

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICROSOFT CORPORATION and AFFIRMED NETWORKS, INC.,
Petitioner,

v.

LEMKO CORPORATION,
Patent Owner.

IPR2023-00529
Patent 7,653,414 B2

Before HUBERT C. LORIN, NEIL T. POWELL, and
FRANCES L. IPPOLITO, *Administrative Patent Judges*.

POWELL, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. BACKGROUND

Microsoft Corporation and Affirmed Networks, Inc. (collectively, “Petitioner”) filed a Petition (Paper 3, “Pet.”) requesting *inter partes* review of claims 1–8, 11–16, and 21 of U.S. Patent No. 7,653,414 B2 (Ex. 1001, “the ’414 patent”). Lemko Corporation (“Patent Owner”) filed a Preliminary Response (Paper 7, “Prelim. Resp.”).

We have jurisdiction under 35 U.S.C. § 6.

Upon consideration of the arguments and evidence presented by Petitioner, we are persuaded that Petitioner has demonstrated, under 35 U.S.C. § 314(a), a reasonable likelihood that it would prevail in showing the unpatentability of at least one challenged claim. For the reasons stated below, we determine that Petitioner has demonstrated a reasonable likelihood of establishing that claim 11 is unpatentable. We institute *inter partes* review as to challenged claims 1–8, 11–16, and 21 of the ’414 patent.

B. RELATED PROCEEDING

Petitioner indicates, and Patent Owner agrees, that the ’414 patent was asserted in *Lemko Corporation v. Microsoft Corporation*, No. 3:22-cv-00363 (N.D. Tex.). Pet. 79; Paper 4, 1.

C. THE ’414 PATENT

The ’414 patent, “relates generally to the distributed mobile communications systems.” Ex. 1001, 1:7–8. The ’414 patent explains that “[c]urrent telephone systems are expensive to deploy,” for example, where “a typical cellular system that includes a mobile switching center (MSC), a base station controller (BSC), and a home location register/visitor location register (HLR/VLR) can cost over \$2.0 million” and “may require a

minimum of ten thousand users in order to be economically viable.” Ex. 1001, 1:34–40. The ’414 patent recognizes that “[i]n many rural areas, the population is not large enough to support the installation of such a system.” *Id.* at 1:40–41.

Accordingly, the ’414 patent proposes a distributed and associative telecommunications system with the controlling logic distributed and decentralized. Ex. 1001, 4:45–46. An exemplary system is depicted in Figure 1, reproduced below.

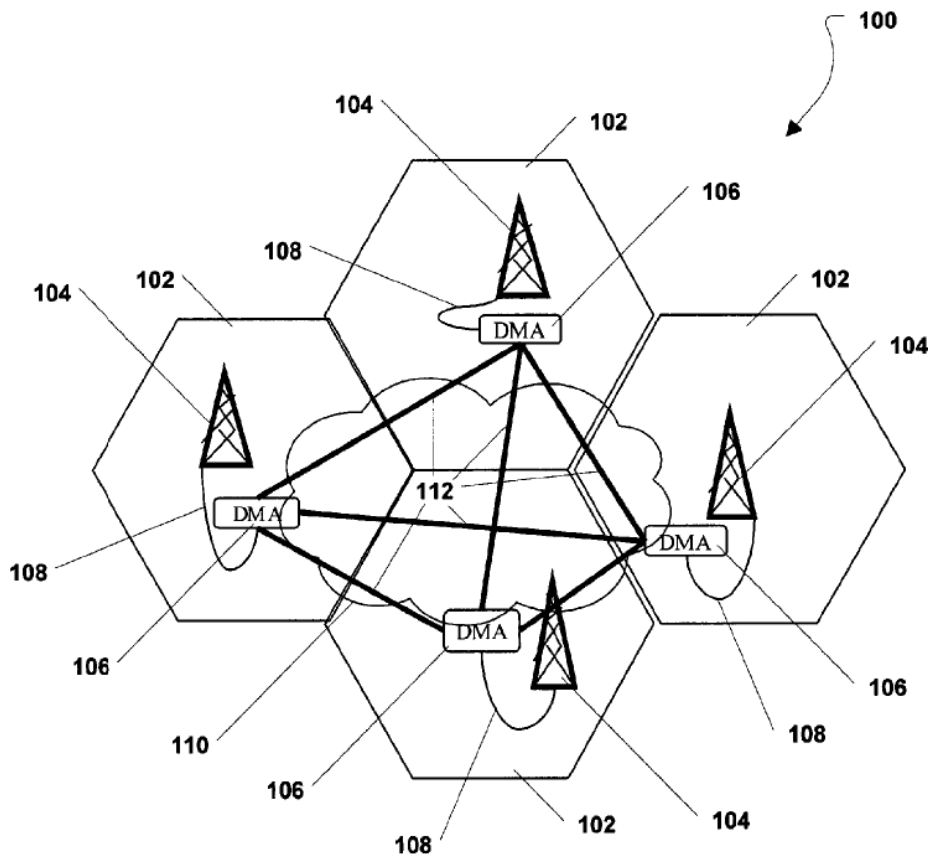


FIG. 1

Figure 1 of the ’414 patent shows a distributed and associated telecommunications system 100. *Id.* at 4:14–16.

As shown in Figure 1, system 100 includes multiple coverage sites 102, each having an antenna 104 that “is connected to a transceiver belonging to a base transceiver station (BTS).” *Id.* at 4:16–21. Each antenna 104 can also be connected to a distributed mobile architecture (DMA) 106 that “is physically and directly connected to its respective antenna 104.” *Id.* at 4:21–25. The DMAs are connected to each other via Internet Protocol network 110 such that “there exists a peer-to-peer connection 112 between each DMA 106 in the system 100.” *Id.* at 4:29–32.

The '414 patent also shows an embodiment in Figure 2, reproduced below.

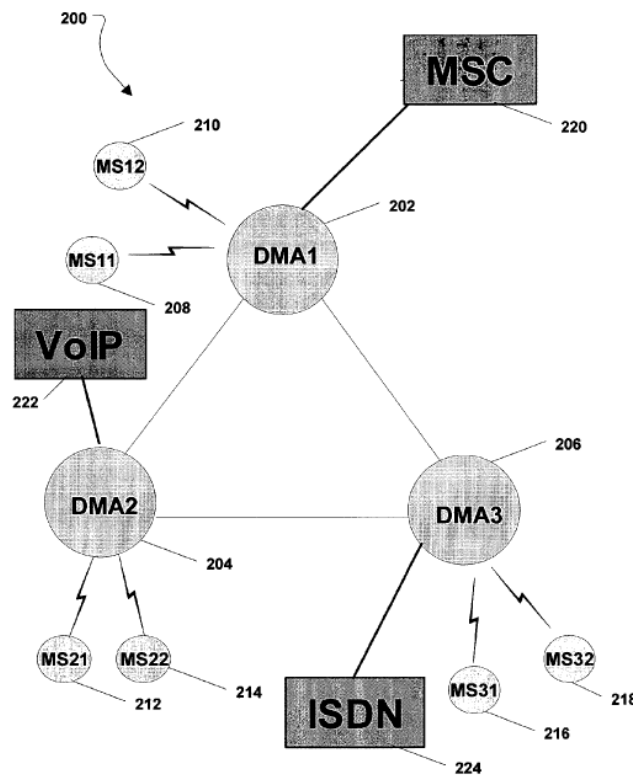


FIG. 2

Figure 2 shows system 200, which includes “an Internet protocol (IP) peer-to-peer network that includes a first distributed mobile architecture 202 that

is coupled to a second distributed mobile architecture 204 and to a third distributed mobile architecture 206.” *Id.* at 4:63–67.

Various components are coupled to distributed mobile architecture 202, distributed mobile architecture 204, and distributed mobile architecture 206:

As shown in FIG. 2, a first mobile subscriber 208 and a second mobile subscriber 210 are wirelessly coupled to the first distributed mobile architecture 202. A first mobile subscriber 212 and a second mobile subscriber 214 are wirelessly coupled to the second distributed mobile architecture 204. Additionally, a first mobile subscriber 216 and a second mobile subscriber 218 are wirelessly coupled to the third distributed mobile architecture 206. FIG. [2] further indicates that a mobile switching center (MSC) interface 220 can be coupled to the first distributed mobile architecture 202 to provide access to a mobile telephone network, such as a cellular telephone network. Further, a voice over Internet protocol (VoIP) interface 222 is coupled to the second distributed mobile architecture 204 to provide access to a VoIP network. FIG. [2] also shows that an integrated services digital network (ISDN) interface 224 can be coupled to the third distributed mobile architecture 206 to provide connectivity to an ISDN.

Id. at 5:3–20.

Mobile subscriber communications can take various routes. Mobile subscribers can communicate with one another via connection through one or more of distributed mobile architecture 202, distributed mobile architecture 204, and distributed mobile architecture 206. *Id.* at 5:21–36.

“In another particular embodiment, calls can be made from a mobile subscriber to an external destination, i.e., external to the DMA network, [via] the MSC interface 220, the VoIP interface 222, or the ISDN interface 224.” *Id.* at 5:62–65.

The '414 patent discloses routing calls based on certain registers. *Id.* at 5:37–54, 9:39–58. The '414 patent discusses such registers in connection with Figure 4, reproduced below.

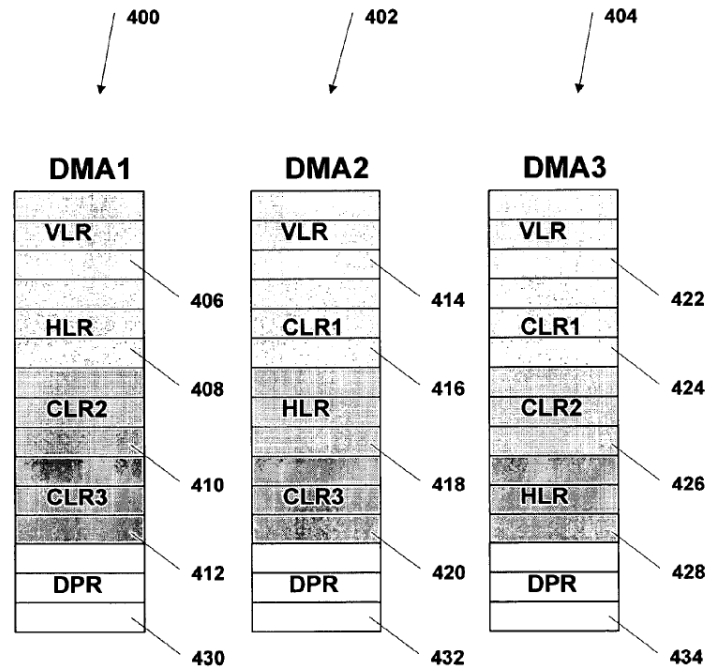


FIG. 4

“[Figure] 4 is a diagram of a plurality of distributed mobile architectures,” specifically “a first DMA 400, a second DMA 402, and a third DMA 404.” *Id.* at 1:66–67, 7:60–62.

Each of these “includes a visitor location register (VLR), a home location register (HLR), and at least one community location register (CLR).” *Id.* at 7:62–65. For example, “DMA 400 includes a VLR 406, an HLR 408, a second CLR 410, and a third CLR 412.” *Id.* at 8:3–5. In one embodiment, “the second CLR 410 within the first DMA 400 . . . correspond[s] to [an] HLR 418 of the second DMA 402.” *Id.* at 8:16–19.

“[T]he second CLR 410 . . . include[s] the information that is stored within the HLR 418 of the second DMA server 402.” *Id.* at 8:19–22. Similarly, in one embodiment, “the third CLR 412 within the first DMA 400 . . . correspond[s] to the HLR 428 of the third DMA 404.” *Id.* at 8:23–26. “[T]he third CLR 412 within the first DMA 400 . . . include[s] the information that is stored within the HLR 428 of the third DMA server 404.” *Id.* at 8:26–29. DMA 402 and DMA 404 similarly have CLRs that include information stored in other DMAs’ HLRs. *Id.* at 8:3–29.

Each of DMA 400, DMA 402, and DMA 404 can also include a destination preference register (DPR):

FIG. 4 further indicates that the first DMA 400 can include a destination preference register (DPR) 430. Also, the second DMA 402 can include a DPR 432. Moreover, the third DMA 404 can also include a DPR 434. In a particular embodiment each DPR 430, 432, 434 includes a preference for a call path to be used to place calls outside of a DMA network provided by the DMAs 400, 402, 404.

Id. at 8:30–36.

D. CLAIMS 1–8, 11–16, AND 21

Of the challenged claims, claims 1, 8, and 11 are independent. Each of claims 2–7, 12–16, and 21 depends from one of independent claims 1, 8, and 11. Independent claims 1, 8, and 11 are reproduced below. Consistent with the Petition, bracketing is added to assist in referring to the claim elements. Pet. 16–78.

1. [Preamble] A method, comprising:

[1.a] receiving, at a first distributed mobile architecture (DMA) system of a DMA network, a call from a first mobile subscriber to a second mobile subscriber, wherein the DMA network includes at least the first DMA system and a second DMA system;

- [1.b] determining whether the second mobile subscriber is located within a first wireless coverage area of the DMA network that is associated with the first DMA system based on information stored at a home location register (HLR) of the first DMA system and a visitor location register (VLR) of the first DMA system;
- [1.c] when the second mobile subscriber is located within the first wireless coverage area, connecting the call to the second mobile subscriber via the first DMA system;
- [1.d] when the second mobile subscriber is not located within the first wireless coverage area, determining whether the second mobile subscriber is located within a second wireless coverage area of the DMA network that is associated with the second DMA system based on information stored at a community location register (CLR) associated with the second DMA system, wherein the CLR associated with the second DMA system is stored at the first DMA system; and
- [1.e] when the second mobile subscriber is not located within the first wireless coverage area and is not located within the second wireless coverage area, determining a preferred call path to route the call outside of the DMA network based on information stored at a destination preference register (DPR), wherein the DPR is stored at the first DMA system.

Ex. 1001, 18:6–36.

- 8. [Preamble] A method, comprising:
 - [8.a] receiving, at a first distributed mobile architecture (DMA) system of a DMA network, a call from a first mobile subscriber to a second mobile subscriber, wherein the DMA network includes at least the first DMA system, a second DMA system, and a third DMA system;
 - [8.b] determining whether the second mobile subscriber is located within a first wireless coverage area of the DMA network that is associated with the first DMA

- system based on information stored at a home location register (HLR) of the first DMA system and a visitor location register (VLR) of the first DMA system;
- [8.c] when the second mobile subscriber is located within the first wireless coverage area, connecting the call to the second mobile subscriber via the first DMA system;
 - [8.d] when the second mobile subscriber is not located within the first wireless coverage area, determining whether the second mobile subscriber is located within a second wireless coverage area of the DMA network that is associated with the second DMA system based on information stored at a community location register (CLR) associated with the second DMA system, wherein the CLR associated with the second DMA system is stored at the first DMA system;
 - [8.e] when the second mobile subscriber is not located within the first wireless coverage area and is not located within the second wireless coverage area, determining whether the second mobile subscriber is located within a third wireless coverage area of the DMA network that is associated with the third DMA system based on information stored at a CLR associated with the third DMA system, wherein the CLR associated with the third DMA system is stored at the first DMA system; and
 - [8.f] when the second mobile subscriber is not located within any of the first wireless coverage area, the second wireless coverage area, and the third wireless coverage area, determining a preferred call path to route the call outside of the DMA network based on information stored at a destination preference register (DPR), wherein the DPR is stored at the first DMA system.

Id. at 18:64–19:34.

11. [Preamble] A distributed mobile architecture (DMA) system, comprising:

[11.a] a housing;

- [11.b] a base transceiver station coupled to the housing, the base transceiver station operable to receive a call from a mobile subscriber;
- [11.c] a computer readable storage medium within the housing, the computer readable storage medium comprising:
 - [11.d] an authentication, authorization, and accounting (AAA) module embedded within the computer readable storage medium, the AAA module comprising:
 - [11.e] a home location register (HLR) that stores information associated with one or more mobile subscriber devices that are registered with the DMA system;
 - [11.f] a visitor location register (VLR) that stores information associated with one or more roaming mobile subscriber devices that are temporarily registered with the DMA system;
 - [11.g] a community location register (CLR) that stores information associated with a second HLR of a second DMA system, wherein the second HLR stores information associated with one or more mobile subscriber devices that are registered with the second DMA system; and
 - [11.h] a destination preference register (DPR) that stores one or more preferred call paths for calls to be routed outside of a DMA network that is accessible to the DMA system, wherein the DMA network includes at least the first DMA system and the second DMA system,
 - [11.i] a call routing component embedded within the computer readable storage medium, the call routing component comprising processor executable instructions to route the call via a particular preferred call path of the one or more preferred call paths stored at the DPR when the AAA module determines that the call is directed to a destination device that is outside of the DMA network.

Id. at 19:49–20:17.

E. ASSERTED GROUNDS OF UNPATENTABILITY

Petitioner challenges the patentability of claims 1–8, 11–16, and 21 of the '414 patent on the following grounds (Pet. 2):

Ground	Claims Challenged	35 U.S.C. §	References/Basis
1	1–8	103 ¹	Mauer ² , Waylett ³
2	11–16, 21	103	Waylett, Mauer

In support of its challenges, Petitioner also relies on the Declaration of James Proctor. Ex. 1003. Patent Owner relies on the Declaration of Todor Cooklev, Ph.D. Ex. 2001.

II. ANALYSIS

A. LEVEL OF ORDINARY SKILL

Petitioner defines the person of ordinary skill in the art as follows:

As of February 2006, a person of ordinary skill in the art (“POSITA”) would have been a person with a degree in computer science, electrical or computer engineering, physics, or a similar discipline . . . [and] would also have at least two years of relevant experience including, for example, work related to telecommunications networks.

Pet. 3 (citing Ex. 1003 ¶ 54).

¹ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103. Because the challenged claims of the '414 patent have an effective filing date before the effective date of the applicable AIA amendments, we refer to the pre-AIA version of 35 U.S.C. § 103 throughout this Decision.

² Mauer et al., U.S. Patent No. 7,395,085 B1, issued July 1, 2008 (Ex. 1005, “Mauer”).

³ Waylett et al., U.S. Patent No. 8,184,603 B2, issued May 22, 2012 (Ex. 1006, “Waylett”).

Patent Owner states that it “applies Petitioners’ definition of a person of ordinary skill in the art (‘POSITA’)” “[f]or the purpose of this preliminary response only.” Prelim. Resp. 18.

Petitioner’s undisputed definition of a person of ordinary skill in the art appears reasonable and is consistent with the prior art. Based on the complete record now before us, we adopt Petitioner’s undisputed proposal as reasonable and consistent with the prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art may reflect an appropriate level of skill in the art).

B. CLAIM CONSTRUCTION

In an *inter partes* review proceeding, a claim of a patent is construed using the same standard used in federal district court, including construing the claim in accordance with the ordinary and customary meaning of the claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b) (2020). According to the applicable standard, claim terms “are generally given their ordinary and customary meaning” as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc) (citations omitted). Only those terms that are in controversy need be construed, and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs., Inc. v. America Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner does not submit constructions for any claim terms. According to Petitioner, “[t]he Board construes claims under the same

standard used in civil actions in federal district court. The district court for the related litigation has not yet construed the claim terms.” Pet. 7.

Patent Owner argues that the “Board should deny the Petition under 37 C.F.R. § 42.104(b)(3)-(4) because Petitioners did not construe the Challenged Claims or identify ‘[h]ow the construed claim is unpatentable under the statutory grounds.’” Prelim. Resp. 19. Patent Owner focuses on the claim language “distributed mobile architecture,” which it contends Petitioner should have construed but did not. *Id.* More specifically, Patent Owner suggests that Petitioner had an obligation to construe “DMA system” and “DMA network.” *Id.* at 20–21. For its part, Patent Owner submits an express construction of “DMA network,” but not an express construction of “DMA system.” *Id.* at 21–25.

As Patent Owner acknowledges, a petitioner must offer an express claim construction only if that petitioner “believes that a claim term requires an express construction.” *Id.* at 19; Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019) (“CTPG”) at 44; Prelim. Resp. 19. Alternatively, a petitioner can take the position that no express claim construction is needed. CTPG at 44.

Here, Petitioner’s statement about claim construction conveys that it does not believe any claim term requires express construction. *See* Pet. 7. Accordingly, we do not find persuasive Patent Owner’s argument that we should deny institution because Petitioner did not submit an express construction for any term.

We turn now to Patent Owner’s proposed construction of “DMA network.”

1. “DMA network”

Patent Owner contends that “‘DMA network’ should be construed to mean individual DMA systems connected with peer-to-peer connections to form the DMA network.” Prelim. Resp. 25. In support, Patent Owner, *inter alia*, reproduces Figure 1 and quotes 4:28–31 of the ’414 patent. *Id.* at 23 (citing Ex. 1001, Figure 1 (reproduced in Section I.C), 4:28–31 (“As illustrated in FIG. 1, each DMA 106 is interconnected with the other DMAs 106 via an Internet protocol network 110. As such, there exists a peer-to-peer connection 112 between each DMA 106 in the system 100.”)).

At this time, we decline to adopt a construction of the claim term “DMA network” that would require peer-to-peer connections. We start with the claim language, which appears to conflict with Patent Owner’s suggestion that “DMA network” requires peer-to-peer connections. Each of independent claims 1, 8, and 11 recites “DMA network” without any mention of “peer-to-peer connection.” Ex. 1001, 18:8–34, 18:66–19:32, 20:8–9. Certain dependent claims expressly narrow the claimed invention by requiring “peer-to-peer connection,” strongly evincing that the claim language “DMA network” does not require peer-to-peer connection. *Id.* at 18:42–46, 19:41–49.

Moreover, the present record does not sufficiently support the view that a POSITA would have otherwise understood the claim term “DMA network” as requiring peer-to-peer connection.

Dr. Cooklev states:

I understand that each of the Challenged Claims requires a distributed mobile architecture (DMA) network. It is my opinion that a DMA network should be construed to mean individual

DMA systems are connected with peer-to-peer connections to form the DMA network.

Ex. 2001 ¶ 34; Prelim. Resp. 21.

Dr. Cooklev’s “understand[ing]” is based, in part, on Figure 1 of the ’414 patent. Ex. 2001 ¶ 38; Prelim. Resp. 24. Figure 1 shows DMAs 106 interconnected via an Internet protocol network 110 and “[a]s such, there exists a peer-to-peer connection 112” between them. Ex. 1001, 4:28–31, Figure 1; Prelim. Resp. 23. But Figure 1 is “a *non-limiting, exemplary embodiment* of a distributed and associative telecommunications system . . . generally designated 100.” Ex. 1001, 4:14–16 (emphasis added).

In explaining what the “DMA network” is referring to, Dr. Cooklev quotes the ’414 patent: “due to the interconnectivity [between DMAs] via the IP network 110” “telephony **traffic handled by [an] inoperable DMA 106 can re-routed to one of the remaining operable DMAs 106.**” *Id.* ¶ 36 (quoting, with emphasis, Ex. 1001, 4:45–60); Prelim. Resp. 22–23. But the claimed method is not so limited. Nor does the record sufficiently show that a POSITA would have nevertheless understood the “DMA network” of the claim *necessarily* limited to one that it is connected to other DMA servers via peer-to-peer connection.

For these reasons, at the present time, we decline to adopt Patent Owner’s proposed construction of “DMA network” so as to limit its scope to require peer-to-peer connection.

C. OBVIOUSNESS ASSERTIONS

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, “would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.⁴ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion does not shift to Patent Owner, except in limited circumstances not present here. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

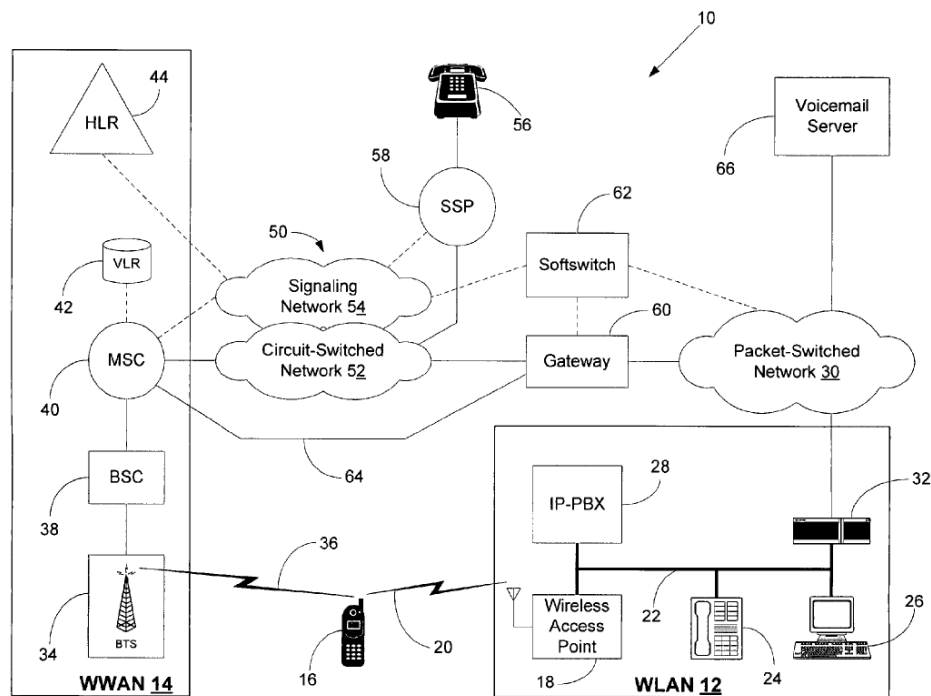
We have reviewed all of the parties’ arguments and evidence regarding Petitioner’s Ground 1 and Ground 2. Based on our review, we determine that, in Ground 2, Petitioner demonstrates a reasonable likelihood of establishing that independent claim 11 would have been obvious over Waylett and Mauer.

⁴ Patent Owner does not present objective evidence of nonobviousness.

1. *Prior Art Overview*

a) *Mauer*

Mauer “relates to telecommunications.” Ex. 1005, 1:8. Mauer discloses a “multi-mode mobile station may use different wireless networks at different times, for example, based on what wireless network is available and preferred in a given location.” *Id.* at 3:25–27. Mauer discusses an illustrative network architecture in connection with Figure 1, reproduced below.



Mauer’s Figure 1 “is a simplified block diagram of a wireless telecommunications system.” *Id.* at 2:50–51.

Figure 1 shows multi-mode mobile station 16, which “has a first interface for wireless communication with WLAN 12 and a second interface for wireless communication with WWAN 14.” *Id.* at 4:64–66. WLAN 12 includes network elements that cooperate to supply wireless coverage, “such

as in a building or part of a building.” *Id.* at 4:35–40. WLAN 14 also include network elements that cooperate to “provide wireless coverage in a relatively large geographic area, such as an entire city.” *Id.* at 4:35–40, 4:54–55.

Figure 1 also shows various other components, including “voicemail server 66 for storing voicemail messages for multi-mode mobile stations, such as multi-mode mobile station 16. *Id.* at 8:25–28. The telecommunications system “may establish a call to voicemail server 66 when the multi-mode mobile station intended to receive the call does not answer it.” *Id.* at 8:32–34.

Mauer discusses details of telecommunications operation in connection with Figure 2, reproduced below.

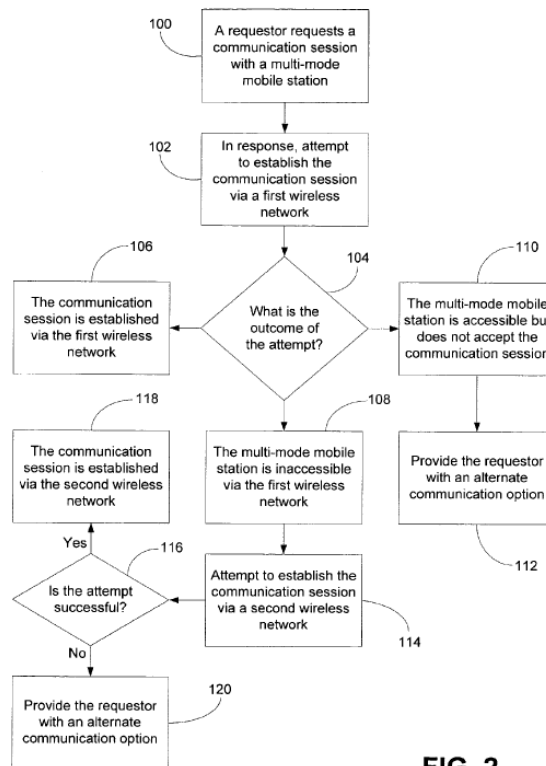


FIG. 2

“[Figure] 2 is a flow chart illustrating a method of attempting to communicate with a multi-mode mobile station.” *Id.* at 2:53–54.

The method begins at block 100, in which “a requester requests the establishment of a communication session with a multi-mode mobile station.” *Id.* at 8:45–47. This triggers “an attempt . . . to establish the communication session with the multi-mode mobile station via a first wireless network, as indicated by block 102.” *Id.* at 8:66–9:1. This may involve attempting to establish communication via WLAN 12. *Id.* at 9:1–3.

This “could result in a number of possible outcomes, as indicated by block 104.” *Id.* at 9:25–27. For example, as shown in block 106, the communication session may be successfully connected via the first wireless network. *Id.* at 9:27–29. Alternatively, as shown in block 108, it may be found that the multi-mode mobile station is not accessible via the first wireless network. *Id.* at 9:39–41. This could happen, for instance, if the multi-mode mobile station is not operating in an area that the first wireless network serves, or for other reasons. *Id.* at 9:42–55.

“If, as in block 108, the multi-mode mobile station is found to be inaccessible via the first wireless network, an attempt may be made to establish the communication session via the second wireless network, as indicated by block 114.” *Id.* at 10:17–20. If this fails, the process may proceed to provide an alternate communication option:

If the outcome of the second attempt is unsuccessful, either because the multi-mode mobile station is inaccessible via the second wireless network or is accessible but does not accept the communication session, then the requestor may be provided with an alternate communication option, as indicated by block 120. The alternate communication option could, for example, allow the requestor to leave a voice message on voicemail system, e.g.,

voicemail server 66, or to send a text message to the multi-mobile station, e.g., as an instant message or SMS message. Other types of alternate communication options could also be provided.

Id. at 10:55–64.

Mauer elaborates on the connection method “for a case in which (i) the requested communication is a voice call, (ii) the first wireless network is a WLAN, e.g., WLAN 12, and (iii) the second wireless network is a WWAN, such as WWAN 14.” *Id.* at 10:65–11:2. In this example, when attempting to connect multi-mode mobile station 16 via WLAN 12, the system’s softswitch 62 uses an SIP INVITE message. *Id.* at 11:22–26.

Mauer discloses the following regarding circumstances in which the system determines that multi-mode mobile station 16 is accessible via WLAN 12 but unavailable for the call:

If multi-mode mobile station 16 is unavailable for the call, then softswitch 62 may cancel the SIP INVITE, e.g., by transmitting a SIP CANCEL message to multi-mode mobile station 16, and may establish the call to a voicemail system, as indicated by block 224. For example, softswitch 62 may route the call to voicemail server 66, via gateway 60 and packet-switched network 30. The caller may then leave a voice message for the user of multi-mode mobile station 16. The caller may also be given other options instead of or in addition to leaving a voice message. For example, the caller may be given the option of sending an instant message or an SMS message to multi-mode mobile station 16.

Id. at 12:59–13:3.

In the event multi-mode mobile station is inaccessible via WLAN 12, softswitch 62 may “try to locate multi-mode mobile station 16 in WWAN 14.” *Id.* at 13:6–9. Subsequently, softswitch 62 may use an SS7 Initial Address Message (IAM) to route the call “to MSC 40, i.e., the MSC serving multi-mode mobile station 16.” *Id.* at 13:29–33. Mauer discloses the

following regarding circumstances in which multi-mode mobile station 16 does not timely answer the call:

If the call is not answered within the predetermined period of time, then softswitch 62 may cancel the SS7 signaling for routing the call to MSC 40, e.g., by sending an SS7 Cancel message to MSC 40, and may establish the call to a voicemail system, as indicated by block 238. To establish the call to voicemail, softswitch 62 may route the call to voicemail server 66, via gateway 60 and packet-switched network 30. The caller may then leave a voice message and may also be provided with other options, e.g., sending an instant message or SMS message to multi-mode mobile station 16.

Id. at 13:58–67.

b) *Waylett*

Waylett relates to communication systems and shows one example in Figure 5, reproduced below. Ex. 1006, 1:25–26, 9:13–14.

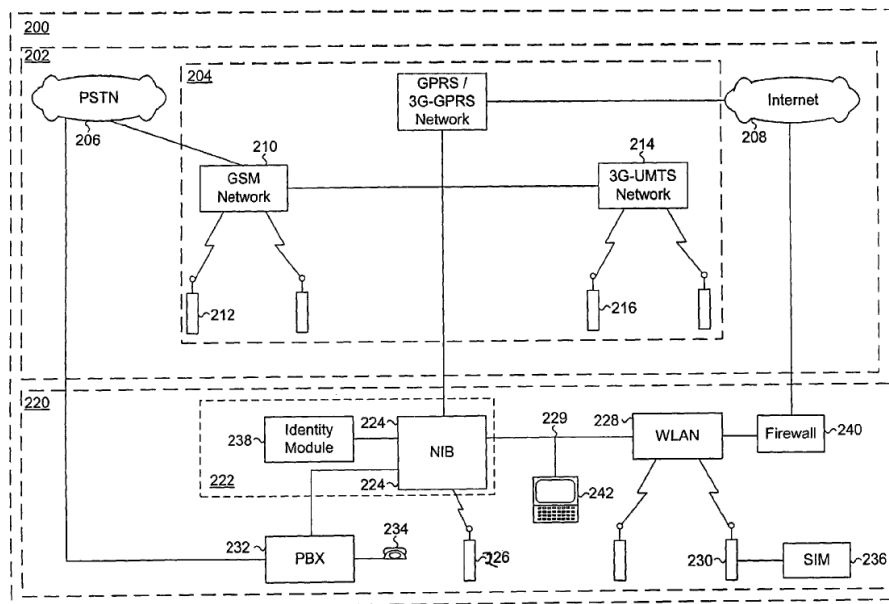


FIG. 5

Figure 5 shows communication system 200, which includes public network 202, private cellular network 222, and WLAN 228. *Id.* at 9:22–36.

Private cellular network 222 “includes at least one WAVEXchange™ (WXC) or a Network-In-A-Box™ (NIB 224) commercially available from interWAVE Communications Inc., of Menlo Park, Calif.” *Id.* at 9:36–40. “NIB 224 includes a MSC, a BSC, and a BTS in a single enclosure.” *Id.* at 9:41–42.

WLAN 228 allows UEs 230 to communicate with other portions of communication system 200:

WLAN 228 is coupled to the public network 202 through the NIB 224 and is adapted to enable voice and data communication between the private UEs 230 and the private mobile stations 226, public mobile stations 212, public UEs 216, PBX telephones 234, and telephones (not shown) coupled to the PSTN 206 and/or the Internet 208. Access points (not shown in this figure) of the WLAN 228 can be coupled to the NIB 224 through a wired local area network (LAN 229), such as an Ethernet, 100Base T. Fast Ethernet or Gigabit Ethernet, or through a wireless or radio-link (not shown).
Id. at 9:47–56.

Waylett also shows an embodiment of communication system 200 in Figure 6, reproduced below.

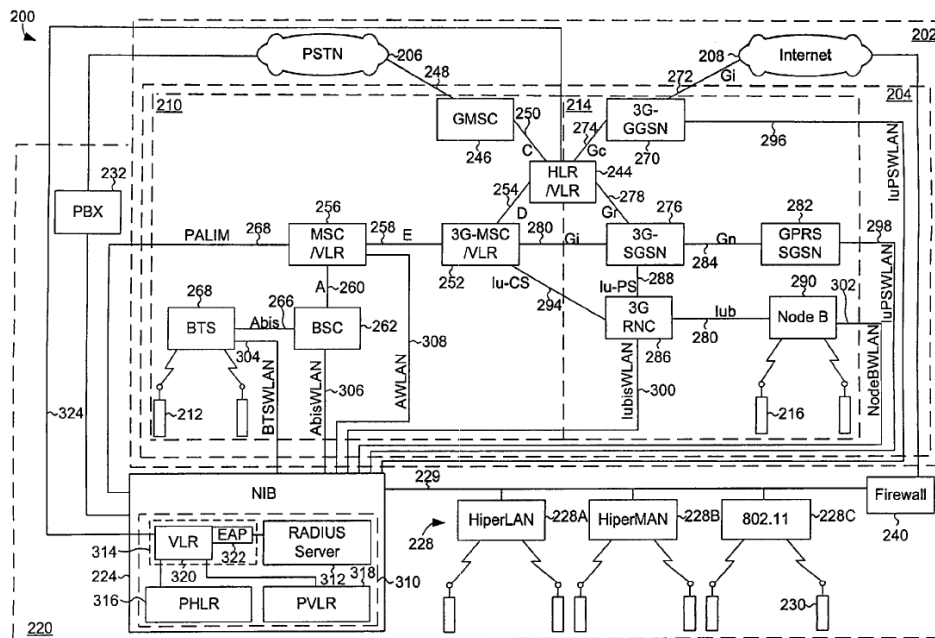


FIG. 6

Figure 6 shows an embodiment in which communication system 200 includes “HiperLAN, HiperMAN, and 802.11 WLANs coupled to a private cellular network and a public network, and a Remote Authentication Dial In User Service (RADIUS) server coupling the WLAN to public and private home location registries (HLRs).” *Id.* at 6:12–18.

Additionally, in the embodiment of Figure 6, public network 202 has public HLR/VLR 244:

The public HLR of the HLR/VLR 244, can include, for example, a home location register and/or a home subscription server HSS, and records and stores information relating to users or subscribers of the public network. The VLR of the HLR/VLR 244 maintains subscriber information for visitors or roamers to the cells or area served by the public cellular network 204.

Id. at 12:30–38.

In an embodiment, communication system 200 may also have Remote Authentication Dial In User Service (RADIUS) system 310. *Id.* at 13:64–66. RADIUS system 310 may include RADIUS authentication and

accounting gateway or server 312, which “can be combined with the NIB 224, as shown.” *Id.* at 13:66–14:1. “RADIUS is an authentication and accounting system used by many service providers to authorize access to a communication system.” *Id.* at 14:3–5. “Preferably, the RADIUS server 312 is coupled via a VRAD 314 to the public HLR/VLR 244 and, to a private HLR(PHLR 316) and/or private VLR (PVLR 318).” *Id.* at 14:23–25.

“The RADIUS server 312 supports roaming of private UEs 230 based on a RADIUS/DIAMETER roaming model along with traditional GSM subscriber roaming based upon the mobile application part (MAP) standard for address registration of roamers and inter-system hand-off procedures.” *Id.* at 14:49–53. In connection with this, Waylett explains the following:

In case of a communication system 200 having a number of private cellular networks 222, each with an associated WLAN 228 and linked by a PWAN(not shown), the RADIUS server 312 can act as a proxy to forward an authentication request via the VRAD 314 to a single, central public HLR/VLR 244 and/or a single, central private HLR.316[.] Alternatively, where the communication system 100 includes either a distributed public HLR/VLR 244 and/or a distributed private HLR 316, the RADIUS server 312 routes an interpretation of either a username or a user identity provided in the authentication procedure, to the appropriate public or private HLR. In one version of this embodiment, the RADIUS server 312 is enhanced to contact the appropriate or controlling public or private HLR 244, 314, either by: (i) querying a standalone Central Address Table server (not shown) coupled thereto to match International Mobile Subscriber Identity (IMSI) information provided in the authentication procedure to the corresponding HLR; or (ii) using a configuration table that matches the IMSI ranges with the appropriate or controlling public or private HLR. This last model works well if IMSI partitioning is implicitly or explicitly enabled for subscriber provisioning across multiple public or private HLR 244, 316.

Id. at 14:56–15:10.

2. *Combination of Mauer and Waylett*

In support of both Ground 1 and Ground 2, Petitioner argues that a person of ordinary skill in the art would have been motivated to combine Mauer’s and Waylett’s disclosures, “using Waylett’s Network-in-a-box 224 in each of Mauer’s WWAN 14 and WLAN 12, resulting in at least two DMA systems.” Pet. 11–13. Asserting that “Mauer teaches providing sufficient network coverage by use of different kinds of networks, network interfaces, and protocols,” Petitioner contends that a person of ordinary skill in the art would have recognized that “Waylett discloses an inexpensive way to implement the same networks used in Mauer’s WWAN 14 and WLAN 12.” *Id.* Citing similarities in Mauer’s and Waylett’s systems, Petitioner argues that “a POSITA would have been able to modify Mauer’s WWAN 14 and WLAN 12 networks so that each network uses Waylett’s NIB 224.” *Id.* at 14. According to Petitioner, the combination would have included a number of beneficial features from Mauer. *Id.* at 14–15.

Petitioner further advances three reasons that a person of ordinary skill would have had to combine the references’ teaching. *Id.* at 15–16. First, asserting that Waylett discloses cost benefits and Mauer discloses “an improved method and system for notifying mobile stations,” Petitioner contends the “references each provide reasoning” to combine their disclosures. *Id.* at 15. Second, Petitioner argues that a person of ordinary skill in the art would have been motivated to “improve Mauer’s distributed wireless network system by consolidating it into a single box, making it compact in design allowing for faster deployment.” *Id.* at 16. “Third, Waylett’s NIB would help mitigate the shared concern of Mauer—that is,

reaching a mobile station as it roams or moves outside of the service or coverage area.” *Id.*

3. *Ground 1: Alleged Obviousness of Claims 1–8 over Mauer and Waylett*

Petitioner explains in detail its view that each limitation of claims 1–8 would have been obvious over Mauer and Waylett. Pet. 16–58. Petitioner relies on Mauer as disclosing, *inter alia*, a communication system and method that involves determining whether a mobile subscriber is within certain coverage areas. *E.g., id.* at 23–28, 31–33. Petitioner relies on Waylett, *inter alia*, for its disclosure of NIBs, arguing that modification of Mauer’s system with Waylett’s NIBs would have resulted in a DMA network with a first and second DMA system, as recited in the claims. *E.g., id.* at 20–23.

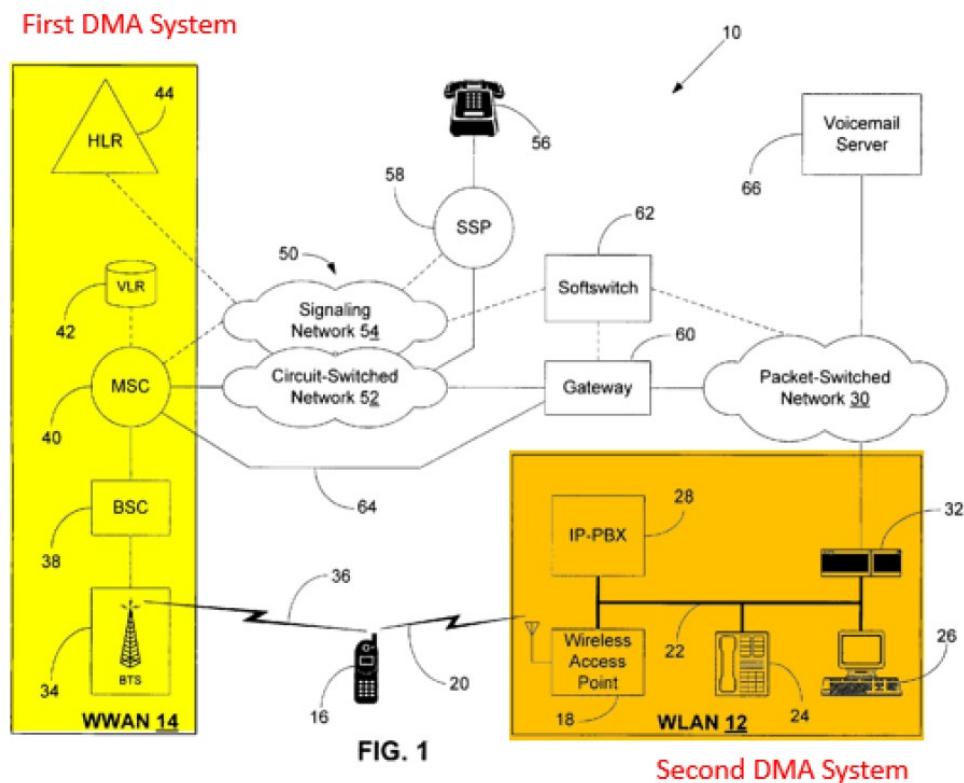
Patent Owner disputes certain of Petitioner’s positions. For example, Patent Owner argues that Mauer and Waylett fail to teach a DMA network with DMA systems. Prelim. Resp. 26–30. Additionally, Patent Owner disputes Petitioner’s contention claim limitations 1.d and 8.d, which recite a community location register (CLR), would have been obvious over Mauer and Waylett. *Id.* at 36–42. Patent Owner also disputes Petitioner’s contention that claim limitations 1.e and 8.f, which recite a destination preference register (DPR), would have been obvious over Mauer and Waylett. *Id.* at 31–36.

We turn now to discussing in detail the disputes raised by the parties’ arguments at this stage.

a) *Claim 1*

(1) “DMA network”

Limitation 1.a recites “receiving, at a first distributed mobile architecture (DMA) system of a DMA network, a call from a first mobile subscriber to a second mobile subscriber, wherein the DMA network includes at least the first DMA system and a second DMA system.” Ex. 1001, 18:9–11. Petitioner contends that this limitation would have been obvious over Mauer and Waylett. Pet. 17–20. According to Petitioner, when modified to include Waylett’s NIBs, Mauer’s system would include a DMA network with a first DMA system and a second DMA system. *Id.* at 18, 20–23. To help convey its position, Petitioner provides an annotated version of Mauer’s Figure 1, reproduced below. *Id.* at 21.



Petitioner's annotated version of Mauer's Figure 1 uses yellow and orange shading to identify the locations of the alleged first and second DMA systems in the modified system of Mauer. *Id.*

Addressing the claim language "receiving . . . a call from a first mobile subscriber," Petitioner cites portions of Mauer related to communication with multi-mode mobile station 16 via wireless telecommunication system 10. *Id.* at 17–20. Petitioner contends that "[a] POSITA would have understood that Mauer's multi-mode mobile stations are '*mobile subscribers*.'" *Id.* at 19.

Addressing the claim language "wherein the DMA network includes at least the first DMA system and a second DMA system," Petitioner asserts that "Mauer's network architecture, as modified to include Waylett's NIB, renders this limitation obvious. Alternatively, Mauer's network further modified to substitute a WWAN for WLAN 12 and incorporate Waylett's NIB likewise renders the claim obvious." *Id.* at 20.

As noted above, Patent Owner argues that Mauer and Waylett fail to teach a DMA network with DMA systems. Prelim. Resp. 26–30. According to Patent Owner, this is so because neither Mauer nor Waylett teaches peer-to-peer connections. *Id.* at 30.

At this stage, Petitioner's evidence and arguments sufficiently support Petitioner's argument that modification of Mauer's system with Waylett's NIBs would have produced a DMA network with a first DMA system and a second DMA system. Pet. 18, 20–23; Ex. 1003 ¶¶ 85, 88–91. Additionally, Petitioner's evidence and arguments sufficiently support Petitioner's position that the claim step of "receiving . . . a call from a first mobile subscriber," would have been obvious in view of the references' disclosures,

such as Mauer’s disclosure of communication with multi-mode mobile station 16. Pet. 19–21; Ex. 1003 ¶¶ 87–91.

At this stage, we find unavailing Patent Owner’s counterargument that neither Mauer nor Waylett teaches peer-to-peer communication. As explained above in Section II.B.1, at this time, we decline to adopt Patent Owner’s construction of “DMA network” as requiring peer-to-peer connection.

(2) “CLR”

Limitation 1.d recites the following:

when the second mobile subscriber is not located within the first wireless coverage area, determining whether the second mobile subscriber is located within a second wireless coverage area of the DMA network that is associated with the second DMA system based on information stored at a community location register (CLR) associated with the second DMA system, wherein the CLR associated with the second DMA system is stored at the first DMA system.

Ex. 1001, 18:21–29.

According to Petitioner, when modified to include first and second DMA systems (Waylett’s NIBs), Mauer “discloses [claim 1’s requirement of] ‘*when the second mobile subscriber is not located within the first wireless coverage area, determining whether the second mobile subscriber is located within a second wireless coverage area of the DMA network that is associated with the second DMA system.*’” Pet. 31 (quoting Ex. 1001, 18:21–25). As required by this claim language, Petitioner contends that Mauer’s communication method of Figure 2 involves determining whether a mobile subscriber is in certain coverage areas. *Id.* at 31–33.

Petitioner explains, however, that “Mauer does not expressly disclose making this determination using ‘*information stored at a community*

location register (CLR) associated with the second DMA system, wherein the CLR associated with the second DMA system is stored at the first DMA system,” as required by limitation 1.d. *Id.* at 33 (quoting Ex. 1001, 18:25–29). Petitioner contends that “Waylett renders this limitation obvious.” *Id.*

In support, Petitioner cites disclosures in Waylett of using a configuration table with a distributed HLR/VLR. *Id.* at 33–35 (citing Ex. 1006, 10:45–48, 13:67–14:1, 14:61–66, 15:6–10, 18:45–49; Ex. 1014, 3; Ex. 1003 ¶¶ 109–112). Petitioner asserts that Waylett discloses “rout[ing] an interpretation of either a username or a user identity provided in the authentication procedure, to the appropriate public or private HLR” using a “configuration table that matches the IMSI ranges with the appropriate or controlling public or private HLR.” *Id.* at 34 (quoting Ex. 1006, 14:61–66, 15:6–8). Arguing that a skilled artisan would have understood IMSI is used for identifying mobile subscriber devices, Petitioner contends that Waylett’s configuration table includes information related to “subscriber identities along with their appropriate HLR.” *Id.* This information in the configuration table allows “send[ing] user information to the appropriate HLR during the authentication procedure,” Petitioner argues. *Id.* Petitioner asserts that certain advantages, such as processing time and resource conservation, would have motivated using Waylett’s configuration tables in Mauer’s system. *Id.* at 36.

Patent Owner counters that Waylett “uses the conventional approach of using home location registers and visitor location registers for determining subscriber information,” not a CLR. Prelim. Resp. 37. Asserting that Waylett’s distributed HLR/VLR “is not a peer-to-peer system as described by the ’414 Patent,” Patent Owner argues that Waylett’s system

requires routing requests “to the particular segment of the distributed HLR/VLR responsible for that wireless network and subscriber.” *Id.* at 37–38. As an example, Patent Owner cites Waylett’s discussion of Figure 12, which “explains that a ‘RADIUS server 312 determines subscriber information for the visiting UE 230A **is not stored** in private HLR [316B] but in a private HLR 316A in the home private network 220A.’” *Id.* at 39 (quoting Ex. 1006, 17:33–36) (alteration and emphasis added by Patent Owner).

Patent Owner also argues that Petitioner’s reliance on Waylett’s configuration table is unavailing:

Waylett’s configuration table does not teach or suggest a modification to Mauer that would yield “determining whether the second mobile subscriber is located within a second wireless coverage area of the DMA network that is associated with the second DMA system **based on information stored at a community location register (CLR) associated with the second DMA system**,” as required by Challenged Claims 1 and 8.

Id. at 41. Patent Owner contends that Waylett’s configuration table “is an ancillary data structure and is not used to determine if a mobile subscriber is in a wireless coverage area.” *Id.* at 40. In support, Patent Owner reiterates its assertion that Waylett teaches routing “rout[ing] a query to the controlling segment of the HLR/VLR for that mobile phone.” *Id.*

Additionally, Patent Owner asserts that Waylett’s configuration table does not include specific subscriber identities. *Id.* at 41. Instead, Waylett discloses no more than “IMSI ranges,” Patent Owner argues. *Id.*

The parties’ arguments and evidence raise nuanced, fact-intensive arguments concerning how a person of ordinary skill in the art would have understood Waylett, as well as what would have been obvious to a person of

ordinary skill in the art. Petitioner’s evidence and arguments tend to show that Waylett’s configuration table includes IMSI ranges associated with certain HLRs, apparently allowing routing an authentication query to the appropriate HLR for a given mobile subscriber. Pet. 33–36. On this record, it appears a person of ordinary skill in the art may have understood from this that Waylett uses the configuration register to determine whether the subscriber is in a particular coverage area. On the other hand, Patent Owner’s arguments and evidence that a person of ordinary skill in the art would have understood that, rather than the configuration register, Waylett’s system uses other means for coverage-area determinations. *E.g.*, Prelim. Resp. 37–41. We deem the issues raised by the parties’ dispute regarding limitation 1.d suited for resolution on a fuller record during *inter partes* review, given our determination, discussed below in Section II.C.4, that Petitioner has demonstrated a reasonable likelihood of showing independent claim 11 would have been obvious over Waylett and Mauer.

(3) “DPR”

Limitation 1.e recites the following:

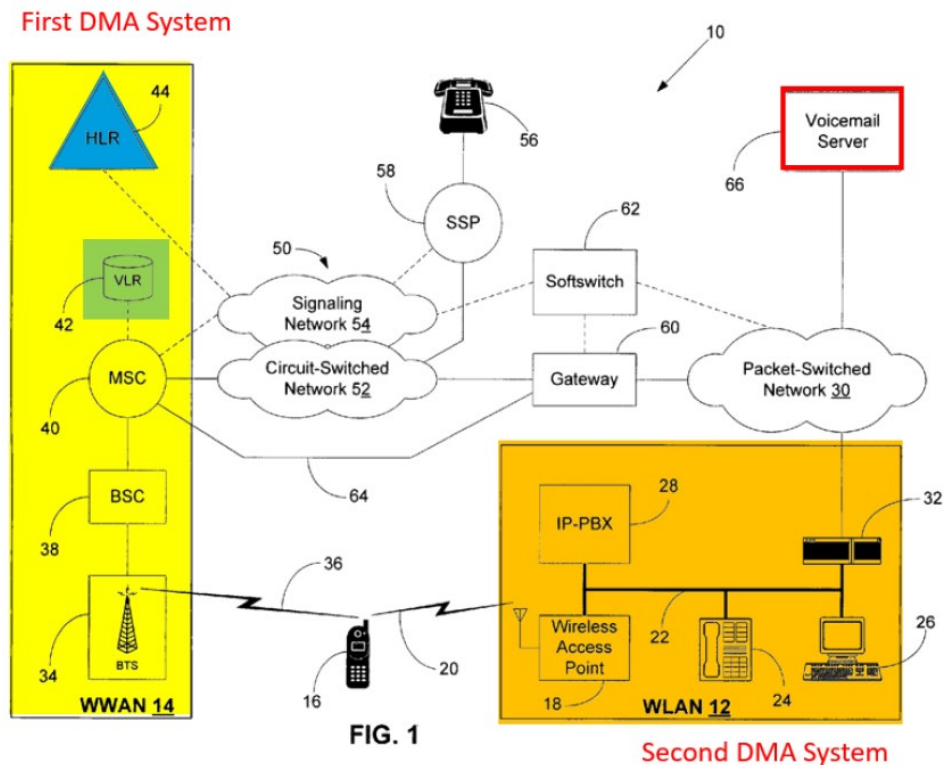
when the second mobile subscriber is not located within the first wireless coverage area and is not located within the second wireless coverage area, determining a preferred call path to route the call outside of the DMA network based on information stored at a destination preference register (DPR), wherein the DPR is stored at the first DMA system.

Ex. 1001, 18:30–36.

Petitioner argues that this limitation would have been obvious over Mauer and Waylett. Pet. 36. Petitioner contends that “Mauer discloses ‘*when the second mobile subscriber is not located within the first wireless coverage area and is not located within the second wireless coverage area,*

determining a preferred call path to route the call outside of the DMA network,” as recited in the claim. *Id.* at 37 (quoting Ex. 1001, 18:30–34). Petitioner cites Mauer’s disclosure of the method shown in Figure 2. *Id.* at 37–40. In this method, if communication cannot be established via the first or second wireless networks, step 120 involves providing an alternate communication option, such as a voice message on a voicemail server or a message sent to the multi-mobile station, Petitioner explains. *Id.* at 37–39. Petitioner argues that a person of ordinary skill in the art would have understood Mauer’s “‘alternate communication option,’ such as voicemail server 66, serves as ‘a preferred call path to route the call.’” *Id.* at 38–39.

Additionally, Petitioner contends that, with Mauer modified to include Waylett’s NIBs, a person of ordinary skill in the art would have understood voicemail server 66 is not within the DMA network. *Id.* at 38–39. Petitioner illustrates this with an annotated version of Mauer’s Figure 1, reproduced below. *Id.* at 39.



Petitioner's annotated version of Mauer's Figure 1 uses yellow and orange shading to identify the locations of the alleged first and second DMA systems in the modified system of Mauer, as well as a red outline to accent voicemail server 66. *Id.*

According to Petitioner, a person of ordinary skill in the art would have recognized voicemail server 66 as the preferred outside call path any time a mobile device is inaccessible to either of the alleged DMA systems:

A POSITA would have further understood that a communication session with the voicemail server 66 would be established whenever a mobile device is inaccessible to both WWAN 14 and WLAN 12, or alternatively, two WWANs. EX 1003, ¶ 121; *see* EX 1005, 9:32–55. Accordingly, a POSITA would have recognized that the voicemail server would be the “*preferred call path to route the call outside of the DMA network*” whenever “*the second mobile subscriber is not located within the first wireless coverage area and is not located within the second wireless coverage area.*” EX 1003, ¶¶ 118-121.

Id. at 39–40.

Noting that “Mauer does not expressly disclose using ‘*information stored at a destination preference register (DPR), wherein the DPR is stored at the first DMA system,*’” Petitioner argues “this feature would have been obvious to a POSITA.” *Id.* at 40. According to Petitioner, a person of ordinary skill in the art would have recognized that routing to voicemail server 66 involves stored routing information for voicemail server 66, “such as the IP address, a domain name, or other identifying information.” *Id.* Petitioner argues that “[a] POSITA would have been motivated to store information pertaining to Mauer’s voicemail server 66 in a ‘*a destination preference register (DPR)*’ in the ‘*first DMA server*’” for a number of reasons. *Id.* at 41.

Patent Owner disagrees with Petitioner in multiple respects. For example, Patent Owner asserts “Mauer’s voicemail server is *within* the alleged DMA network and is not, therefore, an external path.” Prelim. Resp. 31. Patent Owner cites Mauer’s disclosure that its “[w]ireless telecommunications network 10 may also *include* a voicemail server 66.” Prelim. Resp. 31 (citing Ex. 1005, 8:25–34). Arguing that “Petitioner alleges that telecommunications system 10 is the claimed ‘DMA network,’” Patent Owner contends that “the optional voicemail server is within the alleged network, not external to it.” *Id.* at 31–32. Citing certain other Mauer disclosures regarding the relationships between network 10’s components, Patent Owner surmises that “a POSITA would conclude that Mauer’s voicemail server is within network 10 and therefore is not outside the DMA system.” *Id.* at 32. According to Patent Owner, Petitioner “appears to rely exclusively on the schematic diagram in [Figure 1] of

Mauer,” but “[t]he schematic layout of elements in Mauer’s figure 1 . . . is not evidence that the voicemail server is ‘outside of the DMA network.’” *Id.* at 32–33.

Patent Owner also argues that, contrary to Petitioner’s position, “a voicemail server is not a ‘preferred call path.’” *Id.* at 34. Discussing some of the ’414 patent’s disclosures regarding different communication paths outside of its DMA network, Patent Owner contends that “[t]he ‘destination preference register’ (DPR) provides a preferred hierarchy of interfaces to make calls external to the DMA network.” *Id.* According to Patent Owner, Mauer’s voicemail server “represents an end of the (communications) road,” not “a preferred call path for routing the call to be established outside of the network.” *Id.* “In fact, Mauer discloses that it cancels routing the call,” Patent Owner argues. *Id.* (citing Ex. 1005, 13:58–61).

Patent Owner also disputes Petitioner’s contention that it would have been obvious to store voicemail server 66’s routing information as a preferred call path. *Id.* at 35. Patent Owner argues that Petitioner “ignore[s] the plain language of Mauer which provides that rather than be a stored preference, the ‘alternative communication option’ is a user selection at the time of phone call.” *Id.* (citing Ex. 1005, 12:67–13:3).

On this record, we find Petitioner’s arguments and evidence sufficient to demonstrate a reasonable likelihood of prevailing on its position that limitation 1.e would have been obvious. For example, Petitioner’s evidence and arguments tend to show that, with Mauer’s system modified to include Waylett’s NIBs, a person of ordinary skill in the art would have understood Mauer’s voicemail server 66 is “outside of the DMA network.” Pet. 9–16, 20–22, 39; Ex. 1003 ¶¶ 69–78, 88–90, 120. Unlike Patent Owner, we do not

understand Petitioner as suggesting that every component of Mauer's telecommunications system 10 corresponds to claim 1's "DMA network." Prelim. Resp. 31. Petitioner says that, in Mauer, "the same system 10" includes both WWAN 14 and WLAN 12. Pet. 21 (citing Ex. 1003 ¶ 90). Petitioner also clearly conveys its view that voicemail server 66 is external to the components that relate to the claimed "DMA network." Pet. 39 (citing Ex. 1003 ¶ 120). Given this, we do not agree with Patent Owner's suggestion that Petitioner considers the entirety of Mauer's telecommunications system 10 as part of the claimed "DMA network." Prelim. Resp. 31. Regarding Patent Owner's position that a person of ordinary skill in the art would not have considered Mauer's voicemail server 66 external to a DMA network, we find potential merit in Patent Owner's evidence and arguments, but do not find them sufficient, at this stage, to negate Petitioner's reasonable likelihood of prevailing.

On this record, we also find Petitioner has sufficiently supported its position that a person of ordinary skill in the art would have recognized Mauer's voicemail server 66 as "a preferred call path" any time a mobile subscriber is inaccessible to both WWAN 14 and WLAN 12. Pet. 39–40; Ex. 1003 ¶¶ 118–121. At this stage, we find unavailing Patent Owner's counterargument that voicemail server is not "a preferred call path" according to limitation 1.e because "[t]he 'destination preference register' (DPR) provides a preferred hierarchy of interfaces to make calls external to the DMA network." Prelim. Resp. 34. This argument is incommensurate in scope with the claim language, which recites "determining *a* preferred call path . . . based on *information* stored at a destination preference register." Ex. 1001, 18:32–35 (emphases added). The claim language's plain meaning

does not convey that the claim invention requires a hierarchy of interfaces. Nor does the '414 patent's disclosure that "[t]he destination preference register includes *at least one* preferred call path." *Id.* at 3:53–54 (emphasis added); *see also id.* at 4:10–11 ("a destination preference register that includes *at least one* preferred interface") (emphasis added).

At this stage, we also find unavailing Patent Owner's counterarguments that voicemail server 66 "represents an end of the (communications) road" at which "Mauer discloses that it cancels the call." Prelim. Resp. 34. In support of these arguments, Patent Owner cites a portion of the following passage of Mauer:

If the call is not answered within the predetermined period of time, then softswitch 62 may cancel the SS7 signaling for routing the call to MSC 40, e.g., by sending an SS7 Cancel message to MSC40, and may establish the call to a voicemail system, as indicated by block 238. To establish the call to voicemail, softswitch 62 may route the call to voicemail server 66, via gateway 60 and packet-switched network 30.

Ex. 1005, 13:58–64. Contrary to Patent Owner's suggestion, this passage does not disclose cancelling call routing completely. Rather, it discloses "cancel[ing] the SS7 signaling for routing the call *to MSC 40*," along with "establish[ing] the call to voicemail" by "rout[ing] the call to voicemail server 66." Ex. 1005 13:59–64; Prelim. Resp. 34.

On this record, we also find Petitioner has sufficiently supported its contention that, although "Mauer does not expressly disclose using '*information stored at a destination preference register (DPR), wherein the DPR is stored at the first DMA system,*'" "this feature would have been obvious." Pet. 40. Petitioner provides evidence that a person of ordinary skill in the art would have had to implement Mauer's system in the proposed

manner. *Id.* at 41–42. At this stage, we find unavailing Patent Owner’s counterargument that storing routing information for voicemail server 66 would have been unobvious because Mauer’s “‘alternative communication option’ is a user selection at the time of the phone call.” Prelim. Resp. 35. In support of this argument, Patent Owner cites a portion of the following passage of Mauer:

If multi-mode mobile station 16 is unavailable for the call, then softswitch 62 may cancel the SIP INVITE, e.g., by transmitting a SIP CANCEL message to multi-mode mobile station 16, and may establish the call to a voicemail system, as indicated by block 224. For example, softswitch 62 may route the call to voicemail server 66, via gateway 60 and packet-switched network 30. The caller may then leave a voice message for the user of multi-mode mobile station 16. The caller *may* also be given other options instead of or in addition to leaving a voice message. For example, the caller *may* be given the option of sending an instant message or an SMS message to multi-mode mobile station 16.

Ex. 1005, 12:59–13:3 (emphasis added). At this stage, we do not adopt Patent Owner’s suggestion that this passage clearly discloses that the “‘alternative communication options’” *is* a user selection. Prelim. Resp. 35. Rather, this passage arguably describes user selection as an alternative to an embodiment in which failure to connect automatically results in connection to voicemail.

b) Dependent Claims 2–7

As noted above, Petitioner explains in detail its view that each limitation of claims 2–7 would have been obvious over Mauer and Waylett. Pet. 42–49. At this stage, aside from the above-discussed arguments regarding independent claim 1, Patent Owner does not present separate patentability arguments for any of dependent claims 2 and 4–7. Patent

Owner does dispute Petitioner’s arguments that the limitation added by dependent claim 3, which refers to a “peer-to-peer” connection would have been obvious over Mauer and Waylett. Pet. 43–45; Prelim. Resp. 27–30. We deem the fact-intensive issues raised by the parties’ claim 3 dispute best-suited for resolution on a fuller record developed at trial.

c) Claim 8

Independent claim 8 recites a method with many limitations similar to the method of claim independent claim 1. *Compare* Ex. 1001, 18:64–19:34 *with id.* at 18:4–36. The method of claim 8 involves a “third DMA,” which is not recited in claim 1. *Id.* at 19:2.

As noted above, Petitioner explains in detail its view that each limitation of claim 8 would have been obvious over Mauer and Waylett. Pet. 49–58. At this stage, the parties’ disputes regarding claim 8 are substantively the same as the parties’ disputes regarding independent claim 1. Pet. 49–58; Prelim. Resp. 25–27, 31–42. Accordingly, our discussion of those disputes in Section II.C.3.a above also applies to the parties’ disputes regarding independent claim 8.

4. Ground 2: Alleged Obviousness of Claims 11–16 and 21 over Waylett and Mauer

Independent claim 11 recites “[a] distributed mobile architecture (DMA) system” that includes, *inter alia*, “an authentication, authorization, and accounting (AAA) module . . . comprising: a home location register (HLR) . . . ; a visitor location register (VLR) . . . ; a community location register (CLR) . . . ; and a destination preference register (DPR).” Ex. 1001, 19:49–20:6. Each of claims 12–16 and 21 depends from independent claim 1. *Id.* at 20:17–36, 56–64.

In Ground 2, Petitioner argues that each limitation of claims 11–16 and 21 would have been obvious over Waylett and Mauer. Pet. 58–78. As with Ground 1, in Ground 2, Petitioner relies on the allegedly obvious combination of Mauer and Waylett discussed above in Section II.C.2. *E.g.*, *id.* at 68 (“As explained above, it would have been obvious to include Waylett’s NIB 224 in the wireless network architecture of Mauer’s Figure 1.”). Petitioner argues that “Waylett’s Network-In-a-Box 224 . . . is a ‘DMA system.’” *Id.* at 58. Petitioner relies on Mauer, for example, when addressing claim 11’s recitation of “a destination preference register (DPR) that stores one or more preferred call paths for calls to be routed outside of a DMA network that is accessible to the DMA system, wherein the DMA network includes at least the first DMA system and the second DMA system.” *Id.* at 68.

Patent Owner’s arguments regarding Ground 2 overlap with its arguments regarding Ground 1. In traversing Ground 2, Patent Owner argues that the references do not teach a “DMA network.” Prelim. Resp. 26–30. Patent Owner also argues that the references do not teach a “community location register (CLR).” *Id.* at 36–42. And Patent Owner argues that the references do not teach a “destination preference register (DPR).” *Id.* at 31–42.

We have reviewed all of the parties’ arguments and evidence regarding Ground 2. As noted above, based on our review, we determine Petitioner has demonstrated a reasonable likelihood of establishing that independent claim 11 would have been obvious over Waylett and Mauer.

Below, we discuss the parties’ disputes regarding Ground 2. At this stage of the proceeding, the parties’ disputes regarding Ground 1 and

Ground 2 are substantively the same with respect to most issues. Thus, some of our discussion below refers back to our discussion of the parties' disputes regarding Ground 1.

Due at least partially to differences in claim language, however, the issues involved in the parties' dispute over claim 11's language regarding a "CLR" differ from the issues involved in the parties' dispute over claim 1's language regarding a "CLR." We discuss this in detail in Section II.C.4.a.2 below.

a) Claim 11

(1) "DMA network"

Limitation 11.h recites "a DMA network that is accessible to the DMA system, wherein the DMA network includes at least the first DMA system and the second DMA system." Ex. 1001, 20:7–9. At this stage, the parties' dispute regarding this claim limitation raises substantially the same issues as their dispute regarding claim 1's language regarding a "DMA network." Accordingly, for the reasons discussed above in Section II.C.3.a.1, we find Petitioner's evidence and arguments addressing limitation 11.h sufficient to support a reasonable likelihood of prevailing on its challenge of claim 11.

(2) "CLR"

Limitation 11.g recites "a community location register (CLR) that stores information associated with a second HLR of a second DMA system, wherein the second HLR stores information associated with one or more mobile subscriber devices that are registered with the second DMA system." Ex. 1001, 20:1–5. Petitioner asserts that Waylett discloses this limitation. Pet. 65–67. Petitioner explains that "[w]hen Waylett's system includes a

‘distributed public’ or ‘private HLR/VLR,’ . . . Waylett discloses that the RADIUS server 312 ‘routes an interpretation of either a username or a user identity provided in the authentication procedure, to the appropriate public or private HLR.’” *Id.* at 66 (quoting Ex. 1006, 14:61–66). “To do so, Waylett discloses that RADIUS server 312 uses a ‘configuration table that matches the IMSI ranges with the appropriate or controlling public or private HLR,’” Petitioner adds. *Id.* (quoting Ex. 1006, 15:6–8). Arguing that a skilled artisan would have understood IMSI is used for identifying mobile subscriber devices, Petitioner contends that Waylett’s configuration table includes information related to “subscriber identities along with their appropriate HLR.” *Id.* at 67. This information in the configuration table allows RADIUS server 312 “to send user information to the appropriate HLR during the authentication procedure,” Petitioner argues. *Id.* at 66.

Patent Owner counters that Waylett does not “render obvious ‘a community location register (CLR) that stores information associated with a second HLR of a second DMA system, wherein the second HLR *stores information associated with one or more mobile subscriber devices that are registered with the second DMA system,*’ as required by Challenged Claim 11.” Prelim. Resp. 41–42. As discussed above in Section II.C.3.a.2, Patent Owner argues that Waylett’s configuration table does not store “specific IMSI or subscriber identities.” *Id.* at 41. “At most, Waylett’s configuration table uses ‘IMSI ranges,’” Patent Owner asserts. *Id.* Such ranges “represent a multitude of subscribers that fall between a starting address to an end address,” Patent Owner argues. *Id.* at 41.

Additionally, as discussed above in Section II.C.3.a.2, Patent Owner argues that Waylett does not teach using its configuration table to hold

subscriber identities or determine the location or coverage area of a mobile subscriber. *Id.* at 37–41. Instead, in its distributed HLR/VLR embodiments, Waylett routes a query to a mobile phone’s controlling HLR/VLR for the locating and authenticating the mobile user, Patent Owner argues. *Id.* at 40–41.

At this stage, Petitioner sufficiently supports its position that Waylett’s discussion of the configuration table teaches or renders obvious the CLR recited in claim 11. Petitioner’s evidence and arguments tend to show Waylett’s configuration table includes IMSI ranges and corresponding HLRs. Pet. 65–66; Ex. 1003 ¶ 190. Petitioner’s evidence and arguments also tend to show that the IMSI ranges in the configuration table are “*associated with a second HLR . . . , . . . [which] stores information associated with one or more mobile subscriber devices,*” as required by claim 11. Ex. 1001, 20:1–4 (emphases added); Pet. 67; Ex. 1003 ¶ 191. On this record, even if Patent Owner is correct that Waylett’s configuration table does not store any specific subscriber identities, we find this argument unavailing because claim 11 does not recite that the CLR stores any specific subscriber identities. Prelim. Resp. 41.

We also find Patent Owner’s other arguments unavailing at this stage. For example, even if they are accurate, Patent Owner’s arguments about Waylett routing a query to a controlling HLR for location and authentication are not commensurate in scope with claim 11. *Id.* at 40–41. Unlike claims 1 and 8, claim 11 does not recite determining a subscriber’s location based on information in the CLR. *Compare* Ex. 1001, 20:1–5 *with* 18:22–27, 19:12–16.

(3) “DPR”

Limitation 11.h recites “a destination preference register (DPR) that stores one or more preferred call paths for calls to be routed outside of a DMA network that is accessible to the DMA system, wherein the DMA network includes at least the first DMA system and the second DMA system.” Ex. 1001, 20:6–10. At this stage, the parties’ dispute regarding this claim limitation raises substantially the same issues as their dispute regarding claim 1’s language regarding a “DPR.” Accordingly, for the reasons discussed above in Section II.C.3.a.3, we find Petitioner’s evidence and arguments addressing limitation 11.h sufficient to support a reasonable likelihood of prevailing on its challenge of claim 11.

b) *Claims 12–16 and 21*

Each of claims 12–16 and 21 depends from independent claim 11. Ex. 1001, 20:17–32, 20:48. Petitioner explains in detail why it believes each limitation of claims 12–16 and 21 would have been obvious over Waylett and Mauer. Pet. 72–78. At this stage, aside from its patentability arguments for independent claim 11, Patent Owner does not present separate patentability arguments for any of claims 12–16 and 21. *See generally* Prelim. Resp.

III. CONCLUSION

After considering the evidence and arguments of record, we determine that Petitioner has demonstrated a reasonable likelihood of success with respect to at least one of the challenged claims. An *inter partes* review of all of the claims and all of the grounds presented in the Petition is hereby instituted. *See SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348, 1354, 1359–60;

PGS Geophysical AS v. Iancu, 891 F.3d 1354, 1360 (Fed. Cir. 2018); 37 C.F.R. § 42.108(a).

At this stage of the proceeding, the Board has not made a final determination as to the patentability of any challenged claims or any underlying factual or legal issues. The final determination will be based on the record as developed during the *inter partes* review.

IV. ORDER

In consideration of the foregoing, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the '414 patent is instituted with respect to challenged claims 1–8, 11–16, and 21 with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(a) and 37 C.F.R. § 42.4(b), *inter partes* review of the '414 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

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