

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

T-MOBILE USA, INC.,
Petitioner,

v.

VOIP-PAL.COM, INC.,
Patent Owner.

Case No. IPR2023-00641
U.S. Patent No. 10,880,721

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. §312 AND 37 C.F.R. §42.104**

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LIST OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 10,880,721 (‘721 Patent)
1002	File History of U.S. Patent No. 10,880,721 (without NPL and foreign references)
1003	Declaration of Dr. Vijay Madiseti
1004	Curriculum vitae of Dr. Vijay Madiseti
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 <i>Apple, Inc. v. VoIP-Pal.com, Inc.</i> , 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 <i>et al.</i> , Wiley, England (2004)

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Exhibit No.	Description
1020	IETF RFC 3986, <i>available at</i> https://datatracker.ietf.org/doc/html/rfc3986
1021	IETF RFC 2543, <i>available at</i> https://datatracker.ietf.org/doc/html/rfc2543
1022	U.S. Patent No. 7,283,507
1023	Excerpts from Microsoft Computer Dictionary, 5 th 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)

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

T-Mobile USA, Inc. (“T-Mobile” or “Petitioner”) requests *inter partes* review of claims 51-52, 57, 60, 63, 65, 67, 73, 77, 103-104, 108-110, 124, 130, 133, and 138-139 (“Challenged Claims”) of U.S. Patent No. 10,880,721 (EX1001, “the ’721 Patent”).

For the reasons set forth below, which are identical to the petition filed by Meta Platforms, Inc. in *Meta Platforms, Inc. v. VoIP-Pal, Inc.*, IPR2022-01235, the challenged claims should be found unpatentable and canceled. T-Mobile further requests joinder with the proceeding in IPR2022-01235, instituted on January 31, 2023, pursuant to 35 U.S.C. § 315(c) and 37 C.F.R. § 42.122(b), and for the reasons set forth below and in the concurrently-filed Motion for Joinder.

II. MANDATORY NOTICES

A. Real Party-In-Interest

Petitioner identifies the following real parties-in-interest: T-Mobile USA, Inc. and T-Mobile US, Inc.

B. Related Matters

VoIP-Pal.com (“Patent Owner” or “VoIP-Pal”) is asserting the ’721 Patent and related U.S. Patent 8,630,234 (“’234 Patent”) against Petitioner in Case No. 6:21-cv-00674 (W.D. Tex.) (the “Litigation”). Both patents are also asserted in other pending litigations:

- *VoIP-Pal v. Google*, No. 3:22-cv-03199 (N.D. Cal.)

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- *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. Meta Platforms*, No. 3-22-cv-03202 (N.D. Cal.)
- *VoIP-Pal v. Samsung*, No. 6-21-cv-01246 (W.D. Tex.)
- *VoIP-Pal v. Huawei*, No. 6-21-cv-01247 (W.D. Tex.)
- *Verizon v. VoIP-Pal*, No. 3-21-cv-05275 (N.D. Cal.)
- *Twitter v. VoIP-Pal*, No. 3-21-cv-09773 (N.D. Cal.)

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 '721 Patent claims and two other petitions challenging the '234 Patent.

Certain claims of the related '721 Patent are subject to a petition for IPR in *Meta Platforms, Inc. v. VoIP-Pal.com, Inc.*, No. IPR2022-01234 (P.T.A.B.) (pending); *Meta Platforms, Inc. v. VoIP-Pal.com, Inc.*, No. IPR2022-01235 (P.T.A.B.) (pending); *Google LLC v. VoIP-Pal.com, Inc.*, No. IPR2022-01074 (P.T.A.B.) (institution denied); *Google LLC v. VoIP-Pal.com, Inc.*, No. IPR2022-01075 (P.T.A.B.) (institution denied); *Amazon.com, Inc. v. VoIP-Pal.com, Inc.*, No.

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IPR2022-01180 (P.T.A.B.) (institution denied); *Amazon.com, Inc. v. VoIP-Pal.com, Inc.*, No. IPR2022-01181 (P.T.A.B.) (institution denied); *Samsung Electronics Co., Ltd. v. VoIP-Pal.com, Inc.*, No. IPR2022-01392 (P.T.A.B.) (pending); *Samsung Electronics Co., Ltd. v. VoIP-Pal.com, Inc.*, No. IPR2022-01393 (P.T.A.B.) (pending). To Petitioner's knowledge, there are no other judicial or administrative matters that would affect or be affected by a decision here.

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

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

C. Counsel and Service Information

Lead Counsel	Back-Up Counsel
Kourtney Mueller Merrill (Reg. No. 58,195) merrill-ptab@perkinscoie.com PERKINS COIE LLP 1900 Sixteenth Street, Suite 1400 Denver, Colorado 80202 Phone: 303-291-2300 Fax: 303-291-2400	Amanda Tessar (Reg. No. 53,683) tessar-ptab@perkinscoie.com PERKINS COIE LLP 1900 Sixteenth Street, Suite 1400 Denver, Colorado 80202 Phone: 303-291-2300 Fax: 303-291-2400

D. 37 C.F.R. §42.8(b)(4): Service Information

Petitioner concurrently submits a Power of Attorney, 37 C.F.R. §42.10(b), and consents to electronic service to TMobile-VOIP@perkinscoie.com.

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

Review of 20 claims is requested. The undersigned authorizes the Office to charge to Deposit Account No. 50-0665 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 '721 Patent is available for IPR and that Petitioner is not barred or estopped from requesting IPR of the Challenged Claims on the grounds herein. Petitioner certifies: (1) Petitioner does not own the '721 Patent; (2) Petitioner (or any real party-in-interest) has not filed a civil action challenging the validity of any '721 Patent claim; (3) Petitioner files this Petition within one month of institution of the trial Petitioner seeks to join under 37

C.F.R. §§ 42.122, 42.222; (4) estoppel provisions of 35 U.S.C. §315(e)(1) do not prohibit this IPR; and (5) this Petition is filed after the '721 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 unpatentable under 35 U.S.C. §103 as follows:

Ground	Claims	Proposed Statutory Rejection
I	51-52, 57, 60, 63, 65, 67, 73, 77, 103-104, 108-110, 124, 130, 133, and 138-139	Obvious under §103 over Buckley
II	63, 130, 133, and 138-139	Obvious under §103 over Buckley in view of Ejzak
III	51-52, 57, 60, 63, 65, 67, 73, 77, 103-104, 108-110, 124, 130, 133, and 138-139	Obvious under §103 over Buckley in view of Bates
IV	63, 130, 133, and 138-139	Obvious under §103 over Buckley in view of Bates, in further view of Ejzak

VI. DISCRETIONARY DENIAL IS NOT APPROPRIATE

Institution is appropriate under the six-factor test set forth in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11, at 3 (PTAB Mar. 20, 2020), as further clarified by Director Vidal’s June 21, 2022 interim procedure for discretionary denials (the “Memorandum”) (available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf).

Turning to the *fourth* and dispositive factor here (overlap between issues), Petitioner stipulates that, if the IPRs are instituted, Petitioner will not pursue the grounds raised, or that reasonably could have been raised, in these proceedings. *Sotera*, IPR2020-01019, Paper 12, at 18-19. There is therefore no overlap with arguments made in the district court proceedings. This stipulation “mitigates

concerns of potentially conflicting decisions and duplicative efforts between the district court and the PTAB,” and the Director has clarified that the PTAB will not discretionarily deny institution where, as here, Petitioner has made a *Sotera* stipulation. Memorandum, 7-8.

Discretionary denial under the *Fintiv* factors is therefore not appropriate. However, turning briefly to the additional factors for the sake of completeness, for the ***first factor*** (stay), Petitioner is requesting institution on all asserted claims in the related action and timely sought leave to join the Meta proceedings within one month of institution. The relevant facts therefore favor a stay. *See Fintiv*, IPR2020-00019, Paper 15 at 12 (PTAB May 13, 2020) (informative); *HP v. Neodron*, IPR2020-00459, Paper 17 at 35-36 (PTAB Sept. 14, 2020).

The ***second*** (proximity of trial dates) and ***third*** (investment in parallel proceedings) factors are at least neutral. While the Texas court set a tentative trial date of July 17, 2023 for the *Amazon* trial, no date has been set for Petitioner’s trial. Indeed, the court has indicated that it will hold trials in order of case number, meaning that both the *Amazon* and *Verizon* trials will need to occur before it will be Petitioner’s turn. Petitioner has also committed that it will not raise any invalidity arguments that could have been raised in these proceedings, such that the district court action will have no impact on the grounds under review here.

While the ***fifth factor*** (parties) may weigh slightly in favor of denial because the parties are the same as one of the pending district court actions, under the “holistic view” of whether integrity of the system and efficiency are best served, the factors here indicate that institution is proper. *Samsung Elecs. Co. v. Dynamics*, IPR2020-00505, Paper 11 at 15 (PTAB Aug. 12, 2020).

The ***sixth*** factor (other circumstances) also weighs in favor of institution because of the strength of the petition, which has already been confirmed through institution of the Meta proceedings: “[T]he PTAB will not rely on the *Fintiv* factors to discretionarily deny institution ... where a petition presents compelling evidence of unpatentability.” Memorandum, 2; *see also Thryv, Inc. v. Click-To-Call Techs.*, 140 S. Ct. 1367, 1374 (2020).

VII. THE ‘721 PATENT

A. Technology Summary

Traditional Public Switched Telephone Networks (PSTNs) route calls over circuit-switched telephone (aka “voice”) networks.¹ *See* EX1007, 1:19-22. The ‘721

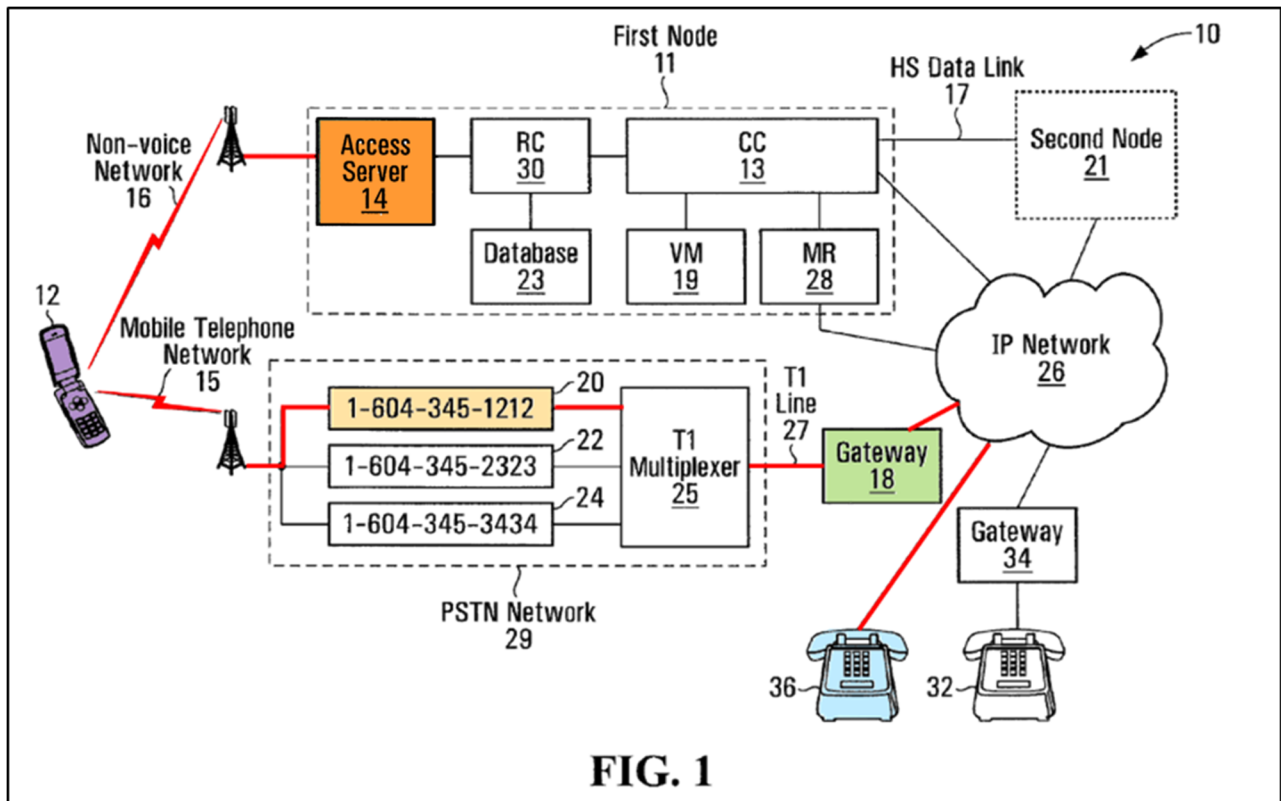
¹ Such networks are known as “circuit-switched” because they can involve a particular, dedicated circuit connection to transmit data (in the form of electrical signals) between the caller and destination node. This stands in contrast to “packet-switched” networks (such as the Internet) that break data into smaller

Patent uses a sequence of messages sent over a “non-voice” network (such as a packet-switched Internet Protocol (IP) network) to route PSTN voice calls over an IP network (aka Voice-over-IP or VoIP). EX1001 8:36-42, 9:9-16.

The '721 Patent's call routing process begins when a mobile telephone (purple² 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). *Id.*, 11:51-55. The access code request message includes the intended callee's identifier, such as a telephone number, and the caller's “location identifier.” *Id.* 11:66-12:2, 12:20-22. 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.* 12:63-67. The “access code” is a temporary number, such as a local telephone number, used to route the call. *Id.* 13:4-7.

packets that are separately routed over network connections to the recipient, which reassembles the packets once they are received. *See* EX1003 ¶40.

² Color in the diagrams herein are Petitioner's annotations. All emphasis herein is added, unless indicated otherwise.

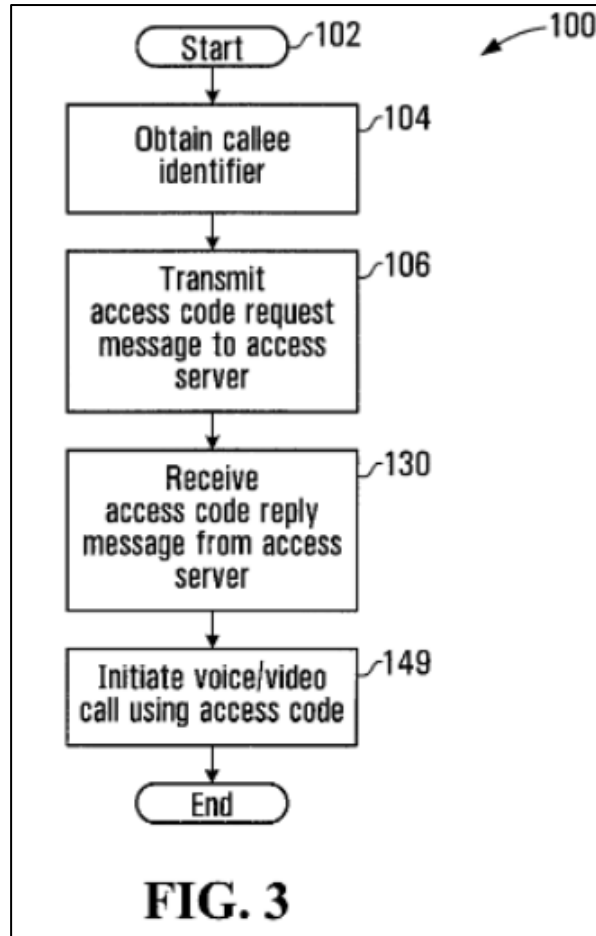


In Figure 1, the “access code” is the temporary telephone number in yellow-highlighted element 20 (*i.e.*, 1-604-345-1212). This temporary number is used to route the call within the phone’s home network towards a gateway (green element 18). The gateway bridges the PSTN (element 29) to an IP Network (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.* 13:49-56. 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 11:58-59. The mobile telephone’s location identifier (which is included in the access code request message) may be “an IP address of the mobile telephone [] in a wireless IP network, such as the non-voice network...” *Id.* 12:26-29. The server’s access code reply message, which includes the temporary number (access code), may be returned over the non-voice, IP network (element 16). The mobile telephone may then use the access code to initiate a call on the voice network (element 15) that is then routed over the IP Network (element 26).

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



The '721 Patent also contains symmetric claims from the access server's perspective, e.g., in claim 51.

B. Person of Ordinary Skill in the Art

A POSITA at the time of the '721 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, ¶¶46-48.

VIII. CLAIM CONSTRUCTION

A. Agreed constructions

In the Litigation, the parties agreed to the following constructions for certain terms governed by 35 U.S.C. § 112 ¶ 6, which have been applied in this Petition:

Claim Term	Agreed Construction
“means for receiving from the wireless [apparatus/device] [the/an] access code request message” (claims 77)	<u>Function</u> : receiving from the mobile telephone [said/an] access code request message <u>Structure</u> : a network interface
“means for transmitting the access code reply message including the access code to the wireless apparatus” (claims 77)	<u>Function</u> : transmitting [said/an/the] access code reply message including [said/the] access code to the [mobile telephone/wireless apparatus] <u>Structure</u> : a network interface

B. “gateway” (Claims 51, 77, 103, 133)

The plain and ordinary meaning of “gateway” in the ’721 Patent is a “device that connects networks that use different communication protocols.” EX1023; EX1024; EX1025 (cited during prosecution, *see* EX1002, 119-125), 1:14-15; EX1001, Fig. 1, 23:21-32, 32:3-6; EX1003, ¶¶50-52. A court in W.D. Tex. construed

the term substantially similarly to mean “[a] device that connects networks and can adjust a protocol of traffic moving between the connected networks.” EX1012.

Patent Owner has contended this term carries only an unspecified “plain and ordinary meaning,” without clarifying what that “plain and ordinary” meaning is. EX1013, 8.

The asserted grounds satisfy all of these constructions, as explained below.

C. “means for causing a routing controller to produce an access code” (Claim 77)

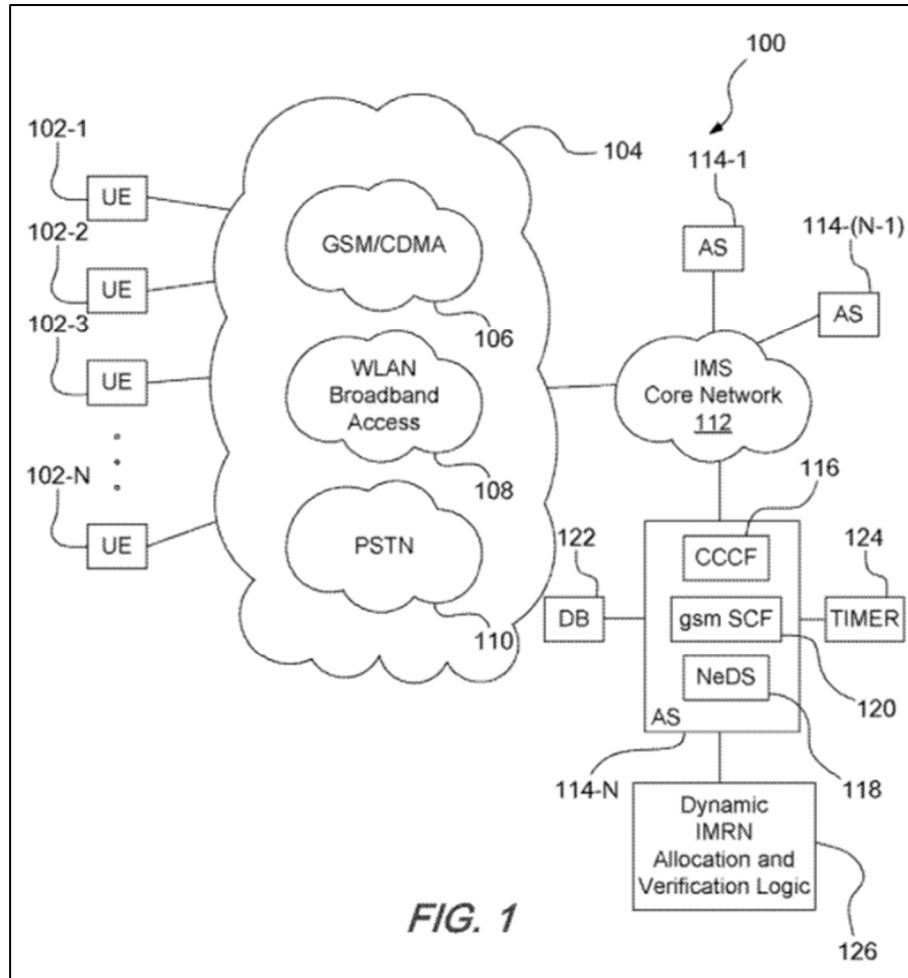
The Board should construe this term as performing the function of “causing a routing control to produce an access code” and incorporating a structure of “an input/output port for transmitting the access code request message, as received from the wireless device, to the routing controller and for receiving, from the routing controller, the access code reply message” EX1001, 22:53-61, 20:57-22:20, Figs. 8, 10, 12; EX1003 ¶56. Patent Owner previously proposed a construction that differs in that it incorporates the structure of “[a]ccess server 14 and/or routing controller 30.” EX1018, 17. 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 in this Petition.

IX. OVERVIEW OF THE PRIOR ART

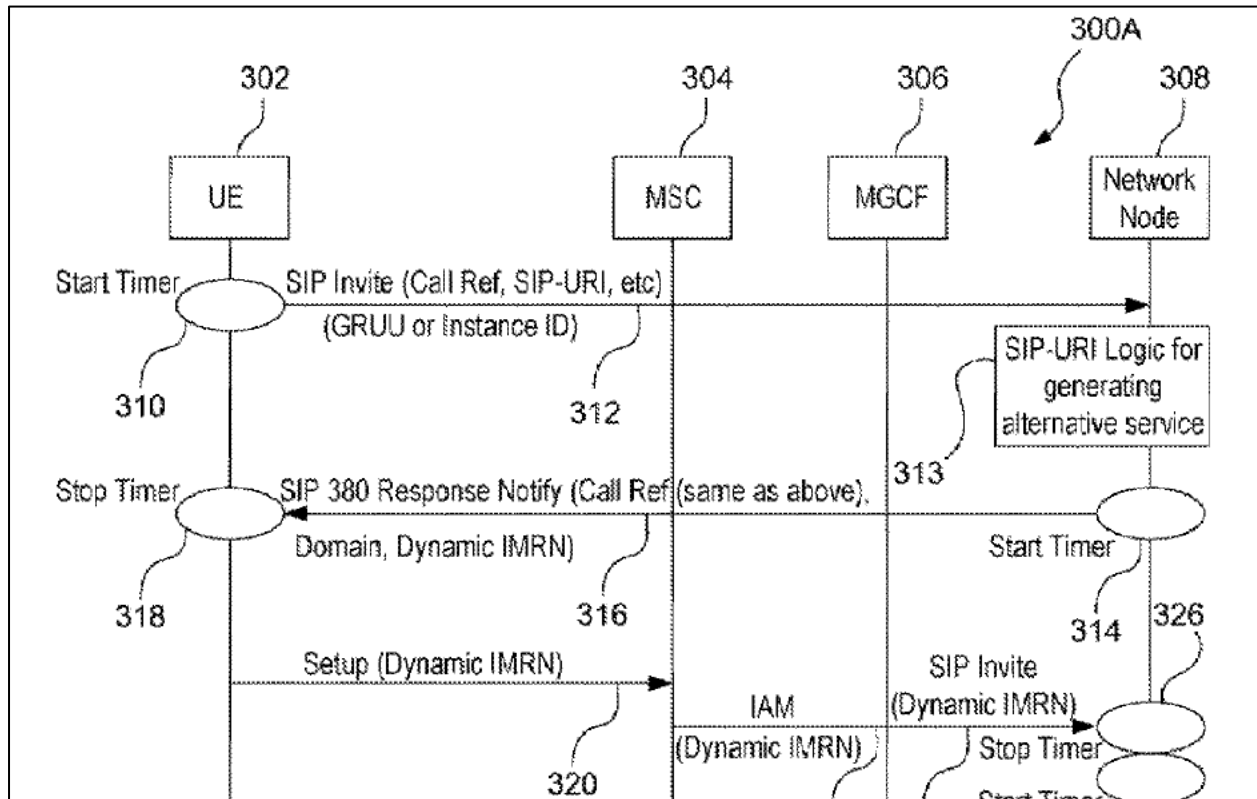
A. Buckley

Buckley teaches routing PSTN calls over packet-switched networks. EX1005, Abstract. Buckley's Figure 1 depicts example components involved, including: mobile phones (*i.e.* User Equipment (UE) (element 102)); Circuit-Switched (CS) networks (*e.g.* PSTN (element 110)); and Packet-Switched (PS) networks (*e.g.* wireless Local Area Network (WLAN) Broadband Access (element 108), and Internet protocol Multimedia Subsystem (IMS) Core Network (element 112)). *Id.*, 3:19-65.



Buckley's Application Server (AS) uses well-known Session Initiation Protocol (SIP) messaging (access code request and reply messages) to assign a temporary IP Multimedia Routing Number (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 Uniform Resource Indicators (URI) that identify location. *Id.*, 2:62-3:12, 5:18-58, Figures 3A, 3B.

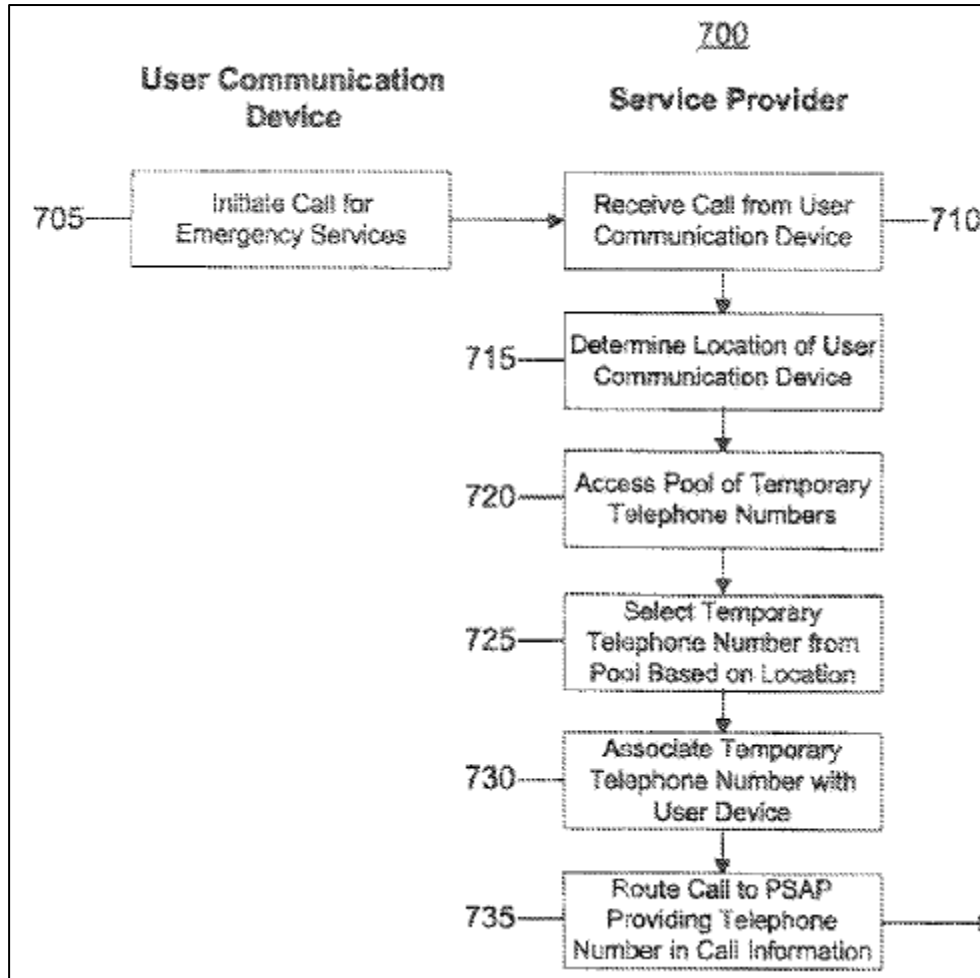


B. Bates

Bates “relates to identifying and assigning correct location information to callers in a communication system.” EX1009, 1:12-13. Bates involves routing calls to the appropriate Public Safety Answering Point (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. Like Buckley and Bates, Ejzak teaches PSTN and VoIP call interoperability such that calls can traverse packet-switched (e.g., IP) and circuit-switched (e.g., PSTN) networks. See EX1007, 2:36-40. Ejzak further teaches using access codes, establishing emergency service calls, and using a mobile phone's location to route

calls over the least cost path. *Id.*, 7:28-36, 4:46-60, 8:43-48; EX1003 ¶¶63, 67. Ejzak further teaches querying a Domain Name System (DNS) using the callee identifier. Specifically, “[q]ueries are sent to DNS, which responds with the associated resource records [e.g., IP addresses] for the requested input.” *Id.*, 8:29-36.; EX1003 ¶63. Thus, the DNS replies with the appropriate IP address, from a set of available IP addresses, to enable communications over an IP network or to route the call to a PSTN gateway for communication over a PSTN. *See id.* 8:63-9:6; *see also id.* 9:8-12; EX1003 ¶¶64-65. Ejzak’s DNS further includes “the functionality of an ENUM [E.164 Number Mapping] Server,” which maps PSTN numbers to IP addresses, and vice-versa, thus rendering them interchangeable for the purpose of identifying IP network communication channels. EX1007, 8:29-48; EX1003 ¶66

X. SPECIFIC GROUNDS

A. Ground I: Claims 51-52, 57, 60, 63, 65, 67, 73, 77, 103-104, 108-110, 124, 130, 133, 138-139 Are Obvious Over Buckley.

1. Claim 51

a. Element 51[preamble]³

Buckley teaches this element. EX1003 ¶¶68-69.

³ The complete text of the claims’ corresponding portions is available in the claim listing attached hereto as Appendix A.

Buckley teaches methods for UEs (User Equipment), in particular “mobile communication device[s] (e.g. cellular phones ...).” EX1005, 3:25-40. Buckley teaches methods wherein these UEs (wireless devices) communicate with a callee’s communication device (destination node), such as a phone, via a communication network. EX1005, *e.g.*, cl. 1 (“A method for use in processing calls in a network environment”), 2:8-9 (“originating a SIP call ... with ... the called party”).

b. Element 51[a]

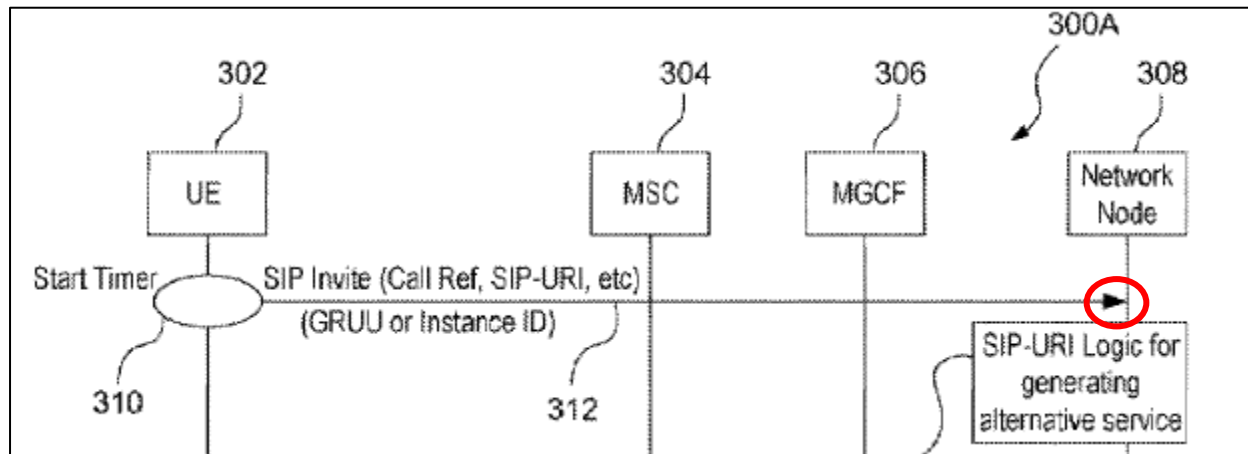
Buckley teaches this element. EX1003 ¶¶70-75.

i. Element 51[a][i]

As shown, for example, in Figure 3A (cropped in relevant part below),⁴ 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 ¶71; EX1005 6:58-63 (“A Wireless UE device 302 ... is operable to generate a SIP Invite message 312 towards an

⁴ 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.

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 ¶72; 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 ¶72; 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 wireless device 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.

ii. Element 51[a][ii]

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

The SIP Invite (access code request message) also includes the UE's (wireless device's) geographic location information in the form of a P-Preferred-ID. EX1005 at 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 geographic location identifier because each of the country, area code, and telephone prefix (*i.e.*, the three digits in a telephone number before the final four digits), are associated with the phone’s geographic location. *See* EX1001, 12:39-42 “[T]he location identifier may include a ... local calling area where the mobile telephone is or may be situated.”); EX1003 ¶74. The P-Preferred-ID is thus a geographic location identifier that identifies the geographical location of the caller’s wireless device. *See id.*

As a further example, The SIP invite (access code request message) also includes the UE’s (wireless device’s) geographic location information by including 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* EX1010⁵, 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. EX1003 ¶75. A POSITA would have recognized the SIP URI is a geographic location identifier because it includes an IP address and IP addresses

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

can be translated into geographic locations. EX1001, cl. 6; EX1009 9:4-9; EX1003 ¶75.

c. **Element 51[b]**

Buckley teaches this element. EX1003 ¶¶76-83.

i. Element 51[b][i]

As the '721 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, 15:14-20. 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 ¶77. 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 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 ¶77. 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 ¶77.

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....”).

ii. Element 51[b][ii]

A POSITA would have understood that an E.164 telephone number (used in Buckley as an IMRN (access code) identifies a communications channel on a gateway. EX1003 ¶79. Moreover, the ’721 Patent itself confirms that a telephone

number identifies a communication channel. *See, e.g.*, EX1001 3:36-38 (“[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 (“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 ¶80.

The IMRN is used by the wireless device in place of the destination node URI (destination node identifier) to connect to the AS (gateway) such that the AS node can complete the call to the original destination node URI; indeed, that is the AS node’s purpose in providing the IMRN. *See* EX1005, 6:38-40 (“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”).

The AS is a gateway because it converts the CS network call setup initiated by the UE (wireless device) to a SIP call setup on a PS network, which requires adjusting traffic between two different networks that use two different protocols (*e.g.* Internet Protocol (IP) used by the PS network, and PSTN protocol used by the CS network). 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 ¶81. Indeed, teaching the transition of calls initiated on a CS network to a PS network (which use two different protocols) is core to Buckley’s 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, wherein a CS-originated IP call (e.g. based on the Session Initiation Protocol or SIP) is to be routed using the IMS network infrastructure.”); 1:51-57 (“[I]f the called party happens to be an IP-only subscriber and is identified with a Uniform Resource Indicator (URI), the originating UE device may not be able to make the IP-based call since the UE device can effectuate only E.164 number-based calls while operating in the circuit-switched cellular network domain.”).

iii. Element 51[b][iii]

Buckley also teaches that the IMRN is based on the location identifier that was sent in the SIP Invite message (access code request message), which, as discussed above, is the P-Preferred ID and/or caller’s URI. 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 P-Preferred-ID, and additionally, the caller’s SIP URI. *Id.*, 6:63-66 (“[T]he SIP Invite message 312 includes applicable call information such as ... the P-Preferred-Identity”); 5:47-53 (“The call information may include information such as ... [the] calling party’s SIP URI...”). Thus, this mapping to “***all*** the received SIP call information” bases the IMRN on the location identifier(s) (P-Preferred ID and/or caller’s URI) in the SIP Invite message (access code request message). EX1003 ¶82.

iv. Element 51[b][iv]

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 ¶83. 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

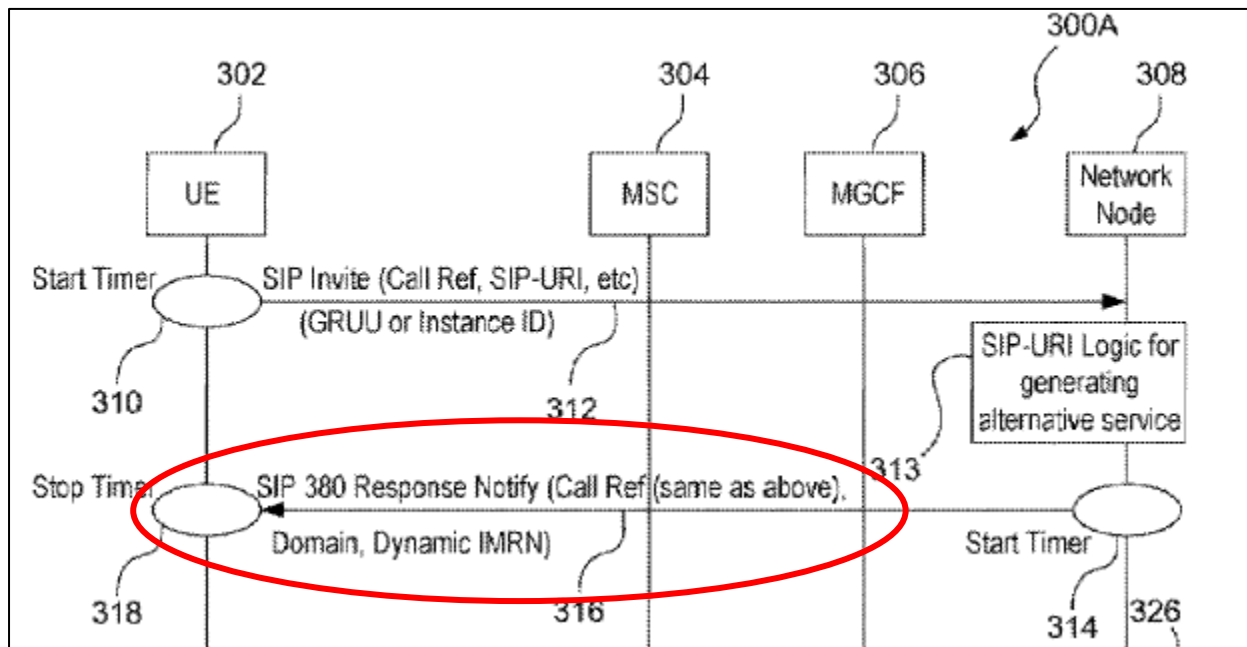
received information; and providing the selected E.164 number to the originating UE device via a SIP 380 (Alternative Service) Response message” to provide access to reach the destination node. EX1005, 4:52-57.

d. **Element 51[c]**

Buckley teaches this element. EX1003 ¶¶84-86.

i. Element 51[c][i]

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 (wireless device):



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 ¶85.

ii. Element 51[c][ii]

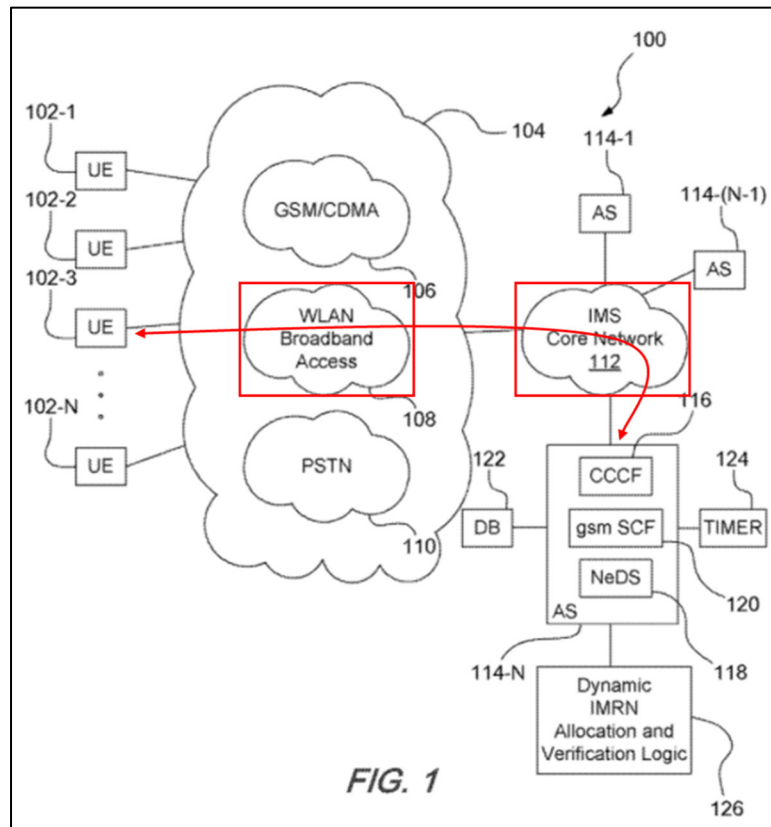
Buckley teaches the UE (wireless device) initiating a call using the IMRN (access code) to identify the destination node, e.g., using “a call setup message 320 that includes the selected IMRN” resulting in messages “towards the AS node, which then uses the IMRN mapping for establishing the SIP session or call to the called party.” EX1005, 7:50-56, Figure 3A. The call is initiated through the AS, which associates the IMRN to the called party’s URI (destination node identifier per Element 51[a]). 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”).

2. Claim 52

Buckley teaches this claim. EX1003 ¶¶87-89.

For example, Figure 1 depicts a UE (wireless device) 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.”).



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 ’721 patent’s parlance because they carry IP data packets, not voice signals. EX1001 11:58-59 (“non-voice network, such as an Internet, using WiFi or GPRS technology for example”);

EX1003 ¶89. 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 ¶89.

3. Claim 57

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

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 an 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 have at least found 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 in order to enjoy the benefits of Buckley's teachings. EX1003 ¶92. 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 ¶92.

4. Claim 60

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

As discussed in Element 51[a], Buckley's SIP Invite message (access code request message) includes the "calling party's SIP URI" (location identifier) 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)⁶, 148; 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". *Id.*, 9:27. Thus, Buckley teaches transmitting the

⁶ RFC 3261 is cited in relevant part in Buckley. EX1005, 5:29-33.

wireless device's IP address (as the hostname) when transmitting the location identifier in the SIP invite message.

As discussed in Claim 52, 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.

5. Claim 63

Buckley teaches this element. EX1003 ¶¶96-99; Element 51[b].

Buckley teaches that the IMRN (access code) identifies an IP address of the called party such that the AS (access server) can set up a SIP session (channel) for the call. EX1003 ¶97. The IMRN (access code) is mapped to the called party's URI (destination node 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 id.*, 6:63-65 ("[T]he SIP Invite message 312 includes applicable call information such as [the] called party's SIP URI..."); *id.*, 5:25-27 ("As is well known, a typical SIP address may take on the form of

sip:<username>@<hostname>...”); *id.*, 9:27 (Buckley teaching 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 51[b]) using the IMRN to identify the called party’s SIP URI. EX1005, 7:50-56, Figure 3A (“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 of the AS node 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, 4:32-38; 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 UE (wireless device) was preferably able to operate over both PSTN (CS) and IP (PS) networks 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) to an IP (packet-switched) communication mode to reach the callee over Buckley's IMS network. EX1003 ¶¶99.

6. Claim 65

Buckley teaches this claim. EX1003 ¶¶100-101; Claim 57.

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").

7. Claim 67

Buckley teaches this claim. 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; EX1003 ¶103.

8. Claim 73

Buckley teaches this claim. EX1003 ¶¶104-106.

Buckley teaches a UE and AS (access server) connect via a non-voice, packet-switched network. *See* Claim 52.

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 ¶106.

9. Claim 77

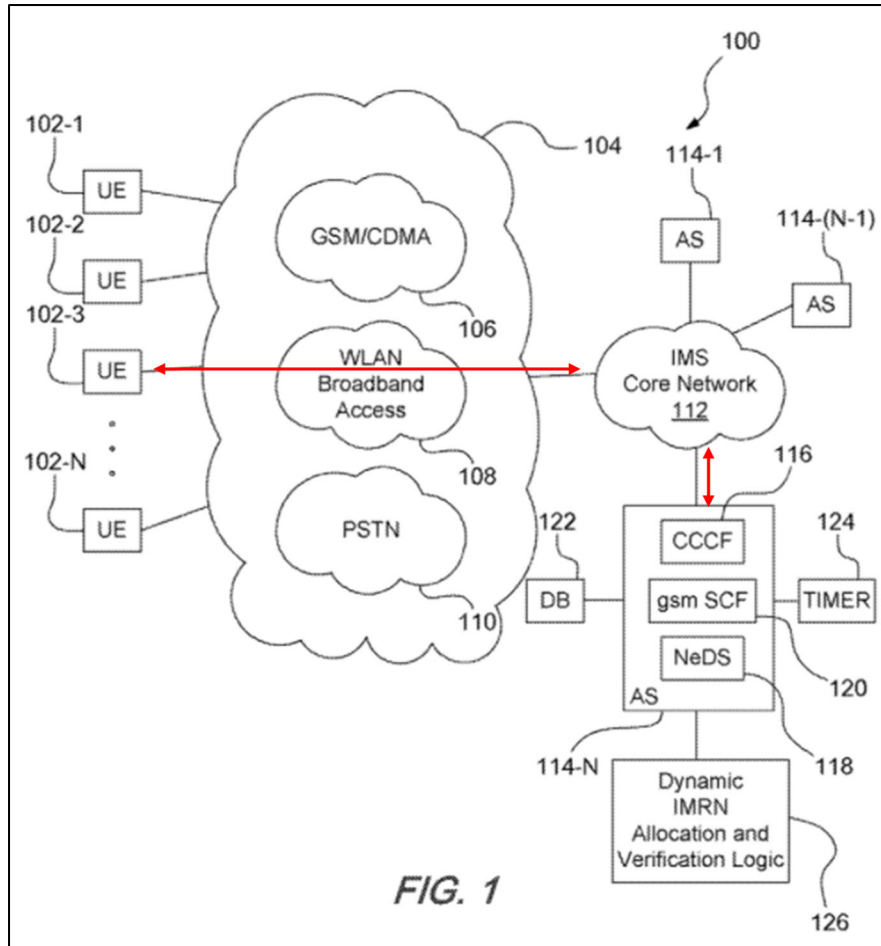
a. Element 77[preamble]

Buckley teaches this element. EX1003 ¶107; Element 51[preamble].

b. Element 77[a]

Buckley teaches this element. EX1003 ¶¶108-110.

Buckley teaches means for receiving, which the parties agree incorporates the structure of “a network interface.” Buckley teaches the application server or AS node 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 node depicted in Figure 1 contains a network interface in order to connect to the “IMS Core Network” and ultimately to the UE, as annotated in red. EX1003 ¶109.



Buckley teaches the element's remainder. *See* Element 51[a].

c. Element 77[b]

Buckley teaches this element. EX1003 ¶¶111-112.

Buckley teaches an access server in the form of its AS node. *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) that act as a routing controller (*see* Element 51[b]). EX1003 ¶112. 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) and/or based on a location pre-associated with the wireless device, where the IMRN (access code) is different from the callee identifier and useable by the wireless device to initiate a call to the callee using the channel and wherein the IMRN (access code) expires after a period of time. *See* Element 51[b]. 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 ’721 Patent. *See* Elements 51[a]-[c]. The AS has an I/O port or network interface. *See* Element 77[a].

d. Element 77[c]

Buckley teaches this element. EX1003 ¶113 Element 51[c]; 77[a].

10. Claim 103

a. Element 103[preamble]

Buckley teaches this element. EX1003 ¶114; Element 51[preamble].

b. Element 103[a]

Buckley teaches this element. EX1003 ¶115; Element 77[b].

c. Element 103[b]

Buckley teaches this element. EX1003 ¶116; Element 77[a]-[c]. 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 in order to receive. EX1005, 28:43-46; EX1003 ¶116. 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. EX1003 ¶116; 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, for further *processing* of the SIP call.”).

d. Element 103[c]

Buckley teaches this element. EX1003 ¶¶117-118; 77[b]. As a POSITA would have recognized, a computer readable medium in the form of memory is necessarily required in order to store software and firmware modules capable of performing the logic and operations ascribed to the AS. EX1003 ¶118.

e. Element 103[d]

Buckley teaches this element. EX1003 ¶119; Element 51[a].

f. Element 103[e]

Buckley teaches this element. EX1003 ¶120; Element 51[b].

g. Element 103[f]

Buckley teaches this element. EX1003 ¶121; Element 51[c].

11. Claim 104

Buckley teaches this claim. EX1003 ¶122; Claim 52.

12. Claim 108

Buckley teaches this claim. EX1003 ¶123; Element 51[b].

13. Claim 109

Buckley teaches this claim. EX1003 ¶¶124-125; Claim 57; Claim 63. In this instance, the access code is the IP address of the AS node, as explained in Claim 63, and the asserted pool is Buckley’s pool comprised of those IP addresses. EX1005, 5:6-7 (“[I]t may be desirable to provide for different pools of IMRNs”).

14. Claim 110

Buckley teaches this claim. EX1003 ¶¶126-128.

The IMRN “terminate[s] on the AS node” (*Id.*, 4:46-47), which is “disposed in the user’s *home* IMS network” and thus enables a local call, 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 ¶127. Thus, a local call is enabled because a POSITA would have also recognized that a benefit of including location information (such as the caller’s SIP URI and P-Preferred ID discussed below in sub-element (iii)) in the SIP Invite message was that the AS node could facilitate making a local call based on such information in order to, for example, avoid needless long distance and roaming charges. *See* EX1014 at Abstract, [0036]; EX1001 1:20-28; EX1003 ¶127. Indeed, a POSITA would have recognized that enabling such a local call is one of the

benefits of “mapp[ing]” the IMRN to “*all* of 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 ¶127. 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 ¶127. The IMRN (access code) is associated with a calling area matching the local calling area associated with the wireless device, which is how the IMRN enables a local call as discussed above. EX1003 ¶127.

As discussed above in Element 51[a][ii], the location identifier (the SIP URI and/or P-Preferred ID) identifies the location of the wireless device, so in Buckley’s process of selecting an IMRN that enables a local call as discussed above, the local calling area associated with the wireless device must be determined from the location identifier, otherwise a local call would not be enabled. EX1003 ¶128.

15. Claim 124

Buckley teaches this claim. EX1003 ¶129-131; Element 51[b].

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 and utilize a new E.164 number....”); *see also id.*, 21:18-21; EX1003 ¶130.

Buckley also teaches that the AS can send a timestamp associated with the IMRN (access code) to the wireless device, 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.164 number contained within it. A time or timer value which defines a time period for which the selected E.164 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 in order 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 ¶131. At a minimum, a POSITA would have found it obvious to include such timer information in the SIP Response message (access code reply message) in order to provide the UE (mobile phone) with

the time information Buckley teaches the UE needs in order 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 ¶131.

16. Claim 130

a. Element 130[preamble]

Buckley teaches this element. EX1003 ¶132; Element 51[preamble].

b. Element 130[a]

Buckley teaches this element. EX1003 ¶133; Element 51[a], Claim 60.

c. Element 130[b]

Buckley renders this element obvious. EX1003 ¶¶134-135; Element 51[b].

Buckley teaches, or at least renders obvious, that the IMRN (access code) identifies a second IP address associated with the AS (IP network communication device). Claim 63. (The “first” IP address comprises the location identifier of the caller’s wireless device, as discussed in Element 130[a].) A POSITA would have recognized the AS is an IP network communication devices because it can connect to IP networks. EX1005, Fig. 1 (depicting the AS connects to the “IMS [*IP* Multimedia Subsystem] Core Network”); Claim 52; EX1003 ¶135. Buckley also teaches that the IMRN (access code) terminates on the AS that connects the wireless device and the destination node. Element 51[b][ii]. 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 in Claim 63, so that a wireless device transitioning to, or initiating, a VoIP call could communicate directly with the AS on the IP network. The wireless device uses the IMRN (access code) to initiate communications with the destination node. Element 51[c][ii].

d. Element 130[c]

Buckley teaches this element. EX1003 ¶¶136-138; Element 51[c].

Buckley teaches, or at least renders obvious, the IMRN (access code) comprises a second IP address. Claim 63. Buckley teaches the IMRN is based on the location identifier. Claim 51[b][iii].

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 ¶138. Indeed, teaching the transition of calls initiated on a CS network to a PS network is core to Buckley’s 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 PS 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 Element 130[b]), as SIP is a process designed for IP networks. EX1003 ¶138.

17. Claim 133

Buckley teaches this element. EX1003 ¶¶139-140; Element 51[b].

Buckley's AS node is a gateway because it is capable of converting CS network (PSTN) call setups to SIP call setups on a PS network (IP) and thus can bridge network using different protocols. EX1005, 1:23-28 ("[T]he present disclosure is directed to a system and method for managing call routing in a network environment including a circuit-switched (CS) network and an IP multimedia subsystem (IMS) network), wherein a CS-originated IP call (e.g. based on the Session Initiation Protocol or SIP) is to be routed using the IMS network infrastructure."). Buckley further teaches that UE's can "initiate calls to **both** IP-only subscribers and conventional circuit-switched telephony [PSTN] subscribers **using either one of the domains**" (EX1005, 1:40-42); thus, if the callee's communication device (destination node) is a PSTN telephone on the PSTN, Buckley's AS node can also establish communications from the caller's wireless device to the callee's PSTN telephone via the PSTN domain. EX1003 ¶140. Buckley's AS is a communications

supplier gateway because it is a “part of the core” network of the network provider to connect callers and callees. EX1005, 4:25-26; EX1003 ¶140.

18. Claim 138

Buckley teaches this claim. EX1003 ¶¶141-142; Claim 63.

Buckley teaches 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.”). The IMRN (access code) identifies an IP address as discussed above with respect to Claim 63. EX1003 ¶142. Communications with the destination node utilize the IP communication channel. Claim 130[c].

19. Claim 139

Buckley teaches this claim. EX1003 ¶143; Claim 138.

B. Ground II: Claims 63, 109, 130, 133, and 138-139 Are 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 ¶144. 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 known 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-switches (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. EX1003 ¶145.

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 ¶146. 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 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. EX1003 ¶146.

A POSITA would have had a reasonable expectation of success in combining Buckley with Ejzak. EX1003 ¶147. 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 requires using the “home IMS network’s AS node.” EX1007, 1:64-67; EX1005, 6:45-46. Buckley further 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. Ejzak’s teachings are thus readily incorporated into Buckley’s network and SIP messaging, which is by its nature sufficiently flexible to accommodate adopting Ejzak’s features. EX1003 ¶148.

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 ¶149.

2. Claim 63

Buckley in view of Ejzak render this element obvious. EX1003 ¶¶150-153; Ground I, Claim 63.

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 8:67-91 (“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 ¶151. Indeed, the purpose of Ejzak assigning an IP address is to complete a call, which requires a communication channel. EX1007, Figure 5; EX1003 ¶151. 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 ¶151.

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 ¶152. 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 ¶152.

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 in Ground I, Claim 63, 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 ¶153.

3. Claim 109

Buckley in view of Ejzak render this claim obvious. EX1003 ¶¶154-155; Ground I, Claim 109. In this instance, the access code is Ejzak’s IP address, as explained in Claim 63, and the asserted pool is Buckley’s pool comprised of Ejzak’s IP addresses. EX1005, 5:6-7 (“[I]t may be desirable to provide for different pools of IMRNs”).

4. Claim 130

a. Element 130[preamble]

Buckley in view of Ejzak render this element obvious. EX1003 ¶156; Ground I, Element 130[preamble].

b. Element 130[a]

Buckley in view of Ejzak render this element obvious. EX1003 ¶157; Ground I, Element 130[a].

c. Element 130[b]

Buckley in view of Ejzak render this element obvious. EX1003 ¶158-159; Ground I, Element 130[b]; Ground II, Claim 63.

Ejzak also teaches the IP address can identify a SIP server (IP network communication device). EX1007, 8:47-48 (“A subsequent query to DNS 165 with that domain name determines the IP address of the SIP server.”). SIP servers perform the functions required to set up SIP communication channels. *Id.*, 10:52 (“S-CSCFs 303 and 304 are preferably stateful SIP servers.”), 10:61-11:5 (“The functions performed by S-CSCFs 303 and 304 include, but are not limited to, receiving and processing SIP-level registrations from Subscribers, providing Session control for the registered endpoint Sessions, and providing Service triggers.”); 11:45-52 (“For a mobile-originated call to a PSTN address, S-CSCF 303 sends the SIP request to BGCF 144 within the operator's network. ... For a mobile-terminated

call to UE 311 being served at iMSC server 301 in its home network, S-CSCF 304 sends the SIP request or response directly to iMSC server 301.”).

d. **Element 130[c]**

Buckley in view of Ejzak render this element obvious. EX1003 ¶160; Ground I, Element 130[c]; Ground II, Element 130[b].

5. **Claim 133**

Buckley in view of Ejzak render this claim obvious. EX1003 ¶¶161-162; Ground I, Claim 133.

Ejzak also teaches establishing communications from the UE (wireless device) to the BGCF (Breakout **Gateway** control function) to connect to a PSTN telephone. EX1007, 11:25-26 (“S-CSCF 303 interacts with BGCF 144 and MGCF 145 for calls to PSTN 161.”); 11:45-47 (“For a mobile-originated call to a PSTN address, S-CSCF 303 sends the SIP request to BGCF 144 within the operator's network.”); 4:46-47 (“To select a **PSTN gateway, BGCF** 144 in the home network receives the call origination message.”). A POSITA would have found it obvious to include Ejzak’s BGCF as one of the “appropriate logic/structure/software/firmware module(s)” Buckley teaches are provided to the AS. EX1005, 4:42-45; EX1003 ¶162.

6. **Claim 138**

Buckley in view of Ejzak render this claim obvious. EX1003 ¶163; Ground I, Claim 138; Ground II, Claim 63.

7. Claim 139

Buckley in view of Ejzak render this claim obvious. EX1003 ¶164; Ground I, Claim 139; Ground II, Claim 63.

C. Ground III: Claims 51-52, 57, 60, 63, 65, 67, 73, 77, 103-104, 108-110, 124, 130, 133, and 138-139 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. EX1003 ¶¶165-171.

To begin, both references are in the field of call routing and are directed to improving call routing. Both teach improved 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. EX1003 ¶¶167-169. 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 **Error! Reference source not found..**

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 ¶168. A POSITA would have therefore 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 ¶168. 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 ¶168.

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. EX1003 ¶170. 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 ¶170. 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 have thus appreciated 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 ¶169.

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 ¶171. Thus, a POSITA would have been motivated to modify Buckley with Bates to produce better call routing results, including in the emergency services

context. EX1003 ¶171. 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 ¶171.

2. Claim 51

a. Element 51[preamble]⁷

Buckley in view of Bates renders this element obvious. EX1003 ¶172; Ground I, Element 51[preamble].

b. Element 51[a]

Buckley in view of Bates renders this element obvious. EX1003 ¶¶173-175; Ground I, Element 51[a].

Bates also 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. EX1003 ¶174.

⁷ The complete text of the claims’ corresponding portions is available in the claim listing attached hereto as Appendix A.

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 wireless device. *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).

c. **Element 51[b]**

Buckley in view of Bates renders this element obvious. EX1003 ¶¶176-182; Ground I, Element 51[b].

As described above, Buckley teaches receiving an access code request message from the wireless device. Ground I, Element 51[a]. In the asserted combination, however, the access code included in the access code reply message is selected based on Bates's techniques to select a geographically correct telephone number that would be used by the caller's mobile phone to enable a local call. EX1009, 18:67-19:2 ("A communications service provider may ... select a temporary number that corresponds to the location of the user communication device."); 19:54-55 ("The temporary telephone number is a geographically-correct telephone number"); 3:45-49 ("***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)"). Either the caller's IP address or P-Preferred-ID as taught by Buckley or the location key as taught by Bates would provide the location information necessary to utilize Bates technique to select a geographically-correct IMRN (access code). EX1003 ¶177.

Bates's geographically-correct telephone number selection technique, when applied in Buckley's system, yields a number that is different than the emergency number dialed (*e.g.* 9-1-1) because the geographically-correct telephone number will have a local area code, such as 202 in the Washington, D.C. example. EX1009, 3:43-50; EX1003 ¶178. Bates's technique to select a geographically-correct telephone

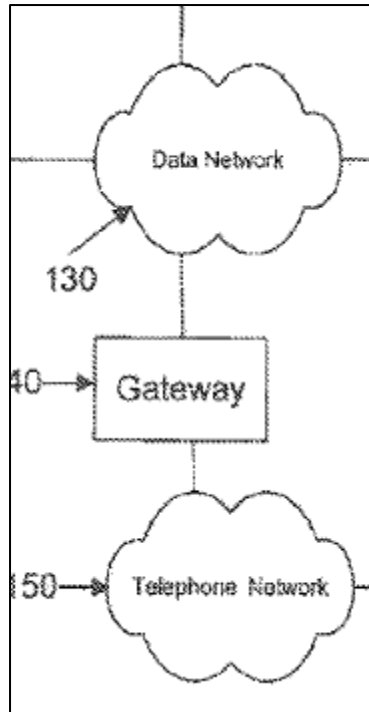
number (access code), when applied to Buckley's system, includes associating the telephone number with the location identifier (whether Buckley's caller's IP address or P-Preferred-ID or Bates's location key). The purpose of selecting a geographically-correct telephone number in the asserted ground is to choose a number that ensures the caller is placing a local call to local emergency services, and not (for example) placing a call to emergency services in California when the caller is in Washington, D.C., nor needlessly incurring long distance or roaming charges. 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 ¶178.

A POSITA would have understood that the geographically correct telephone number used in Bates identifies a communications channel. EX1003 ¶179. Moreover, the '721 Patent itself confirms that a telephone number identifies a communication channel. *See, e.g.*, EX1001 3:36-38 ("[t]he access code may include a telephone number identifying a channel operably configured to cooperate with an IP network."). Further, Bates's temporary number selection process and system described above is used to "***establish a communication session*** with an emergency services provider" or between "communication device[s]", and such a "communication session" is a channel. EX1009, 14:26-32, 4:48-61, 11:26-31, 12:17-21 ("The communications service provider 120 establishes the

communication session requested by the user communication device 110 including the temporary telephone number in information used to establish the communication session (450).”), 15:28-30; EX1003 ¶179.

Additionally, Bates’s “emergency services proxy server” comprises a routing controller because the emergency services proxy server facilitates communication between a caller and destination node by assigning the “geographically correct telephone number” and establishing a call with the appropriate PSAP (which may be a caller or destination node) 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 540 including the temporary telephone number”); *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”); *Id.*, 14:13-15 (“the user communication device may be able to receive a return call from the PSAP”); EX1003 ¶180.

Like Buckley, Bates also teaches a gateway, as shown, for example, in this cropped portion of Figure 1 which illustrates the gateway spanning two different networks (*i.e.*, a packet-switched data network and a circuit-switched telephone network, that as described above in Ground I, would operate on different protocols):



EX1009, 6:21-24 (“[T]he gateway 140 is a PSTN gateway configured to convert communications from data network 130 (e.g. IP packets) to communications suitable for delivery by a PSTN. By enabling communications between data network 130 and telephone network 150, the gateway 140 enables communications between a device connected only to data network 130 and a device connected only to the telephone network 150.”). Buckley’s AS is a gateway because Buckley’s invention helps span different types of network as discussed above in Ground I, and a POSITA would have further found it obvious that Buckley’s AS would have the qualities of a gateway as expressly described by Bates in order to bridge different network types.

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.”); EX1003 ¶181.

The remaining elements are taught by Buckley as described above in Ground I, Element 51[b], with Bates’s selection technique applied to Buckley. EX1003 ¶182.

d. **Element 51[c]**

Buckley in view of Bates renders this element obvious. EX1003 ¶183; Ground I, Element 51[c].

3. **Claim 52**

Buckley in view of Bates renders this element obvious. EX1003 ¶184; Ground I, Claim 52.

4. **Claim 57**

Buckley in view of Bates renders this element obvious. EX1003 ¶185; Ground I, Claim 52; Ground III, Element 51[b].

5. **Claim 60**

Buckley in view of Bates renders this claim obvious. EX1003 ¶¶186-187; Ground I, Claim 60.

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, 6:12-13. A POSITA would have recognized that when the user communication device is connected to a wireless network, its IP address would be wireless IP network address. EX1003 ¶187.

6. Claim 63

Buckley in view of Bates renders this element obvious. EX1003 ¶188; Ground I, Claim 63; Ground III, Element 52[b].

7. Claim 65

Buckley in view of Bates renders this element obvious. EX1003 ¶189; Ground I, Claim 52; Ground III, Element 52[b].

8. Claim 67

Buckley in view of Bates renders this claim obvious. EX1003 ¶¶190-191; Ground I, Claim 67.

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 ¶191.

9. Claim 73

Buckley in view of Bates renders this claim obvious. EX1003 ¶192; Ground I, Claim 73.

10. Claim 77

a. Element 77[preamble]

Buckley in view of Bates renders this element obvious. EX1003 ¶193; Ground I, Element 77[preamble].

b. Element 77[a]

Buckley in view of Bates renders this element obvious. EX1003 ¶194; Ground I, Element 77[a]; Ground III, Element 51[a]

c. Element 77[b]

Buckley in view of Bates renders this element obvious. EX1003 ¶195; Ground I, Element 77[b]; Ground III, Element 51[b]

d. Element 77[c]

Buckley in view of Bates renders this element obvious. EX1003 ¶196; Ground I, Element 77[c].

11. Claim 103

a. Element 103[preamble]

Buckley in view of Bates renders this element obvious. EX1003 ¶197; Ground I, Element 103[preamble].

b. **Element 103[a]**

Buckley in view of Bates renders this element obvious. EX1003 ¶198;
Ground I, Element 103[a].

c. **Element 103[b]**

Buckley in view of Bates renders this element obvious. EX1003 ¶199;
Ground I, Element 103[b].

d. **Element 103[c]**

Buckley in view of Bates renders this element obvious. EX1003 ¶200;
Ground I, Element 103[c].

e. **Element 103[d]**

Buckley in view of Bates renders this element obvious. EX1003 ¶201;
Ground I, Element 103[d]; Ground III, Element 51[a].

f. **Element 103[e]**

Buckley in view of Bates renders this element obvious. EX1003 ¶202;
Ground I, Element 103[e]; Ground III, Element 51[b].

g. **Element 103[f]**

Buckley in view of Bates renders this element obvious. EX1003 ¶203;
Ground I, Element 103[f].

12. Claim 104

Buckley in view of Bates renders this element obvious. EX1003 ¶204;
Ground I, Claim 104.

13. Claim 108

Buckley in view of Bates renders this element obvious. EX1003 ¶205; Ground I, Claim 108; Ground III, Element 51[b].

14. Claim 109

Buckley in view of Bates renders this element obvious. EX1003 ¶206; Ground I, Claim 109.

15. Claim 110

Buckley in view of Bates renders this element obvious. EX1003 ¶¶207-208; Ground I, Claim 110.

Bates's teaches selecting a temporary telephone number that has the same area code as the local calling area associated with the wireless device. EX1009, 3:43-50.(Teaching 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.”); Ground III, Element 52[b]; EX1003 ¶208.

16. Claim 124

Buckley in view of Bates renders this element obvious. EX1003 ¶209; Ground I, Claim 124, Ground III, Element 52[b].

17. Claim 130

a. Element 130[preamble]

Buckley in view of Bates render this element obvious. EX1003 ¶210; Ground I, Element 130[preamble].

b. Element 130[a]

Buckley in view of Bates render this element obvious. EX1003 ¶211; Ground I, Element 130[a].

c. Element 130[b]

Buckley in view of Bates render this element obvious. EX1003 ¶212; Ground I, Element 130[b].

d. Element 130[c]

Buckley in view of Bates renders this element obvious. EX1003 ¶213; Ground I, Element 130[c].

18. Claim 133

Buckley in view of Bates render this claim obvious. EX1003 ¶¶214-215; Ground I, Claim 133; Ground II, 51[b].

Bates teaches its “emergency services proxy server may relay the call to the enhanced emergency service provider,” which “is configured to facilitate handling of a request to establish a communication session with an emergency services provider by enabling interoperability of non-traditional communication networks

with established, traditional PSTN-based emergency services.” EX1009, 14:9-10; 14:26-31.

19. Claim 138

Buckley in view of Bates renders this element obvious. EX1003 ¶216; Ground I, Claim 138.

20. Claim 139

Buckley in view of Bates renders this element obvious. EX1003 ¶217; Ground I, Claim 139.

D. Ground IV: Claims 63, 109, 130, 133, and 138-139 Are Obvious Over Buckley in View Bates, in Further 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; 8:67-91. 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 ¶218.

2. Claim 63

Buckley in view of Bates, in further view of Ejzak render this element obvious. EX1003 ¶219; Ground III, Claim 63; Ground II, Claim 63.

3. Claim 109

Buckley in view of Bates, in further view of Ejzak render this claim obvious. EX1003 ¶220; Ground II, Claim 109.

4. Claim 130

a. Element 130

Buckley in view of Bates, in further view of Ejzak render this element obvious. EX1003 ¶221; Ground III, Element 130[preamble].

b. Element 130[a]

Buckley in view of Bates, in further view of Ejzak render this element obvious. EX1003 ¶222; Ground III, Element 130[a].

c. Element 130[b]

Buckley in view of Bates, in further view of Ejzak render this element obvious. EX1003 ¶223; Ground III, Element 130[b]; Ground II, Element 130[b].

d. Element 130[c]

Buckley in view of Bates, in further view of Ejzak render this element obvious. EX1003 ¶224; Ground III, Element 130[c]; Ground II, Element 130[c].

5. Claim 133

Buckley in view of Bates, in further view of Ejzak render this element obvious. EX1003 ¶225; Ground III, Claim 133; Ground II, Claim 133.

6. Claim 138

Buckley in view of Bates, in further view of Ejzak render this element obvious. EX1003 ¶226; Ground III, Claim 138; Ground II, Claim 138.

7. Claim 139

Buckley in view of Bates, in further view of Ejzak render this element obvious. EX1003 ¶227; Ground III, Claim 139; Ground II, Claim 139.

XI. SECONDARY CONSIDERATIONS

Petitioner is unaware of any evidence of secondary considerations of non-obviousness. EX1003, ¶228.

XII. CONCLUSION

Petitioner requests institution of IPR.

Respectfully submitted,

Dated: February 28, 2023

PERKINS COIE LLP
1900 Sixteenth Street, Suite 1400
Denver, Colorado 80202
Phone: 303-291-2300
Fax: 303-291-2400

/Kourtney Mueller Merrill/

Lead Counsel

Kourtney Mueller Merrill, Reg. No. 58,195

Backup Counsel

Amanda Tessar, Reg. No. 53,683

Attorneys for Petitioner T-Mobile USA, Inc.

CERTIFICATE OF COMPLIANCE

This Petition complies with the type-volume limitations as mandated in 37 C.F.R. §42.24, totaling 13,860 words. Counsel has relied upon the word count feature provided by Microsoft Word.

/Kourtney Mueller Merrill/
Kourtney Mueller Merrill

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, POWER OF ATTORNEY, AND EXHIBITS 1001-1026** to be served via USPS Priority Mail Express on the Patent Owner at the following correspondence address of record as listed on PAIR:

THORPE NORTH & WESTERN, LLP.
P.O. Box 1219
SANDY UT 84091-1219

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(N.D. Cal.)

Lewis E. Hudnell, III
lewis@hudnelllaw.com
Nicolas S. Gikkas
nick@hudnelllaw.com
Stanley H. Thompson, Jr.
stan@hudnelllaw.com
HUDNELL LAW GROUP P.C.
800 W. El Camino Real Suite 180
Mountain View, California 94040

Sean Franklin Parmenter
sean@parmenterip.com
Parmenter Intellectual Property Law,
PLLC
8980 N Pine Hollow Dr
Cedar Hills, UT 84062

William M. Parrish
bparrish@stradlinglaw.com
Stradling Yocca Carlson & Rauth
500 W. 2nd Street, Suite 1900
Austin, TX 78701

/Kourtney Mueller Merrill/
Kourtney Mueller Merrill

APPENDIX A

No.	Element
51[preamble]	A method for enabling a wireless device to establish communications with a destination node, the method comprising:
51[a][i]	receiving from the wireless device an access code request message,...
51[a][ii]	...including a destination node identifier associated with the destination node and a location identifier identifying a geographical location of the wireless device;
51[b][i]	in response to receiving the access code request message, causing a routing controller to produce an access code...
51[b][ii]	...[the access code] identifying a communications channel on a gateway through which communications between the wireless device and the destination node can be conducted,...
51[b][iii]	... the access code being based on the location identifier of the access code request message received from the wireless device,...
51[b][iv]	... wherein the access code is useable by the wireless device to initiate communications with the destination node through the communications channel; and
51[c][i]	transmitting, to the wireless device, an access code reply message including the access code based on the location identifier, ...
51[c][ii]	...to cause the wireless device to use the access code to initiate communications with the destination node through the communications channel.
52	The method of claim 51, wherein receiving comprises receiving the access code request message on a non-voice network.
57	The method of claim 51, wherein causing the routing controller to produce the access code comprises causing the access code to be selected from a pool of access codes.
60	The method of claim 51, wherein the location identifier comprises an Internet Protocol (IP) address of the wireless device in a wireless IP network.
63	The method of claim 57, wherein at least one of the access codes in the pool of access codes identifies an IP network address as a possible communications channel through which the communications can be conducted.
65	The method of claim 57, wherein at least one of the access codes identifies a telephone number as a possible communications channel through which the communications can be conducted.

No.	Element
67	The method of claim 51, wherein the access code request message includes a caller identifier and wherein the method further comprises associating the caller identifier included in the access code request message with the access code produced by the routing controller.
73	The method of claim 51, wherein transmitting comprises transmitting the access code reply message on a non-voice network.
77[preamble]	An apparatus for enabling a wireless device to establish communications with a destination node, the apparatus comprising:
77[a]	means for receiving from the wireless device an access code request message including a destination node identifier associated with the destination node and a location identifier identifying a geographical location of the wireless device;
77[b]	means for causing a routing controller to produce an access code identifying a communications channel on a gateway through which communications between the wireless device and the destination node can be conducted, in response to receiving the access code request message, such that the access code is produced based on the location identifier of the access code request message received from the wireless device and such that the access code is useable by the wireless device to initiate communications with the destination node through the communications channel; and
77[c]	means for transmitting an access code reply message including the access code to the wireless device, wherein the access code in the access code reply message is based on the location identifier and is used by the wireless device to initiate communications with the destination node through the communications channel on the gateway.
103	An apparatus for enabling a wireless device to establish communications with a destination node, the apparatus comprising:
103[a]	a processor circuit including at least one processor;
103[b]	a network interface in communication with the processor circuit; and

No.	Element
103[c]	a non-transitory computer readable medium having stored thereon computer executable codes for directing the at least one processor to:
103[d]	receive from the wireless device an access code request message including a destination node identifier associated with the destination node and a location identifier identifying a geographical location of the wireless device;
103[e]	cause a routing controller to produce an access code identifying a communications channel on a gateway through which communications between the wireless device and the destination node can be conducted, in response to receiving the access code request message, such that the access code is produced based on the location identifier of the access code request message received from the wireless device and such that the access code is useable by the wireless device to initiate communications with the destination node through the communications channel; and
103[f]	transmit an access code reply message including the access code to the wireless device, wherein the access code in the access code reply message is based on the location identifier and is used by the wireless device to initiate communications with the destination node through the communication channel.
104	The apparatus of claim 103, wherein the network interface comprises a non-voice network interface, and wherein the codes for directing the processor circuit to receive include codes for directing the processor circuit to cause the access code request message to be received using the non-voice network interface on a non-voice network.
108	The apparatus of claim 103 further comprising the routing controller.
109	The apparatus of claim 108, wherein the routing controller is operably configured to cause the access code to be selected from a pool of access codes, wherein none of the access codes in the pool of access codes identifies a respective telephone number.
110	The apparatus of claim 109, wherein the routing controller is operably configured to determine from the location identifier a local calling area associated with the wireless device and to select an access code associated with a calling area matching the local calling area associated with the wireless device.

No.	Element
124	The apparatus of claim 103, wherein the routing controller is operably configured to enable communications to be established between the wireless device and the destination node when the wireless device seeks to establish a call to the destination node using the access code transmitted in the access code reply message when a timestamp associated with the access code indicates that usability of the access code has not expired and to prevent the communications from being established when the timestamp indicates that the usability of the access code has expired.
130[preamble]	A method of operating an apparatus for enabling a wireless device to establish communications with a destination node, the method comprising:
130[a]	receiving from the wireless device a request message including a destination node identifier associated with the destination node and a location identifier associated with a geographical location of the wireless device, wherein the location identifier comprises a first Internet Protocol (IP) address associated with the wireless device;
130[b]	in response to receiving the request message, producing an access code identifying a second Internet Protocol (IP) address associated with an IP network communication device through which communications between the wireless device and the destination node can be conducted, wherein the access code is produced based on the location identifier received from the wireless device, wherein the access code is useable by the wireless device to initiate communications with the destination node through the IP network communication device; and
130[c]	transmitting a reply message including the access code to the wireless device, wherein the second Internet Protocol (IP) address is based on the location identifier and is used by the wireless device to initiate communications with the destination node through a communication channel on the IP network communication device.
133	The method of claim 130 further comprising, if the destination node is a PSTN telephone on the public switched telephone network (PSTN), establishing communications from the wireless device to a communications supplier gateway operable to connect

No.	Element
	to the PSTN telephone via the public switched telephone network (PSTN).
138	The method of claim 51, wherein the access code reply message identifies an Internet Protocol (IP) network address of the communications channel through which the communications can be conducted, wherein the access code is useable by the wireless device to initiate the communications with the destination node through the communications channel.
139	The apparatus of claim 103, wherein the access code reply message identifies an Internet Protocol (IP) network address associated with the communications channel through which the communications can be conducted, wherein the Internet Protocol (IP) network address is useable by the wireless device to initiate the communications with the destination node through the communications channel.