Claim 38.

Ejzak teaches identifying a "replacement" IP address as a possible communications channel through which calls can be conducted, if the server determines that the call is to take place over a packet-switched network. *See* EX1007 8:67-9:1 ("DNS query resolves the replacement domain name to a set of ***IP addresses***."). A POSITA would have recognized that Ejzak's IP addresses are a possible channel through which the call can be conducted, including because Ejzak teaches that IP addresses can be used to connect to "media ***channels***." EX1007, 5:8-9; EX1003 ¶141. Indeed, the purpose of Ejzak assigning an IP address is to complete a call, which requires a communication channel. EX1007, Figure 5; EX1003 ¶141. In the combination asserted in this ground, Ejzak's "replacement" IP address would be included within Buckley's pool of access codes, intended for use in the event the call is to occur over an IP network. EX1005, 5:5-7 ("[I]t may be desirable to provide for different pools of IMRNs"); EX1003 ¶141.

Additionally, Ejzak's system includes a DNS/ENUM service that interchangeably maps E.164 numbers to an appropriate IP address to route the call,

and vice versa, including in the event that the call may need to transition from a PSTN to a VoIP call. EX1007, 8:29-36, 8:43-48; EX1003 ¶142. Hence, it would have been obvious that each E.164 number in Buckley's pool of IMRNs (access codes) also "identifies an IP network address as a possible channel through which said call can be conducted" as this claim requires, because Ejzak teaches that it was well-known and beneficial to use DNS/ENUM services for that purpose, particularly for networks and devices that provide for both communication modes. EX1003 ¶142.

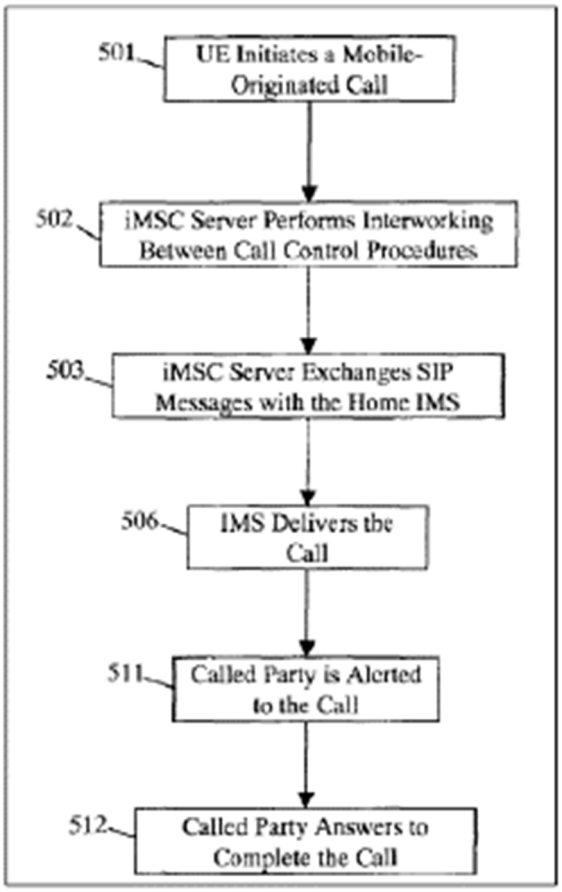
To the extent this claim also requires an access code be communicated back to the mobile telephone itself be an IP address, it would have been obvious to do so using Buckley's system for IMRNs (as the IMRN or in addition to it), as discussed above, so that a mobile telephone transitioning to or initiating a VoIP call could communicate directly with the network entities for the IP network identified by Ejzak's network selection procedures. EX1003 ¶143.

3. Claim 39

Buckley in view of Ejzak renders this claim obvious. *See* EX1003 ¶¶144-146; Ground I, Claim 39.

Ejzak also teaches enabling communications between the caller and the callee in response to a call received at the IP network address. For example, "FIG. 5 depicts

a flow chart 500 of a mobile unit originating a call with the communication system of the present invention" (EX1007, 13:58-60):



As can be seen, the communications are enabled because the called party (*i.e.*, callee) is able to answer the call, in response to a call received at the IP address discussed in Claim 38.

Ejzak further teaches that such communications would be established through an IP network. EX1007, 1:55-58 ("The present invention enables an IP Multimedia Subsystem (IMS) to support features and services for mobile units using either circuit-switched or IP Multimedia call control procedures."). Indeed, establishing

the communication through an IP network is one of the reasons that the DNS query would "resolves the replacement domain name to a set of ***IP addresses***." EX1007, 8:67-9:1; *See* EX1003 ¶¶145-146.

4. Claim 54

Buckley in view of Ejzak renders this claim obvious. *See* EX1003 ¶147; Ground I, Claim 54; Ground II, Claim 38.

5. Claim 70

Buckley in view of Ejzak renders this claim obvious. *See* EX1003 ¶148; Ground I, Claim 70; Ground II, Claim 38.

C. Ground III: Claims 30-33, 35, 37-40, 43, 45-48, 51, 53-54, 61-62, 64-65, 67, 69-70, 72, and 75 Are Obvious Over Buckley in View of Bates.

1. Motivation to Combine

Bates builds upon Buckley's disclosed transmission of location information, and further informs a POSITA why such location information is important in selecting a temporary number that will optimize call routing and enable a local call. A POSITA would have been motivated to modify Buckley with Bates for a number of reasons. *See* EX1003 ¶149.

To begin, both references are in the field of call routing and are directed to improving call routing. Both teach methods of routing PSTN and VoIP calls across packet-switched networks and circuit-switched networks. *Compare* EX1005

(Buckley), Abstract ("Methods and apparatus for use in processing Session Initiation Protocol (SIP) calls in a network environment which includes a circuit-switched (CS) network and an Internet Protocol (IP) multimedia subsystem (IMS) network"), *with* EX1009 (Bates), 14:26-31 (Invention "enabl[es] interoperability of non-traditional communication networks with established, traditional PSTN-based emergency services.").

The similarities between references is substantial, and a POSITA therefore would have had a reasonable expectation of success in combining Buckley with Bates. *See* EX1003 ¶¶150-151. For example, both references teach selecting temporary telephone numbers to allow calls to be transferred between IP (*i.e.*, packet-switched (PS)) and circuit-switched (CS) (*e.g.*, PSTN) networks. *Compare* EX1005 (Buckley), 4:26-40, *with* EX1009 (Bates), 14:2-8, 26-37. Both references also teach selecting telephone numbers from a pool of numbers that are temporarily assigned in response to a communication request. *Compare* EX1005 (Buckley), 4:46-49, *with* EX1009 (Bates), 1:32-37. The analogous overlap can also be seen in comparing, for example, Figure 3A of Buckley with Figure 7 of Bates, as discussed above in Section IX.A-B.

A POSITA also would have had a reasonable expectation of success in combining the references because Buckley expressly contemplates routing emergency calls, and Bates seeks to improve on such routing. For example, Buckley

teaches XML code for establishing registration information used for emergency calls. *See* EX1005, 11:28-43; 12:8-18; EX1006, 11:44-45; EX1003 ¶152. A POSITA would therefore have understood that Bates's techniques and rationale for selecting a geographically-correct telephone number (described in further detail below) could be utilized by Buckley's system to select a local IMRN E.164 telephone number in the interest of optimizing routing decisions, including ensuring proper routing of emergency calls and avoiding unnecessary long distance and roaming charges. EX1003 ¶152. Multiple prior art references from the same inventor (Buckley) and assignee (Research in Motion) further confirm that a POSITA would have understood from Buckley's disclosure that Buckley's system included ensuring proper routing of emergency calls. EX1006, 11:44-45; EX1008, [0041]-[0042], Figure 6; EX1003 ¶152.

A POSITA also would have had a reasonable expectation of success in combining, and be motivated to combine, Buckley and Bates because they both teach techniques for establishing channels for bi-directional communication. EX1003 ¶153. Buckley's IMRN access code, which may be and E.164 telephone number as discussed above in Ground I, identifies a channel for communication. *See, e.g.*, EX1001, 3:30-32 ("The access code may include a telephone number identifying a channel operably configured to cooperate with an IP network."). So too does Bates's geographically-correct telephone number identify a channel for communication.

EX1009, 3:43-50, Figure 4 ("Establish the Communication Session Including the Temporary Telephone Number"). Buckley's and Bates's techniques for mapping such temporary numbers to call participants identifies the channels on which those participants communicate.

A POSITA would also have been motivated to modify Buckley with the teachings of Bates to produce better routing results, including for routing local calls. *See* EX1003 ¶154. Buckley teaches the IMRN can be constructed based on "some relationship(s) to one or more of the parameters received in a message … from the UE device" in the SIP Invite message. EX1005, 3:4-12, 4:41-49. But Buckley does not expressly teach all the "relationship(s)" that a POSITA may use to map the received information to an IMRN. A POSITA would have been motivated to select available and known techniques for creating such relationships and mappings to embody Buckley's system. EX1003 ¶154. Bates provides one such technique that determines a "***geographically-correct telephone number*** (*e.g.*, a telephone number including a 202 area code for a call that was determined to have been made by a user located in the Washington, D.C. area, where the 202 area code indicates that the user placed the call from the Washington, D.C. area)." EX1009, 3:43-50. A POSITA would thus appreciate that Bates's "geographically-correct" relationship technique is a known technique that can be used to improve or carry out Buckley's similar system with predictable results, and was an obvious-to-try option for mapping

IMRNs to the "received SIP call information" that yields predictable results (a local call). EX1003 ¶154.

Bates itself teaches the communication service that selects temporary telephone numbers may do so whenever the server "determine[s] that the type of communication session requested by the user communication device 110 would benefit from having a temporary telephone number." EX1009, 7:55-64; *Id.* 11:26-31 ("The communications service provider 120 determines whether the type of communication session would benefit from a temporary telephone number (420). In one implementation, the communications service provider 120 may analyze the communication session request to determine whether a temporary telephone number would be beneficial."). Bates further teaches using a "geographically-correct telephone number" allows "the temporary telephone number [to be] used to … route the call to the appropriate public safety answering point [(PSAP)] for the location of the user communication device 110," which is helpful to ensure, for example, that a mobile phone caller with a Los Angeles area code does not get connected to the Los Angeles 9-1-1 when that caller is traveling in New York. *See* EX1009, 12:28-32; EX1003 ¶155. Thus, a POSITA would have been motivated to modify Buckley with Bates to produce better call routing results, including in the emergency services context. *See* EX1003 ¶155. Additionally, as discussed above, a POSITA would have known that selecting a "geographically correct" local telephone number can produce

a local call that avoids long distance and roaming charges, providing further motivation to modify Buckley with Bates's techniques to obtain these predictable and desirable results. *See* EX1014, at Abstract, [0036]; EX1001, 1:20-28; EX1003 ¶155.

2. Claim 30

a. **Element 30[preamble]**

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶156; Ground I, Element 30[preamble]. Further, Bates additionally teaches that the mobile phone would be roaming. EX1009, 4:43-47 ("[T]he user communication device 110 may be mobile such that the user communication device 110 may establish a connection with communications service provider 120 at multiple different points in data network 130 located in multiple different geographic areas.").

b. **Element 30[a]**

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶¶157-159; Ground I, Element 30[a].

Bates teaches "a request to place a call to a call recipient is received from the user" EX1009, Abstract. Moreover, Bates teaches the "user ***places a call*** for emergency services (e.g., a ***9-1-1 call***)." *Id.*, 3:39-40. The 9-1-1 number is a callee identifier associated with the callee, which is emergency services. *See* EX1003 ¶158.

Bates teaches the service "receive[s] a request from the user communication device [] to establish a communication session with the recipient communication device," and "the ***location key*** [(location identifier)] may be included in the request." EX1009, 11:12-15, 12:7-8. "The location key is an identifier used by the communications service provider 120 to identify a particular location" of the user's mobile telephone. *Id*. 9:27-29. That location key may be input by the user for transmission to the service provider's access server. *Id*., 8:56-9:1 ("[T]he user provides his or her current location by explicitly providing his or her address (e.g., entering location in a text box provided in a graphical user interface (GUI) of the communications service provider 120 or orally reciting location in a voice communication). In another implementation, the communications service provider 120 maintains a list of potential locations for the user and the user selects a location from a list provided by the communications service provider…."). Thus, Bates teaches that the access code request message includes a location identifier (Bates's "location key") that is separate and distinctive from said callee identifier (9-1-1, in the asserted combination). EX1003 ¶159.

c. **Element 30[b]**

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶¶160-164; Ground I, Element 30[b].

Bates teaches "the communications service provider [] maintains a pool of telephone numbers." EX1009, 10:11-14, 19-21. From among that pool, Bates teaches techniques to "select a temporary telephone number that corresponds to the location of the user communication device." EX1009, 18:67-19:2. "The temporary telephone number is a geographically-correct telephone number" that enables a local call because a geographically-correct telephone number "route[s] the call to the appropriate public safety answering point for the location of the user communication device." *Id*. 19:53-55, 12:30-31; EX1003 ¶161. For example, Bates teaches selecting "a telephone number including a 202 area code for a call that was determined to have been made by a user located in the Washington, D.C. area, where the 202 area code indicates that the user placed the call from the Washington, D.C. area." EX1009, 3:43-50. In the asserted combination, Bates's technique for selecting a "geographically-correct telephone number" from among its pool of such numbers determines Buckley's selection of IMRN from a pool of telephone (E.164) numbers (access codes) to ensure that a local call is made so that the correct emergency services is contacted and no unnecessary long distance or roaming charges are incurred. *See* EX1009 3:54-56 (Teaching the system "routes the call to the appropriate public safety answering point (PSAP) based on the location associated with the temporary telephone number"); EX1003 ¶161. As a result, Bates's "geographically-correct telephone number" is an access code that is based on the

mobile telephone's location identifier and/or based on a location pre-associated with the mobile telephone.

Bates's technique is used to select a "geographically-correct telephone number" in Buckley's system, which would satisfy the elements of the claim similar to how Buckley's IMRN relied upon in Ground I satisfied the elements. The "geographically-correct" IMRN would still yield an access code that identifies a communication channel, because it is an E.164 telephone number. EX1001, 3:30-33; EX1003 ¶162. It is still different from the callee identifier, because Bates's geographically-correct telephone number selection technique, when applied in Buckley's system, will have a local area code, such as 202 in the Washington, D.C. example, that is different than the emergency number dialed (*e.g.* 9-1-1). EX1009, 3:42-50; EX1003 ¶163. It is useable by the mobile telephone to initiate a call to the callee using the channel (EX1005, 6:37-43), and would still expire after a period of time. *See* EX1009, 12:44-51 (System "may wait a threshold amount of time … prior to returning the temporary telephone number to the pool of available telephone numbers."); EX1005, 21:18-21. In other words, applying Bates's technique for selecting a "geographically-correct telephone number" to Buckley's system yields an IMRN that still meets all the elements of the claim.

The remaining components of this element are taught by Buckley as described above in Ground I, Element 30[b].

d. **Element 30[c]**

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶165; Ground I, Element 30[c].

3. Claim 31

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶166; Ground I, Claim 31.

4. Claim 32

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶¶167-168; Ground I, Claim 32.

Bates's "emergency services proxy server" comprises a routing controller operably configured to route a call between the caller and the callee because it establishes a call to or from the appropriate PSAP while informing the PSAP of the UE's location. *See* EX1009, 13:61-14:1 ("[T]he emergency services proxy server 524 may be configured to … relay the request to enhanced emergency service provider"); *Id*., 3:53-57 ("The traditional emergency services call handling system routes the call to the appropriate public safety answering point (PSAP) based on the location associated with the temporary telephone number and establishes the emergency services call between the user and the PSAP"); EX1003 ¶168; Element 30[b]. In the asserted combination, the "logic/structure/software/firmware module(s)" that Buckley teaches is provided on the AS for purposes of producing

the access code are part of Bates's emergency services proxy server that comprises a routing controller. EX1005, 4:42-45; EX1003 ¶168.

5. Claim 33

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶¶169-170; Ground I, Claim 33.

Bates also teaches selecting a telephone number (access code) associated with the local calling area of the telephone because Bates teaches a technique for selecting a "***geographically-correct telephone number***" to "route the call to the ***appropriate public safety answering point for the location of the user communication device***." EX1009 13:62-63, 12:30-31; EX1003 ¶170. For example, Bates teaches selecting "a telephone number including a 202 area code for a call that was determined to have been made by a user located in the Washington, D.C. area, where the 202 area code indicates that the user placed the call from the Washington, D.C. area)." EX1009, 3:43-50. The 202 area code in the above example represents the mobile telephone's local calling area associated with the mobile telephone, and applying its technique in selecting a "geographically-correct telephone number" to Buckley's system would result in an access code (*i.e.*, the geographically-correct telephone number) that is associated with a calling area matching the local calling area associated with the mobile telephone (in this example, the 202 area code associated with the call in the Washington, D.C. area). EX1003 ¶170. Bates teaches that the "geographically-

correct telephone number" can be determined from its "location key" identifier. *See* Element 30[a].

6. Claim 35

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶¶171-172; Ground I, Claim 35.

Bates also teaches the location identifier is an IP address. *See* EX1009, 9:4-9 ("[T]he communications service provider 120 may ***determine a current location*** of the user communication device 110 ***based on an IP address the user communication device*** is using to connect to the data network 130"). Bates also teaches the user communication device may be "a wireless phone" that connects via a "data network [that] may include … a wired or ***wireless*** data pathway." *id*., 4:22-23, 6:10-13. A POSITA would recognize that when the user communication device is connected to a wireless network, its IP address would be wireless IP network address. *See* EX1003 ¶172.

7. Claim 37

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶¶173-174.

Bates teaches "the current physical address of the user accessing the communications service provider 120 with the user communication device … may be ***explicitly supplied by the user***." EX1009, 5:30-34; *see* EX1003 ¶174.

8. Claim 38

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶175; Ground I, Claim 38.

9. Claim 39

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶176; Ground I, Claim 39.

10. Claim 40

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶177-178; Ground I, Claim 40.

Bates teaches "the communications service provider [] may ***receive a request*** to establish a connection from the user communication device" as well as "a service level identifier (e.g., ***a screen name***) and password from the user communication device." EX1009, 8:20-25. Buckley teaches "mapp[ing]" the IMRN (access code) to "***all*** [of] the received SIP call information," such that the selected access code would be associated with the caller identifier (*e.g.*, screen name) included in the access code request message. *See* EX1005, 6:2-3; EX1003 ¶178.

11. Claim 43

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶179; Ground I, Claim 43.

12. Claim 45

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶180; Ground I, Claim 45.

13. Claim 46

a. Element 46[preamble]

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶181; Ground I, Element 46[preamble].

b. Element 46[a]

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶182; Ground I, Element 46[a]; Ground III, Element 30[a].

c. Element 46[b]

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶183; Ground I, Element 46[b]; Ground III, Element 30[b]. Additionally, Bates teaches "a processor will receive instructions and data from a read-only memory and/or a random access memory." EX1009, 21:21-23.

d. Element 46[c]

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶184; Ground I, Element 46[c].

14. Claim 47

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶185; Ground I, Claim 47.

15. Claim 48

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶186; Ground I, Claim 48.

16. Claim 51

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶187; Ground I, Claim 51.

17. Claim 53

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶188; Ground II, Claim 37.

18. Claim 54

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶189; Ground I, Claim 54.

19. Claim 61

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶190; Ground I, Claim 61.

20. Claim 62

a. Element 62[preamble]

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶191; Ground I, Element 62[preamble].

b. Element 62[a]

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶192; Ground I, Element 62[a].

c. Element 62[b]

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶193; Ground I, Element 62[b].

d. Element 62[c]

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶194; Ground I, Element 62[c].

e. Element 62[d]

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶195; Ground I, Element 62[d]; Ground III, Element 30[a].

f. Element 62[e]

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶196; Ground I, Element 62[e]; Ground III, Element 30[b].

g. **Element 62[f]**

Buckley in view of Bates renders this element obvious. *See* EX1003 ¶197; Ground I, Element 62[f].

21. Claim 64

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶198; Ground I, Claim 64.

22. Claim 65

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶199; Ground I, Claim 65.

23. Claim 67

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶200; Ground I, Claim 67.

24. Claim 69

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶201; Ground III, Claim 37.

25. Claim 70

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶202; Ground I, Claim 70.

26. Claim 72

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶203; Ground I, Claim 72.

27. Claim 75

Buckley in view of Bates renders this claim obvious. *See* EX1003 ¶204; Ground I, Claim 75.

D. Ground IV: Claims 38-39, 54, and 70 Are Obvious Over Buckley in View of Bates and Further in View of Ejzak.

1. Motivation to Combine

A POSITA would have been motivated to combine Buckley with Bates for the reasons described above in Ground III. A POSITA would have been further motivated to combine Buckley with Ejzak for the reasons described above in Ground II. In that ground, Ejzak's DNS/ENUM server provides the ability for any E.164 number (including those used in, and selected from, the pools in Buckley and Bates) to identify an IP address that can be used to route a call. EX1007, 8:29-36; 8:43-48; 8:67-9:1. Ejzak's also provides the ability to replace an E.164 number from the pool with an IP address used to route the call. *Id*. Ejzak's teachings may therefore be incorporated into the combination of Buckley with Bates in the same way that it can be incorporated into Buckley as described above in Ground II; in other words, Buckley's pool is able to accommodate both techniques, each motivated for the

reasons set forth above in Grounds II and III. EX1005, 5:5-6 ("To allow flexibility, it may be desirable to provide for different pools of IMRNs…."); EX1003 ¶205.

2. Claim 38

Buckley in view of Bates and further in view of Ejzak renders this claim obvious. *See* EX1003 ¶206; Ground II, Claim 38; Ground III, Claim 38.

3. Claim 39

Buckley in view of Bates and further in view of Ejzak renders this claim obvious. *See* EX1003 ¶207; Ground II, Claim 39; Ground III, Claim 39.

4. Claim 54

Buckley in view of Bates and further in view of Ejzak renders this claim obvious. *See* EX1003 ¶208; Ground III, Claim 54; Ground IV, Claim 54.

5. Claim 70

Buckley in view of Bates and further in view of Ejzak renders this claim obvious. *See* EX1003 ¶209; Ground III, Claim 70; Ground IV, Claim 70.

XI. SECONDARY CONSIDERATIONS

Petitioner is unaware of any evidence of secondary considerations that would support a finding of non-obviousness. *See* EX1003, ¶210. The asserted prior art demonstrates there is no evidence of failure by others and that the features recited in the Challenged Claims were readily available in the prior art.

XII. CONCLUSION

Petitioner requests institution of an IPR and cancellation of the Challenged Claims.

Respectfully submitted,

Dated: February 28, 2023

By: /Naveen Modi/
Naveen Modi (Reg. No. 46,224)
Counsel for Petitioner

CERTIFICATE OF COMPLIANCE

This Petition complies with the type-volume limitations as mandated in 37 C.F.R. §42.24, totaling 13,931 words. Counsel has relied upon the word count feature provided by Microsoft Word.

Respectfully submitted,

Dated: February 28, 2023

By: /Naveen Modi/
Naveen Modi (Reg. No. 46,224)
Counsel for Petitioner

CERTIFICATE OF SERVICE

I hereby certify that on February 28, 2023, I caused a true and correct copy of the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 8,630,234 and supporting exhibits to be served via express mail on the Patent Owner at the following correspondence address of record as listed on Patent Center:

THORPE NORTH & WESTERN, LLP.
P.O. Box 1219
SANDY UT 84091-1219
Customer Number: 20551

A courtesy copy was also sent via electronic mail to the Patent Owner's litigation counsel at the following addresses:

Lewis E. Hudnell, III
lewis@hudnellaw.com
Nicolas S. Gikkas
nick@hudnelllaw.com
Hudnell Law Group P.C.
800 W. El Camino Real Suite 180
Mountain View, California 94040
T: 650.564.3698
F: 347.772.3034

By: /Naveen Modi/
Naveen Modi (Reg. No. 46,224)

APPENDIX A

No.	Claim Language
30[preamble]	A method for enabling mobile telephone roaming, the method comprising:
30[a]	receiving from the mobile telephone an access code request message including a callee identifier associated with the callee and a location identifier separate and distinctive from said callee identifier, identifying a location of the mobile telephone
30[b]	producing an access code identifying a communication channel based on said location identifier and/or based on a location pre-associated with the mobile telephone, said access code being different from the callee identifier and useable by the mobile telephone to initiate a call to the callee using the channel, and wherein said access code expires after a period of time and wherein producing said access code comprises selecting said access code from a pool of access codes, wherein each access code in said pool of access codes identifies a respective telephone number or Internet Protocol (IP) network address; and
30[c]	transmitting an access code reply message including said access code, to the mobile telephone.
31	The method of claim 30 wherein receiving comprises receiving said access code request message on a non-voice network.
32	The method of claim 30 wherein producing said access code comprises causing a routing controller operably configured to route a call between said caller and said callee to produce said access code.
33	The method of claim 30 further comprising determining from said location identifier a local calling area associated with the mobile telephone and selecting an access code associated with a calling area matching said local calling area associated with the mobile telephone.
35	The method of claim 30 wherein said location identifier comprises an IP address of the mobile telephone in a wireless IP network.

No.	Claim Language
37	The method of claim 30 wherein said location identifier comprises a user-configured identifier of a location associated with the mobile telephone.
38	The method of claim 30 wherein at least one of said access codes in said pool of access codes identifies an IP network address as a possible channel through which said call can be conducted.
39	The method of claim 38 further comprising enabling communications between said caller and said callee to be established through an IP network in response to a call received at said IP network address.
40	The method of claim 30 wherein said access code request message includes a caller identifier and wherein the method further comprises associating said caller identifier included in said access code request message with the selected access code.
43	The method of claim 30 wherein producing further comprises associating a timestamp with said access code, for use in determining when the usability of said access code to initiate a call to the callee will expire, and causing said timestamp to be included in said access code reply message transmitted to the mobile telephone.
45	The method of claim 30 wherein transmitting comprises transmitting said access code reply message on a non-voice network.
46[preamble]	A system for enabling mobile telephone roaming, the System comprising:
46[a]	means for receiving from the mobile telephone an access code request message including a callee identifier associated with the callee and a location identifier separate and distinctive from said callee identifier, identifying a location of the mobile telephone;
46[b]	means for producing an access code identifying a communication channel based on said location identifier and/or based on a location pre-associated with the mobile telephone, said access code being different from the callee identifier and useable by the mobile telephone to initiate a call to the callee

No.	Claim Language
	using the channel and wherein said access code expires after a period of time and wherein said means for producing said access code comprises means for selecting said access code from a pool of access codes wherein each access code in said pool of access codes identifies a respective telephone number or Internet Protocol (IP) network address; and
46[c]	means for transmitting an access code reply message including said access code to the mobile telephone.
47	The system of claim 46 wherein said means for receiving comprises a non-voice network interface for receiving said access code request message on a non-voice network.
48	The system of claim 46 wherein said means for producing said access code comprises a routing controller operably configured to route a call between said caller and said callee.
51	The system of claim 46 wherein said location identifier includes an IP address of the mobile telephone in a wireless IP network.
53	The system of claim 46 wherein said location identifier includes a user-configured identifier of a location associated with the mobile telephone.
54	The system of claim 46 wherein at least one of said access codes in said pool of access codes identifies an IP network address as a possible channel through which said call can be conducted.
61	The system of claim 46 wherein said means for transmitting comprises a non-voice network interface for transmitting said access code reply message on a non-voice network.
62[preamble]	A system for enabling mobile telephone roaming, the system comprising:
62[a]	a processor circuit;
62[b]	a network interface in communication with said processor circuit; and
62[c]	a computer readable medium in communication with said processor circuit and encoded with codes for directing said processor circuit to

No.	Claim Language
62[d]	receive from the mobile telephone an access code request message including a callee identifier associated with the callee and a location identifier separate and distinctive from said callee identifier, identifying a location of the mobile telephone;
62[e]	communicate with a routing controller to obtain from said routing controller an access code identifying a communication channel, said access code being determined from said location identifier and/or based on a location pre-associated with the mobile telephone and said access code being different from the callee identifier and useable by the mobile telephone to initiate a call to the callee using the channel, and wherein said access code expires after a period of time and wherein said access code is selected from a pool of access codes and wherein each access code in said pool of access codes identifies a respective telephone number or Internet Protocol (IP) network address; and
62[f]	cause an access code reply message including said access code to be transmitted to the mobile telephone.
64	The system of claim 62 wherein said codes for directing said processor circuit include codes for directing said processor circuit to cause a routing controller to produce said access code.
65	The system of claim 62 wherein said codes for directing said processor circuit include codes for directing said processor circuit to determine from said location identifier a local calling area associated with the mobile telephone and to select an access code associated with a calling area matching said local calling area associated with the mobile telephone.
67	The system of claim 62 wherein said location identifier comprises an IP address of the mobile telephone in a wireless IP network.
69	The system of claim 62 wherein said location identifier comprises a user-configured identifier of a location associated with the mobile telephone.
70	The system of claim 62 wherein at least one of said access codes in said pool of access codes identifies an IP network address as a possible channel through which said call can be conducted.

No.	Claim Language
72	The system of claim 62 wherein said access code request message includes a caller identifier and wherein said codes for directing said processor circuit include codes for directing said processor circuit to associate said caller identifier included in said access code request message with the selected access code.
75	The system of claim 62 wherein said codes for directing said processor circuit include codes for directing said processor circuit to associate a timestamp with said access code, for use in determining when the usability of said access code to initiate a call to the callee will expire, and to cause said timestamp to be included in said access code reply message.