

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Hytera Communications Co. Ltd.
Petitioner,

v.

Motorola Solutions, Inc.
Patent Owner.

Case No. IPR2018-00176
Patent No. 6,591,111

PETITIONER'S NOTICE OF APPEAL

In accordance with 35 U.S.C. §§ 141 and 142 and 37 C.F.R. §§ 90.2(a) and 90.3, Petitioner Hytera Communications Co. Ltd. (“Petitioner”) hereby appeals to the United States Court of Appeals for the Federal Circuit from the Patent Trial and Appeal Board’s (“Board”) Final Written Decision dated May 9, 2019 in IPR2018-00176 (Paper No. 40) (“Final Written Decision”), and from all orders, decisions, rulings, and opinions underlying or supporting the Final Written Decision that are adverse to Petitioner. A copy of the Final Written Decision is attached as Exhibit A.

For the limited purpose of providing the Director with the information requested in 37 C.F.R. § 90.2(a)(3)(ii), Petitioner indicates that the issues on appeal may include, but are not limited to:

(a) the Board’s ruling that Petitioner has not demonstrated, by a preponderance of the evidence, that claims 11, 13, 15, and 16 of U.S. Patent 6,591,111 (“the ‘111 patent”) are rendered obvious under pre-AIA 35 U.S.C. § 103 by WO 99/63773 to Stubbs (Ex. 1006) in view of U.S. Patent 5,659,881 to Kent (Ex. 1007);

(b) the Board’s ruling that Petitioner has not demonstrated, by a preponderance of the evidence, that claims 1, 6-7, 11-13, and 15-16 of the ‘111 patent are rendered obvious under pre-AIA 35 U.S.C. § 103 by U.S. Patent

6,301,263 to Maggenti (Ex. 1003) in view of U.S. Patent 5,398,248 to Shepherd (“Shepherd”) (Ex. 1004);

(c) the Board’s ruling that Petitioner has not demonstrated, by a preponderance of the evidence, that claims 1, 6-7, 11-13, and 15-16 of the ‘111 patent are rendered obvious under pre-AIA 35 U.S.C. § 103 by U.S. Patent 5,987,331 to Grube *et al.* (Ex. 1005) in view of Shepherd (Ex. 1004);

(d) the Board’s rulings regarding Petitioner’s Motion to Exclude; and

(e) any findings or determinations supporting or relating to the above rulings, including but not limited to the Board’s claim constructions, obviousness including but not limited to application of secondary considerations of non-obviousness, the Board’s interpretation of the prior art and evidence, and the Board’s findings that conflict with the evidence and are not supported by substantial evidence, as well as all other issues decided adversely to Petitioner in any orders, decisions, rulings and/or opinions.

Petitioner reserves the right to challenge any finding or determination supporting or relating to the issues listed above and to challenge any other issues decided adversely to Petitioner by the Board in this proceeding.

In accordance with 37 C.F.R. § 90.2(a), this Notice of Appeal is being filed both electronically with the Board and by Express Mail with the Office of the General Counsel under 37 C.F.R. § 104.2. This Notice of Appeal is also being

served upon Patent Owner in accordance with 37 C.F.R. § 42.6(e). In addition, this Notice of Appeal, along with the required fee, is being filed with the Clerk's Office for the United States Court of Appeals for the Federal Circuit in accordance with Federal Circuit Rule 15.

Respectfully submitted this 10th day of July, 2019.

Dated: July 10, 2019

/s/ Mark W. McDougall

Todd R. Tucker (Reg. No. 40,850)

ttucker@calfee.com

Joshua M. Ryland (Admitted *pro hac vice*)

jryland@calfee.com

Mark W. McDougall (Reg. No. 62,670)

mmcdougall@calfee.com

Kyle Deighan (Reg. No. 75,525)

kdeighan@calfee.com

Joshua A. Friedman (Reg. No. 76,079)

jfriedman@calfee.com

CALFEE, HALTER & GRISWOLD LLP

The Calfee Building

1405 East Sixth Street

Cleveland, Ohio 44114

P: (216) 622-8200; F: (216) 241-0816

***Attorneys for Petitioner Hytera
Communications Co. Ltd.***

CERTIFICATE OF FILING

I hereby certify that on July 10, 2019, the foregoing **PETITIONER'S NOTICE OF APPEAL** was electronically filed with the USPTO through the Board's E2E filing system. In addition, the foregoing **PETITIONER'S NOTICE OF APPEAL** was filed by Express Mail on July 10, 2019, with the Director of the United States Patent and Trademark Office, at the following address:

Director of the U.S. Patent and Trademark Office
c/o Office of the General Counsel
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

I further certify that the foregoing **PETITIONER'S NOTICE OF APPEAL**, and the filing fee, were filed on July 10, 2019, with the Clerk's Office of the United States Court of Appeals for the Federal Circuit through the Court's CM/ECF filing system and by Express Mail at the following address: Clerk of Court, United States Court of Appeals for the Federal Circuit, 717 Madison Place, N.W., Washington, D.C. 20439.

Dated: July 10, 2019

/s/ Mark W. McDougall

Attorney for Petitioner

CERTIFICATE OF SERVICE

I hereby certify that the attached **PETITIONER’S NOTICE OF APPEAL** was served as of the below date by e-mail on the following individuals and e-mail address(es) of record:

Jon R. Carter (jon.carter@kirkland.com)
Eugene Goryunov (eugene.goryunov@kirkland.com)
Adam R. Alper (adam.alper@kirkland.com)
Akshay S. Deoras (Akshay.deoras@kirkland.com)
Moto_HyteraIPRs@kirkland.com

Dated: July 10, 2019

/s/ Mark W. McDougall

Attorney for Petitioner

EXHIBIT A

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HYTERA COMMUNICATIONS CORP. LTD.,
Petitioner,

v.

MOTOROLA SOLUTIONS, INC.,
Patent Owner.

Case IPR2018-00176
Patent 6,591,111 B1

Before TREVOR M. JEFFERSON, DANIEL N. FISHMAN, and
PATRICK M. BOUCHER, *Administrative Patent Judges*.

BOUCHER, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

In response to a Petition (Paper 2, “Pet.”) filed by Hytera Communications Corp. Ltd. (“Petitioner”), we instituted an *inter partes* review of claims 1, 6, 7, 11–13, 15, and 16 of U.S. Patent No. 6,591,111 B1 (“the ’111 patent”). Paper 7 (“Dec.”). During the trial, Motorola Solutions, Inc. (“Patent Owner”) filed a Response (Paper 18, “PO Resp.”) to which Petitioner filed a Reply (Paper 29, “Reply”) and Patent Owner filed an authorized Sur-Reply (Paper 35, “Sur-Reply”). Petitioner filed a Motion to Exclude evidence filed by Patent Owner, which Patent Owner opposed, and to which Petitioner replied. Papers 33, 36, 38. An oral hearing was held with the parties, and a copy of the transcript was entered into the record. Paper 39 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner has shown, by a preponderance of the evidence, that claims 1, 6, 7, and 12 of the ’111 patent are unpatentable, but Petitioner has not shown that claims 11, 13, 15, and 16 are unpatentable.

I. BACKGROUND

A. *The ’111 Patent*

1. *Overview*

The ’111 patent “relates to a group radio communication system which implements point-to-multipoint communications.” Ex. 1001, 1:6–8.

“Point-to-multipoint (PTM) refers to a communication circuit in which a single signal goes from originating group member to many destination or target group members,” with PTM communications sometimes being referred to in the ’111 patent as “monologs.” *Id.* at 1:15–17, 1:28–32. In particular, the patent addresses the implementation of point-to-multipoint communications between independent radio sub-networks, which “are coupled together through a group controller to form an overall network for point-to-multipoint communications.” *Id.* at 1:8–12. For example, subscribers in one radio sub-network (such as a city police department) may need to communicate with subscribers in a different radio sub-network (such as a federal agency). *Id.* at 1:54–63. The patent identifies two principal challenges in doing so: inefficient use of existing communication infrastructures and incompatibilities between the independent radio sub-networks. *Id.* at 1:42–63.

Figure 1 of the ’111 patent is reproduced below.

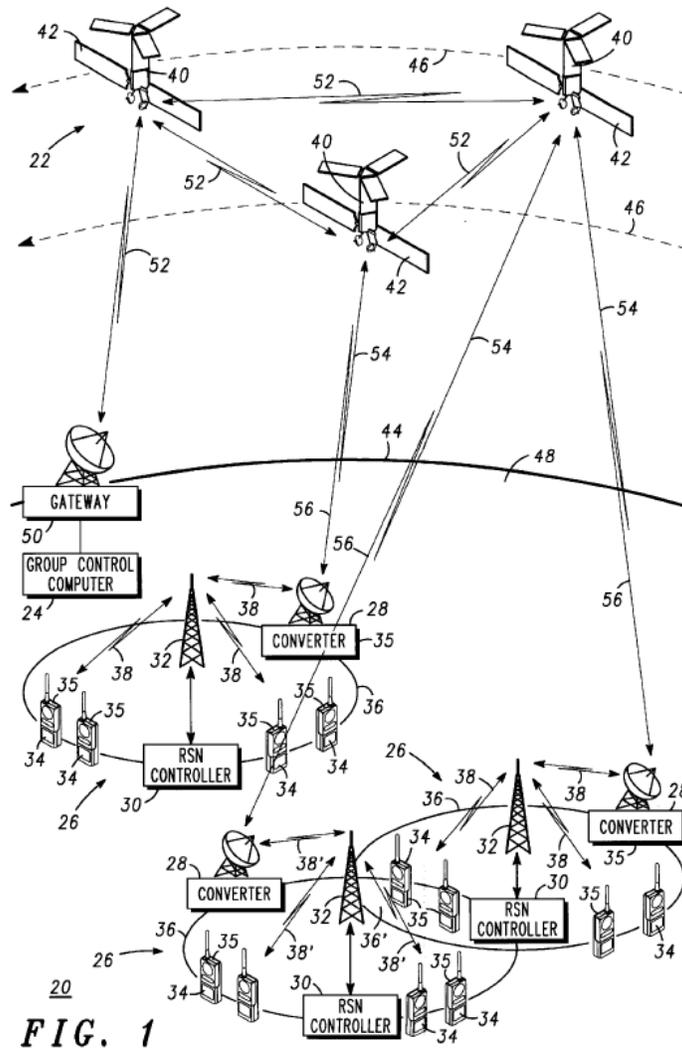


Figure 1 illustrates a layout of group radio communication system 20, which includes data communication network 22 coupled to group controller 24 and a number of radio sub-networks 26. *Id.* at 2:31–35. Data communication network 22 is a packet switched network, i.e. it “merely includes addressing information in data packets and sends the addressed data packets . . . for delivery to their intended destinations on a packet-by-packet basis.” *Id.* at

3:42–50. Each radio sub-network 26 includes radio sub-network controller 30, base station 32, and subscriber radios 34. *Id.* at 2:36–38. Within each sub-network 26, radio sub-network controller 30 coordinates among call requests from the subscribers within the sub-network. *Id.* at 2:36–49. Each sub-network 26 also includes converter 28, which translates between protocols used in network 22 and the data communication protocol used by group controller 24. *Id.* at 2:36–38, 4:34–35.

The '111 patent discloses that group controller 24 “may be implemented using conventional computer technology . . . , including, for example, a processor unit, a memory unit, a hard drive unit, I/O units such as video display, keyboard, mouse, and the like, and an interface to gateway 50.” *Id.* at 3:65–4:3. Figure 8 is reproduced below.

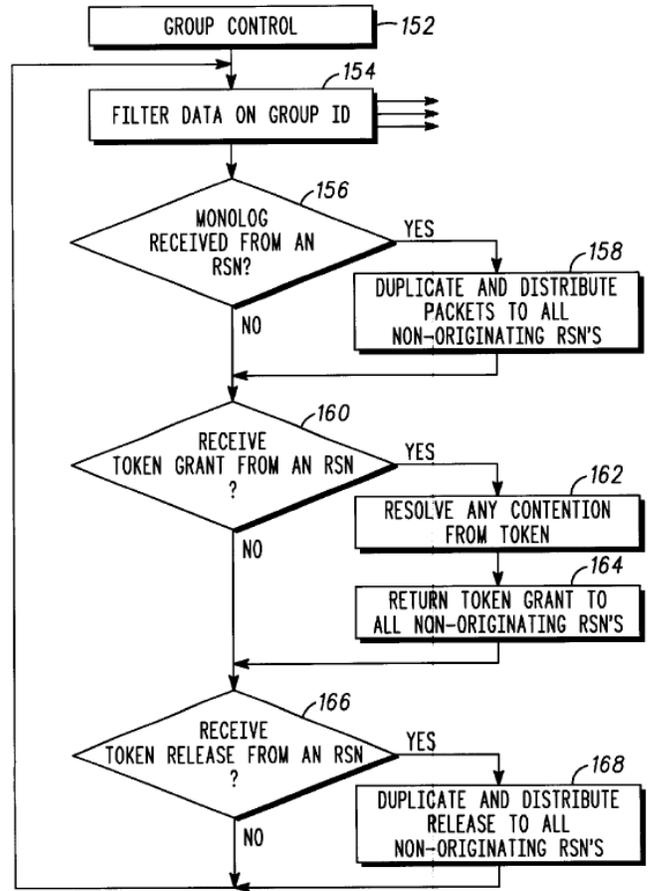


FIG. 8

Figure 8 provides a flow chart of a group control process performed by group controller 24 “to manage a common point-to-multipoint communication session involving point-to-multipoint communication sessions in more than one radio sub-network 26.” *Id.* at 9:28–33. Group control process 152 “is carried out in response to computer software stored in a memory portion . . . of group controller 24 and executed by a processor portion . . . of group controller 24.” *Id.* at 9:33–36. Task 154 filters packets received from data communication network 22 such that group control

process 152 is performed for a specified group of subscriber radios 34, which may be located in a variety of sub-networks 26. *Id.* at 9:39–44.

The remaining steps shown in Figure 8 manage a communication session by identifying whether a packet containing monolog traffic is received at step 156, and duplicating and distributing the packets to all non-originating radio subnetworks 26 for the group. *Id.* at 9:47–10:3. “Tokens” are “intangible construct[s] used to manage a PTM communication session,” such as by representing “the permission to be the origination point for a point-to-multipoint monolog.” *Id.* at 6:39–42. When token grants are received at step 160, conflicts are resolved at step 162, such as with “a prioritization scheme which prioritizes by subscriber radio ID, radio sub-network ID, or the like.” *Id.* at 10:4–17. When token releases are received at step 166, the release message is duplicated and distributed to all non-originating radio sub-networks at step 168. *Id.* at 10:36–50.

2. *Illustrative Claims*

Independent claims 1 and 13 are illustrative of the claims at issue, and are reproduced below.

1. A group radio communication system comprising:
 - a first radio sub-network configured to implement point-to-multipoint communication sessions within said first radio sub-network;
 - a second radio sub-network configured to implement point-to-multipoint communication sessions within said second radio sub-network; and

a group controller in data communication with said first radio sub-network and said second radio sub-network, said group controller being configured to manage a common point-to-multipoint communication session involving said first radio sub-network and said second radio sub-network;

a packet switched data communication network coupled between said first radio sub-network and said group controller and between said second radio sub-network and said group controller;

a radio sub-network controller associated with each of said first and second radio sub-networks and a plurality of subscriber radios in communication with said radio sub-network controller, and

each of said radio sub-network controllers is configured to resolve conflicts between substantially concurrent requests from said plurality of subscriber radios in communication with said radio sub-network controller to be origination points for a point-to-multipoint monolog and to provide subscriber traffic distribution to said plurality of subscriber radios in communication with said radio sub-network controller.

Ex. 1001, 11:21–50.

13. A method of implementing a common point-to-multipoint communication session involving first and second radio sub-networks, said method comprising:

coupling said first radio sub-network to a packet switched communication network;

coupling said second radio sub-network to said packet switched communication network;

coupling a group controller to said data communication network;

routing a point-to-multipoint monolog from said first radio sub-network through said group controller to said second radio sub-network;

converting said point-to-multipoint monolog into packets for distribution through said packet switched data communication network and said group controller;

receiving said point-to-multipoint monolog at a first converter configured to communicate in said first radio sub-network using a communication protocol established for said first radio sub-network; and

transmitting said point-to-multipoint monolog as packets over said packet switched data communication network using a protocol established for said packet switched data communication network.

Ex. 1001, 13:1–24.

B. Evidence

Petitioner relies on the following references.

Maggenti	US 6,301,263 B1	Oct. 9, 2001	Ex. 1003
Shepherd	US 5,398,248	Mar. 14, 1995	Ex. 1004
Grube	US 5,987,331	Nov. 16, 1999	Ex. 1005
Stubbs	WO 99/63773	Dec. 9, 1999	Ex. 1006
Kent	US 5,659,881	Aug. 19, 1997	Ex. 1007

Petitioner also provides Declarations by Michael Davies. Exs. 1002, 1018.

Mr. Davies was cross-examined by Patent Owner, and a transcript of his deposition was entered into the record. Ex. 2004. Patent Owner provides a Declaration by Kevin C. Almeroth, Ph.D. Ex. 2003. Dr. Almeroth was cross-examined by Petitioner, and a transcript of his deposition was also entered into the record. Ex. 1017.

C. Asserted Grounds of Unpatentability

Petitioner challenges claims 1, 6, 7, 11–13, 15, and 16 as unpatentable under 35 U.S.C. § 103(a) over the following combinations of references: (1) Maggenti and Shepherd; (2) Grube and Shepherd; and (3) Stubbs and Kent. Pet. 3.

D. Real Parties in Interest

In addition to itself, Petitioner identifies Hytera America, Inc., and Hytera Communications America (West), Inc., as real parties in interest. Pet. 74. Patent Owner identifies only itself as a real party in interest. Paper 4, 1.

E. Related Proceedings

Both parties identify *In the Matter of Certain Two-Way Radio Equipment and Systems, Related Software and Components Thereof*, 337-TA-1053 (ITC), and *Motorola Solutions, Inc. v. Hytera Communications Corp. Ltd.*, No. 1:17-cv-01972 (N.D. Ill.), as related proceedings in which the '111 patent has been asserted. Pet. 74; Paper 4, 1.

II. ANALYSIS

A. Legal Principles

A claim is unpatentable for obviousness 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 skill in the art; and (4) when in evidence, objective indicia of non-obviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)); see *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006)).

To prevail on its challenges, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). “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 never shifts to Patent Owner. See *Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review). Furthermore, Petitioner does not satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

B. Level of Skill in the Art

Petitioner contends that a person of ordinary skill in the art “would have had a Bachelor’s degree in electrical engineering, computer engineering, or computer science, or a related field, along with at least two to three years of experience in telecommunications and networking, or an equivalent degree and/or experience.” Pet. 13. According to Petitioner, “[a]dditional education might compensate for a deficiency in experience, and vice-versa.” *Id.*

Patent Owner does not advocate for a particular level of skill in the art in its Response, but Patent Owner’s expert, Dr. Almeroth, sets forth a proposed level of skill that is similar to that advocated by Petitioner. Ex. 2003 ¶ 32. In light of that similarity, we see no compelling basis to deviate from Petitioner’s proposal and adopt it for this Decision.

C. Claim Construction

In an *inter partes* review proceeding based on a petition filed prior to November 13, 2018, the Board interprets claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b) (2017); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard). Under the broadest reasonable interpretation standard, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An inventor may provide a meaning for a term that is different from its ordinary meaning by defining the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

In the Institution Decision, we addressed construction of two terms. In particular, we preliminarily construed the term “group controller,” which is recited in independent claims 1 and 13, as “a computational device that manages a point-to-multipoint communication session.” Dec. 11. Patent Owner expressly “agrees with the Board’s construction,” PO Resp. 8, and Petitioner does not dispute our preliminary construction. In addition, the Institution Decision noted our preliminary agreement with Patent Owner that “independent claim 1 requires that each radio sub-network includes a radio sub-network controller.” Dec. 12. Again, Patent Owner expressly “agrees

with this construction,” PO Resp. 8, and Petitioner does not dispute it. Because we see no compelling reason to alter these constructions in light of the record developed during the trial, we adopt them for this Decision.

D. Obviousness over Stubbs and Kent

1. Overview of Stubbs

Stubbs describes a wireless network that uses general packet radio service (“GPRS”) to implement virtual push-to-talk functionality. Ex. 1006, abst. Figure 3 of Stubbs is reproduced below.

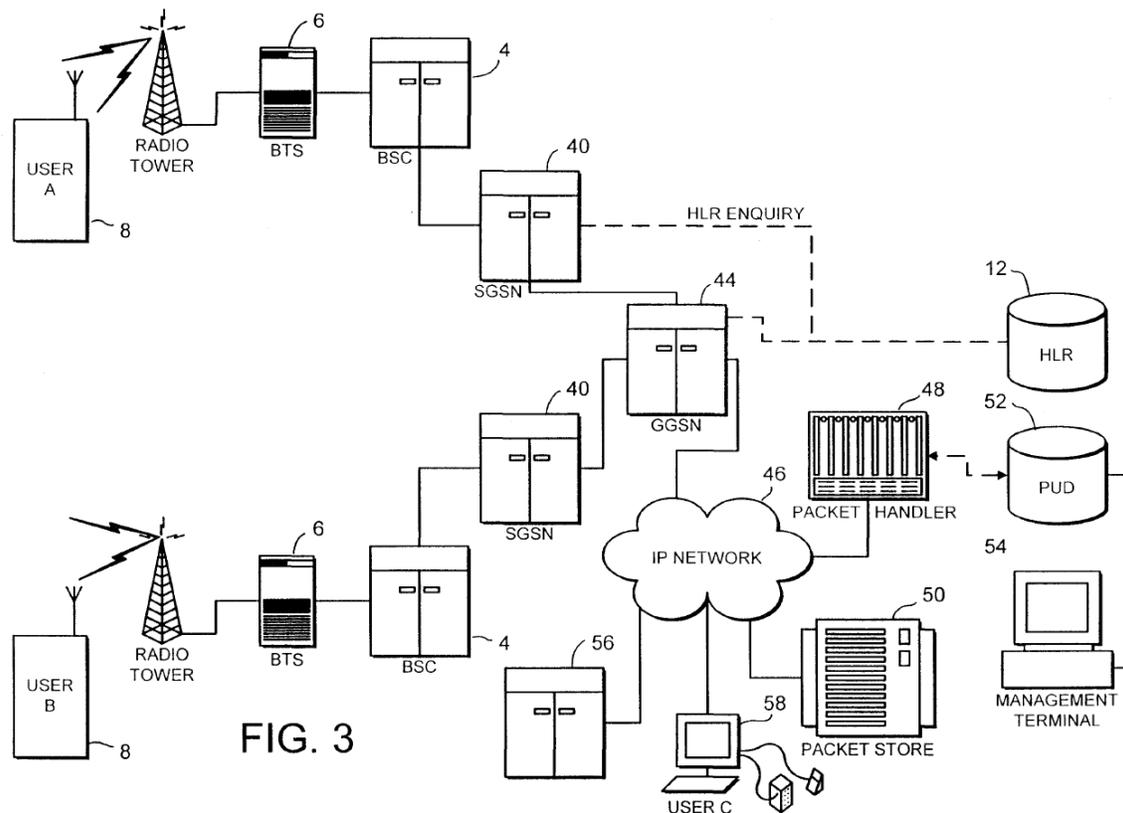


Figure 3 is a schematic illustration of a public land mobile network (“PLMN”) that uses the global system for mobile communications (“GSM”). *Id.* at 9:4–5. The PLMN includes GPRS support nodes, including serving GPRS support nodes (“SGSNs”) 40 and gateway GPRS support node (“GGSN”) 44 that interfaces the PLMN with external packet data network 46. *Id.* at 9:5–12. “It contains routing information for active GPRS users in the PLMN, which is used to transmit data packets,” with GGSN 44 providing a mapping function that allows mobile users to be identified in packet data network 46. *Id.* at 9:12–19. SGSNs 40, which are in communication with GGSN 44 and base station controllers (“BSCs”) 4, serve mobile stations 8 in their routing areas, with each SGSN establishing a mobility management context and a routing context with GGSN 44 used by mobile station 8 to access packet data network 46. *Id.* at 4:8–9, 10:5–11. Other PLMNs may similarly be supported by GGSN 56. *Id.* at 10:15–17.

In addition, Figure 3 shows additional structure that includes packet handler 48, packet store 50, packet user database 52, and service management terminal 54. *Id.* at 11:17–20. These components are responsible for “setting up virtual connections between GPRS users in the PLMN,” “storing data packets which are intended for distribution to GPRS users within the PLMN,” and “hold[ing] call group records for identifying the members of a call group” and “identification records for each mobile subscriber in the PLMN.” *Id.* at 11:21–13:3.

2. *Overview of Kent*

Kent describes “a distributed method of arbitrating talk group call contentions in a multisite system.” Ex. 1007, 1:7–12. Kent explains that “call contention in a multisite environment can occur when multiple callers at different sites attempt to transmit on a common talk group (Call Group) at nearly the same moment.” *Id.* at 11:6–9. Accordingly, Kent teaches resolution of talk group call contention “to avoid the potential performance bottleneck and ‘single point of failure’ mode that would arise from a conventional central arbitration scheme.” *Id.* at 11:9–14. Instead, Kent “utilizes a distributed approach to contention arbitration wherein each site interface autonomously checks for contention and resolves occurrences by determining which call should be given priority based upon a predetermined common arbitration scheme.” *Id.* at 11:14–19.

3. *Combination of Stubbs and Kent*

Petitioner argues that claims 1, 6, 7, 11–13, 15, and 16 would have been obvious over the combination of Stubbs and Kent, specifically by incorporating the decentralized arbitration taught by Kent into the system taught by Stubbs. Pet. 55–57. Petitioner reasons that one of skill in the art would combine the teachings in light of Kent’s explicit recognition that its decentralized arbitration would “avoid the potential performance bottleneck and ‘single point of failure’ mode that would arise from a conventional central arbitration scheme,” and Petitioner supports that reasoning with

testimony by Mr. Davies. *Id.* at 56–57; Ex. 1007, 11:9–14; Ex. 1002 ¶¶ 84–85.

a. Independent Claim 1

i. Summary of Petitioner’s Argument

Petitioner draws an express correspondence between the limitations of independent claim 1 and its proposed combination of Stubbs and Kent. Pet. 57–67. In doing so, Petitioner observes that Stubbs discloses a mobile communications system with a radio interface and thereby discloses a group radio communication system, as recited in the preamble of claim 1. *Id.* at 57 (citing Ex. 1006, abst., 5:1–4; Ex. 1002 ¶ 141). For the first and second recited “radio sub-network[s] configured to implement point-to-multipoint communication sessions within [the respective] radio sub-network[s],” Petitioner identifies Stubbs’s structure, shown in Figure 3 above, of a PLMN with GGSN 44. Pet. 57–58. Petitioner further reasons that the second radio sub-network is disclosed by Stubbs’s second GGSN 56. *Id.* at 59. These identifications are sufficient in light of Stubbs’s specific teaching that GGSN 56 is part of another PLMN, such that one of skill in the art would reasonably have understood that the full sub-network structure shown for GGSN 44 is reproduced for GGSN 56. Ex. 1006, 28:13–19.

Petitioner’s argument is also sufficient that “a radio sub-network controller [is] associated with each of said first and second radio sub-networks and a plurality of subscriber radios in communication with said

radio sub-network controller.” Pet. 64. For this limitation, Petitioner identifies the BSC as performing the functions of the radio sub-network controller because it is responsible for encapsulating data prior to transmission outside a radio sub-network. *Id.* (citing Ex. 2006, 15:15–19).

With respect to the requirement that each radio sub-network controller be configured to resolve conflicts, Petitioner relies on the combination of Stubbs and Kent, pointing to similarities in their disclosures, particularly between a mobile switching center (“MSC”) described in Stubbs and a multi-site switch described in Kent. *Id.* at 64–65. Stubbs’s MSC is described as provided with a link by the BSCs and as “provid[ing] conventional circuit switching with a public services telephone network (PSTN), and a Metro Packet Switch (MPS) which provides switching for the dispatch services.” Ex. 1006, 3:11–15. Petitioner reasons that one of ordinary skill in the art would accordingly apply Kent’s distributed arbitration as effected with its multi-site switch to the teachings of Stubbs. Pet. 64–67.

With respect to the “group controller,” Petitioner identifies multiple components, including management terminal 54, PUD 52, and packet handler 48. *Id.* at 60 (“Stubbs discloses a management terminal 54 acting as a group controller”; “Stubbs also discloses a management terminal 54 and PUD 52. . . . Together, these elements define a group controller”), 61 (“Packet handler 48 can also be a part of the group controller”), 62 (version

of Stubbs Fig. 3 with highlighting by Petitioner). In doing so, Petitioner identifies the following explicit disclosure in Stubbs:

In the above description, virtual connections between mobile stations operating in the same PLMN are controlled by the packet handler. As illustrated in Figure 3, a GGSN 56 of another PLMN is also accessible, via the packet data network 46 from the packet handler. Therefore, *the packet handler may also be used to set up virtual connections between mobile stations operating within the PLMN illustrated, and mobile stations operating in other PLMNs which include a GPRS infrastructure.* In addition, the packet handler 48 is also able to control virtual connections between a mobile station operating the PLMN illustrated and fixed terminals, such as the fixed terminal 58 illustrated in Figure 3, connected to the packet data network 46.

Ex. 1006, 28:13–22 (emphasis added); Pet. 60. In addition, Petitioner identifies IP network 46 shown in Figure 3 above, which is coupled to management terminal 54 via intermediate elements, as corresponding to the recited “packet switched data communication network.” *Id.* at 63.

Patent Owner disputes a number of aspects of how Petitioner draws these correspondences between the claim and the combination of Stubbs and Kent. We address these arguments below.

ii. Conflict Resolution

Patent Owner contends that “Petitioner has failed to show that Stub[b]s, alone or in combination with Kent, teaches or suggests the claimed radio sub-network controllers that claim 1 requires be configured ‘to resolve conflicts between substantially concurrent requests *from said plurality of*

subscriber radios in communication with said radio sub-network controller to be origination points for a point-to-multipoint monolog.’” PO Resp. 14 (quoting Ex. 1001, 11:43–48). Patent Owner’s Sur-Reply summarizes its argument as follows: “Stubbs in combination with Kent fails to disclose this element because integrating the conflict resolution scheme of Kent into Stubbs would resolve conflicts for a network as a whole rather than within each of the radio sub-networks.” Sur-Reply 3–4. But this does not address Petitioner’s more limited argument, which is that “the combination of Stubbs/Kent teaches conflict resolution in each ‘radio sub-network’ by associated ‘radio sub-network controllers.’” Reply 6. Indeed, we agree with Petitioner that Patent Owner “largely focuses on rebutting arguments *not included* in the asserted combination.” *Id.* at 7.

Central to Patent Owner’s argument is its characterization that a “hierarchical scheme [is] disclosed and claimed by the ’111 patent.” PO Resp. 19 (citation omitted). In addressing independent claim 1, Patent Owner motivates this characterization by focusing on the claim’s requirement that “‘each of said radio sub-network controllers is configured to resolve conflicts between substantially concurrent requests *from said plurality of subscriber radios in communication with said radio sub-network controller,*’ and further that each radio sub-network controller must ‘provide subscriber traffic distribution *to said plurality of subscriber radios in communication with said radio sub-network controller.*’” *Id.* (quoting Ex. 1001, 11:44–51) (emphases by Patent Owner)). According to Patent

Owner, Figure 1 of the '111 patent illustrates a “hierarchical arbitration topology” in which “radio sub-network controller 30 . . . must resolve conflicts and provide subscriber traffic distribution to the subscriber radios 34 and 35 within *its* radio sub-network.” *Id.* at 18–19; *see id.* at 40. “The radio sub-network controller does not resolve conflicts between devices *in other sub-networks.*” *Id.* But such a negative limitation, i.e. precluding the resolution of conflicts in other sub-networks with the same scheme, is not recited in the claim, and Patent Owner’s argument improperly seeks to narrow the claim by importing such a limitation from an embodiment disclosed in the specification. *See In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1369 (Fed. Cir. 2004) (“We have cautioned against reading limitations into a claim from the preferred embodiment described in the specification, even if it is the only embodiment described, absent clear disclaimer in the specification.”).

In assessing the propriety of importing a requirement of a “hierarchical arbitration topology” under the specific factual circumstances at issue here, the testimony of the respective experts is instructive. Although Patent Owner’s expert, Dr. Almeroth, provides direct testimony that supports Patent Owner’s position that the claim requires “hierarchical conflict resolution” that involves “the simultaneous use of both a group controller and a radio sub-network controller to implement call management and conflict resolution,” Ex. 2003 ¶ 118, Petitioner’s expert, Mr. Davies, expressly disagrees. *See* Ex. 2003 ¶¶ 59, 77, 118; Ex. 1018 ¶ 10. As Mr.

Davies observes, “[t]he term ‘hierarchical arbitration topology’ appears nowhere in the ‘111 patent specification or claims,” and Mr. Davies also states that the “group controller” recited in claim 1 “is not required to perform arbitration or resolve conflicts.” Ex. 1018 ¶ 10. This leads Mr. Davies to conclude that a person of ordinary skill in the art “would not read the ‘111 patent to require the ‘hierarchical arbitration topology’ as described by Patent Owner and Dr. Almeroth.” *Id.* Thus, in considering the teachings of Kent, Mr. Davies opines that “whether Kent teaches a ‘hierarchical arbitration topology’ is irrelevant because the claims of the ‘111 patent do not require it, and the ‘111 patent neither uses that phrase nor explains its meaning.” *Id.* ¶ 11.

Petitioner explored the bases for Dr. Almeroth’s contrary opinion on cross-examination. Acknowledging that the phrase “hierarchical arbitration topology” does not appear in the ‘111 patent, Dr. Almeroth explained that he was “using it as a general characterization of what the invention is.” Ex. 1017, 19:6–13, 142:8–13. In addition, Dr. Almeroth appeared to agree that the phrase does not require two levels of conflict resolution, but instead “requires two levels of where you are doing conflict resolution and management.” *Id.* at 138:8–15 (“I don’t know that there needs to be a separate level of conflict resolution distinct from the first level as opposed to managing the communication and facilitating that communication at the group controller level.”). More specifically, Dr. Almeroth conceded that the claim does not require the recited “group controller” to resolve conflicts. *Id.*

at 136:6–11 (“I don’t think that that is a specific requirement of the group controller. It’s something that could be within scope of managing that session, though.”).

Weighing the testimony of the two experts, we find that Mr. Davies articulates the more compelling position, particularly in light of claim language that does not expressly require multiple levels of arbitration. It is thus irrelevant, as Mr. Davies suggests, that “Kent does not disclose or contemplate systems where individual sites or portions of the network operate on a different scheme.” *See* PO Resp. 21. Rather, we determine that Petitioner makes a sufficient showing with respect to the conflict-resolution element of claim 1 in its articulation of the combination of Stubbs and Kent. That is, Petitioner provides sufficient evidence that one of skill in the art would apply Kent’s distributed arbitration as effected with its multi-site switch to the teachings of Stubbs. As Petitioner asserts, a person of ordinary skill in the art “would appreciate that *the combination of Stubbs and Kent* results in the required conflict resolution in each radio sub-network.” Reply 7 (citing Ex. 1002 ¶ 163; Ex. 1018 ¶ 12). In addition, as Petitioner asserts, “*the combination of Stubbs and Kent*, informed by the similarities between Kent’s Multi-Site Switch and Stubbs’ MSC linked to the BSC, teaches

‘radio sub-network controllers’ configured to resolve conflicts.” *Id.* (citing Ex. 1002 ¶¶ 157–163; Ex. 1018 ¶¶ 12–13).¹

iii. Packet Switched Data Communication Network

Patent Owner contends that Petitioner’s combination of Stubbs and Kent does not meet claim 1’s requirement that the group radio communication system comprise “a packet switched data communication network coupled between said first radio sub-network and said group controller and between said second radio sub-network and said group controller.” PO Resp. 33–35. Patent Owner appears to argue that Stubbs fails to disclose the reciting “coupl[ing]” between the radio sub-networks and the group controller because “the GPRS data network in Stubbs *is* a packet-switched data network.” *Id.* at 34. In doing so, Patent Owner

¹ Based on a statement made by Mr. Davies during his deposition, Patent Owner argues that Petitioner relies on a “new inherency argument—which should be understood as a clear admission that Stubbs does not disclose the functionality required by the claims.” PO Resp. 15. During cross-examination, referring to the BSC of Stubbs, Mr. Davies testified that conflict resolution is “inherent in what a BSC does.” Ex. 2004, 98:10–99:3. It is not apparent that Mr. Davies intended to use the word “inherent” in its legal sense, and Petitioner’s argument “does not rely solely on Stubbs’ BSC—even inherently—to teach the conflict resolution.” Reply 8. Rather, as discussed above, Petitioner relies on the combination of Stubbs and Kent to reach the conflict resolution recited in the claim. Petitioner confirmed this understanding of its argument at the oral hearing. Tr. 14:7–15:12.

improperly attempts to read a negative limitation into the claim, namely that the radio sub-networks cannot themselves have packet switching.

When asked about this on cross-examination, Dr. Almeroth agreed that there is no such express exclusion recited in the claim. Ex. 1017, 115:4–16. And when asked to focus on whether packet-switching capabilities in a radio sub-network would “disqualify it from being a radio sub-network,” Dr. Almeroth testified that “no, . . . there wouldn’t be a limit on what the first radio sub-network could be in that hypothetical.” *Id.* at 117:2–19. We find such testimony consistent with Petitioner’s position that the limitation is met in the combination of Stubbs and Kent by virtue of Stubbs’s disclosure that GGSN 44 interfaces the PLMN with IP network 46.

iv. Rationale for Combining Stubbs and Kent

As noted above, Petitioner reasons that one of ordinary skill in the art would combine the disclosures of Stubbs and Kent in view of similarities in their disclosures, particularly between the MSC described in Stubbs and the multi-site switch described in Kent. Pet. 64–67. Elaborating on such similarities, Petitioner observes that Kent “discloses a point-to-multipoint radio sub-network with the same radio system structure as the one disclosed in Stubbs,” and that Kent “provides explicit detail on the functionality of its multi-site switch.” *Id.* at 65–66. According to Petitioner, and supported by the testimony of Mr. Davies, “Kent’s arbitration scheme is nearly identical to the one disclosed in the ‘111 Patent” because “[b]oth use flags at the

controller” and because “[b]oth disclosures also provide for preemption based on different call priorities.” *Id.* at 66 (citing, *inter alia*, Ex. 1002 ¶¶ 154–163). Mr. Davies also supports Petitioner’s reasoning that “[o]ne could easily substitute the Multi-Site Switch 200 of Kent for the terrestrial controller 16 of Stubbs, as the networks have nearly identical structures” and that “one of ordinary skill in the art would know to add conflict resolution at the radio sub-network because the management of determining if call data can be transmitted can add the packet handler functions to the GGSN.” *Id.* at 67 (citing Ex. 1002 ¶¶ 154–163).

Patent Owner disputes this rationale, contending that Petitioner “fails to establish that the challenged claims are unpatentable for another, independent reason: the proposed combination would be unworkable and Petitioner fails to come forward with cognizable evidence establishing that the proposed combination would actually function in the real world.” PO Resp. 39. In doing so, Patent Owner focuses on Kent’s conflict-resolution scheme, asserting that “Kent teaches away from the hierarchical arbitration topology of the ’111 patent” and “instead discloses a single-level system that evaluates requests for the system as a whole, not a radio sub-network controller to resolve requests from within a sub-network.” *Id.* at 40 (citing Ex. 1007, 4:23–33, 11:8–13; Ex. 2003 ¶ 77). Although Patent Owner supports these assertions with testimony by Dr. Almeroth, the assertions still suffer from the same deficiencies discussed above with respect to the

improper importation of a hierarchical arbitration topology requirement into the claim.

Patent Owner also contends that “the systems of Stubbs and Kent are incompatible with one another, a fact that would definitively discourage a POSITA from combining them together.” PO Resp. 41. But in advancing that contention, Patent Owner does not focus sufficiently on the *teachings* of the references, but on a bodily incorporation that would require the packet handler of Stubbs to “be used simultaneously with the multi-site switch functionality of Kent.” *Id.* But “[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). As we stated in the Institution Decision in addressing an earlier presentation of this argument, “Petitioner does not propose to ‘implement[] both resource contention systems,’ but rather ‘to decentralize the arbitration of Stubbs,’ as taught by Kent.” Dec. 16 (citations omitted).

v. Objective Indicia

Patent Owner contends that certain objective indicia support its position that the challenged claims, including claim 1, would not have been obvious. PO Resp. 60–64. First, Patent Owner contends that “the ’111 patent addressed a long felt but unresolved need others had failed to solve” in that “[t]he systems that existed prior to the invention of the ’111 patent did not allow subscribers in different radio sub-networks to communicate

with each other.” *Id.* at 61. As evidence of such a “long felt but unresolved need,” Patent Owner cites two Commission reports: one by Lyndon Johnson’s Commission on Law Enforcement and Administration of Justice and one by the 9/11 Commission. Exs. 2005, 2006. Both reports note an inability for public-safety officials to communicate effectively, particularly in emergency situations. The relevance of this indicium is limited in the context of claim 1, which does not recite any incompatibility in communication protocols between the radio sub-networks, but is of greater relevance to claim 11, as we note below. *See ClassCo, Inc. v. Apple, Inc.*, 838 F.3d 1214, 1220–22 (Fed. Cir. 2016) (explaining that the weight accorded to evidence of secondary conditions should take into account the degree of the connection between the features presented in the evidence and the elements recited in the claims).

Second, Patent Owner contends that “the technologies of the ’111 patent have achieved commercial success and have been used by those in the industry, including Petitioner and Patent Owner.” PO Resp. 63. Patent Owner provides only modest evidence of such commercial success in the form of marketing materials, and does not provide significant evidence of “market share information or industry praise or recognition for the novelty” of the claimed invention, such as evidence of sales or publications lauding the invention. Exs. 2008, 2010, 2012; *see ABT Sys. v. Emerson Elec. Co.*, 797 F.3d 1350, 1361 (Fed. Cir. 2015).

In light of the limited nature of Patent Owner’s evidence relevant to claim 1, we give little weight to objective indicia of nonobviousness in our assessment.

vi. Summary

In view of the foregoing considerations, we conclude that Petitioner demonstrates, by a preponderance of the evidence, that independent claim 1 is unpatentable under 35 U.S.C. § 103(a) over Stubbs and Kent.

b. Dependent Claims 6 and 7

Claim 6 further limits the system of claim 1 by requiring that each of the first and second radio sub-networks comprises a “converter configured to translate between said . . . radio sub-network and said packet switched data communication network.” Ex. 1001, 12:15–24. Claim 7 depends from claim 6 and further recites that each sub-network has a protocol for communication between its respective controller and subscriber radios. *Id.* at 12:26–42.

In addressing claim 6, Petitioner observes that “Stubbs discloses that the GGSN interfaces the PLMN with an external packet data network,” and that “[b]oth the GGSN and SGSN in a PLMN provide[] functionality to permit mobile users to transmit and receive packet mode data.” Pet. 68 (citing Ex. 1006, 9:11–12, 10:14–17). Petitioner reasons, supported by the testimony of Mr. Davies, that “[t]o perform these functions, the GGSN and

SGSN must convert data.” *Id.* (citing Ex. 1002 ¶ 164). Specifically, “[t]he data is converted by encapsulating data to be sent outward from the mobile users at the SGSN,” “the encapsulated data is sent to the GGSN,” and “[t]he data at the GGSN is de-capsulated (another conversion) and sent onward to the external packet data network.” *Id.* (citing Ex. 1006, 10:12–13, 15:15–22). Because Stubbs discloses multiple PLMNs, Petitioner further reasons that the same structure is found for multiple radio sub-networks. *Id.* We agree with this reasoning.

Patent Owner disputes this reasoning because “[t]he encapsulation and decapsulation that occurs in Stubbs’ BSC involves simply converting packets from one packet format to another packet format, not ‘translat[ing]’ between a radio sub-network and the packet switched data communications network by converting voice into packet data.” PO Resp. 32 (citing ex. 2004, 141:17–142:15). But the claim is not limited specifically to the conversion of *voice* to data, as Patent Owner’s expert, Dr. Almeroth, acknowledges. *See* Ex. 1017, 246:23–247:7. Patent Owner thus impermissibly relies on a distinction that is not present in the claim.

With respect to claim 7, Petitioner observes that Stubbs discloses transmission of data packets from mobile station 8 to the SGSN via the BSC to conclude that “both the mobile station and the GGSN/SGSN are in communication with the BSC.” Pet. 69. In addition, Petitioner relies on Stubbs’s disclosure of SGSN-MS encapsulation as used for the connection between the SGSN and mobile station within the same PLMN as a protocol

for each radio sub-network. *Id.* We agree with these identifications, which Patent Owner does not separately dispute apart from its arguments directed at claim 6. Accordingly, Petitioner sufficiently identifies the structure and protocol recited in claim 7.

Patent Owner provides no distinct argument regarding objective indicia of nonobviousness apart from the arguments we address above in the context of claim 1. For the reasons expressed above, we give little weight to such indicia in our assessment.

We conclude that Petitioner shows, by a preponderance of the evidence, that claims 6 and 7 are unpatentable under 35 U.S.C. § 103(a) over *Stubbs and Kent*.

c. Dependent Claim 11

Claim 11 depends from claim 1 and recites that the first and second radio sub-networks “have overlapping radio coverage areas” and “have incompatible communication protocols.” Ex. 1001, 12:59–64. Only the second of these recitations gives rise to a dispute between the parties.² *See* PO Resp. 35–39; Reply 18–20. This aspect of the claim is given cursory

² Patent Owner’s evidence of a “long felt but unresolved need” is more compelling in the context of claim 11 than in the context of the other claims because of the explicit recitation of incompatible communication protocols. *See ClassCo*, 838 F.3d at 1220–22 (weighing evidence of secondary considerations differently for claims of different scope). But because Petitioner’s argument is deficient, we do not reach a full analysis of objective indicia of nonobviousness.

treatment in the Petition, which asserts that “having different protocols among the sub-networks is an obvious design choice” and that the converter already recited in the claims “would be pointless if there was only a single protocol across the entire network.” Pet. 70.

Patent Owner responds by noting that the converter otherwise recited in the claims “is used to convert between a radio sub-network and the packet-switched network . . . [,] not between a first incompatible radio sub-network and a second incompatible radio[] sub[-]network.” PO Resp. 37–38. We agree with Patent Owner that this is a relevant distinction that is not accounted for in the reasoning set forth in the Petition. As Patent Owner asserts, “Petitioner identifies *no* disclosure [in the Petition] of either Stubbs or Kent that discloses the use of incompatible protocols.” *Id.*

Petitioner shifts arguments in its Reply, taking the position that Stubbs “discloses use of incompatible protocols.” Reply 18. We see no reason why this argument could not have been made in the Petition, rather than the “design choice” argument that was advanced, nor do we find this new argument reasonably responsive to Patent Owner’s argument. The Federal Circuit has emphasized the singular importance of the petition in *inter partes* reviews in framing the scope of trial. *SAS Inst.*, 138 S. Ct. at 1355 (“Much as in the civil litigation it mimics, in an inter partes review the petitioner is master of its complaint.”); *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (“It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement

that the initial petition identify ‘with particularity’ the ‘evidence that supports the grounds for the challenge to each claim.’” (citing 35 U.S.C. § 312(a)(3)).

Accordingly, we do not consider the new argument advanced in the Reply. We conclude that Petitioner does not show, by a preponderance of the evidence, that claim 11 is unpatentable under 35 U.S.C. § 103(a) over Stubbs and Kent.

d. Dependent Claim 12

Claim 12 depends from claim 1 and recites that the first and second radio sub-networks “have non-overlapping radio coverage areas.” Ex. 1001, 12:65–67. Petitioner contends, and Patent Owner does not dispute, that “having non-overlapping coverage areas is an obvious design choice.” Pet. 70–71. We agree with Petitioner that “[t]he alleged invention functions the same way under both conditions [i.e. overlapping and non-overlapping coverage areas], as one of ordinary skill in the art would readily expect.” *Id.* at 70 (citing Ex. 1002 ¶ 173).

Patent Owner provides no distinct argument regarding objective indicia of nonobviousness apart from the arguments we address above in the context of claim 1. For the reasons expressed above, we give little weight to such indicia in our assessment.

Accordingly, we conclude that Petitioner demonstrates, by a preponderance of the evidence, that claim 12 is unpatentable under 35 U.S.C. § 103(a) over Stubbs and Kent.

e. Claims 13, 15, and 16

Independent claim 13 is a method claim that recites steps generally corresponding to limitations recited in independent apparatus claim 1, and addressed above. Ex. 1001, 11:21–50, 13:1–24. Claim 13 additionally recites “routing a point-to-multipoint monolog from said first radio sub-network through said group controller to said second radio sub-network.” *Id.* at 13:11–13. That is, rather than merely require that the group controller “be[] configured to *manage* a point-to-multipoint communication session *involving* said [radio sub-networks],” as recited in claim 1, claim 13 more specifically requires *routing* a PTM monolog “through said group controller.” *Id.* at 11:31–34 (emphases added), 13:11–13. Based upon the full record developed during the trial, we agree with Patent Owner that Petitioner’s showing with respect to this limitation of claim 13 is deficient.

In addressing this step, the Petition observes that “Stubbs discloses sending communications as data through a point-to-multipoint network” because “[t]he data packets are transmitted via a BSC to the SGSN and thus the GGSN[, which] contains functionality for the point-to-multipoint transmission of data.” Pet. 72 (citing Ex. 1006, 4:6–11, 9:12–16, 15:15–16). The Petition further asserts that “[t]he GGSN contains functionality for the

point-to-multipoint transmission of data,” which is “then transferred to all the cells in a defined region.” *Id.* (citing Ex. 1006, 9:12–16, 4:6–11). The Petition concludes that “[t]he cells have mobile stations which may receive packet mode data, thereby disclosing this limitation.” *Id.* (citing Ex. 1006, 10:18–21); Ex. 1002 ¶¶ 144–148.

With this argument, Petitioner insufficiently identifies how PTM monologs are routed “through said group controller,” particularly in light of its identification of multiple components as corresponding to the recited group controller when addressing claim 1. In its Reply, Petitioner narrows its identification of the recited group controller as corresponding to Stubbs’s packet handler 48. Reply 12–15. But we agree with Patent Owner, whose characterization is consistent with the argument presented in the Petition, that, in Stubbs, “the GPRS system of Stubbs routes packets using the SGSN and GGSN, not the packet handler.” Sur-Reply 6. Indeed, as Patent Owner observes, “when discussing this element, Petitioner does not even mention the packet handler, instead explaining that the ‘packets are transmitted via a BSC to the SGSN and thus the GGSN.’” *Id.* (citing Pet. 72).

Accordingly, we conclude that Petitioner does not show, by a preponderance of the evidence, that claim 13 is unpatentable under 35 U.S.C. § 103(a) over Stubbs and Kent. Because claims 15 and 16 depend from 13, and thereby inherit the “routing” limitation, we also conclude that Petitioner does not show, by a preponderance of the evidence, that those claims are unpatentable under 35 U.S.C. § 103(a) over Stubbs and Kent.

E. Obviousness over Maggenti and Shepherd

1. Overview of Maggenti

Maggenti “relates generally to push-to-talk communication systems and more particularly to a method and apparatus for providing fair access to members of a push-to-talk communication system in which the members experience differing signaling delays.” Ex. 1003, 1:9–13. Figure 1 of Maggenti is reproduced below.

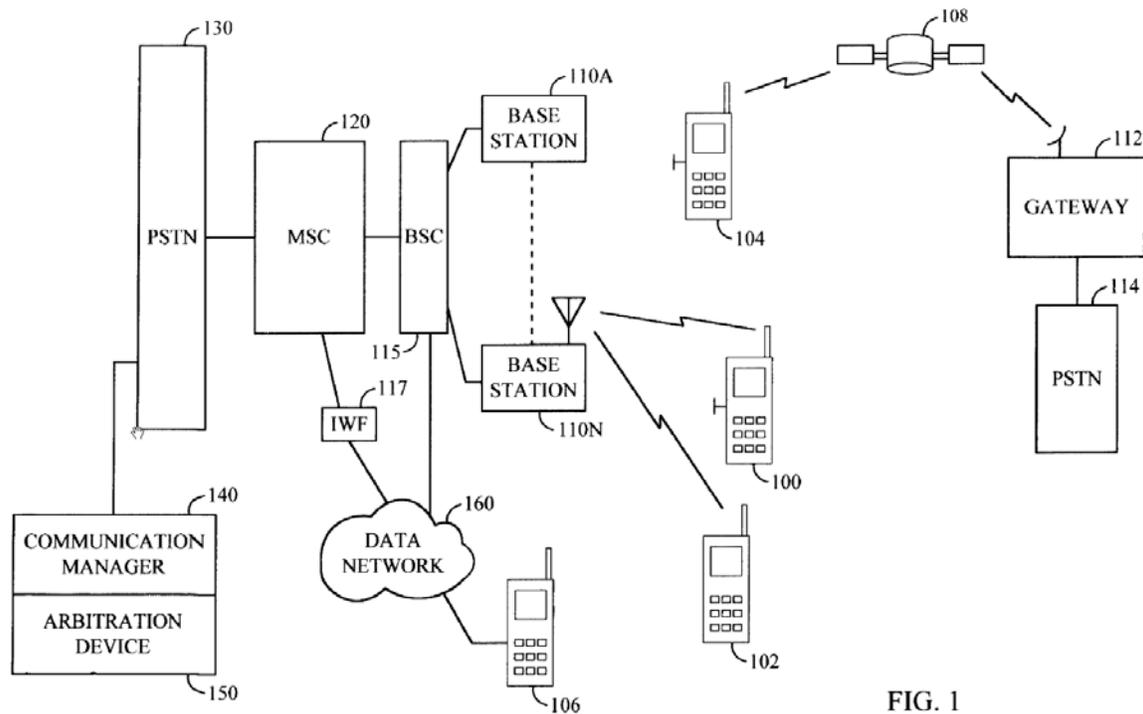


FIG. 1

Figure 1 provides an illustration of a group communication system used by Maggenti. *Id.* at 3:24–25. In the drawing, different types of wireless communication devices are shown, including terrestrial-based wireless devices 100 and 102, satellite-based communication device 104, and data

communication device 106 connected to data network 160. *Id.* at 4:15–26. Such devices are referred to generically by Maggenti as “remote units.” *Id.*

Communications from remote units 100 and 102 are transmitted to and from base stations 110A–N, which Maggenti describes as “well known in the art for relaying wireless communication signals among remote units and between remote units and a central facility,” such as mobile switching center (“MSC”) 120. *Id.* at 4:27–35. Communications between MSC 120 and base stations 110A–N are routed through one or more base station controllers (“BSCs”), one of which is shown as BSC 115 and which “coordinates the functionality of typically several base stations operating in a given location.” *Id.* at 35–40. In particular, MSC 120 routes communications between remote units operating in various base station coverage areas, as well as between remote stations and land-line telephone users through Public Switch Telephone Network (“PSTN”) 130. *Id.* at 5:28–33. In addition, MSC 120 may be connected to computer network 160 to provide communications between remote units in the communication system and various known computing devices connected to computer network 160, “such as personal computers, mainframe computers, digital cameras, email systems, remotely controlled devices, and so on.” *Id.* at 5:33–38.

Communications manager 140 may be connected to PSTN 130 or to data network 160 to provide push-to-talk communications in an existing point-to-point wireless communication system. *Id.* at 5:47–50. Arbitration device 150 controls transmission privilege and has the “primary function” of

“assign[ing] the exclusive transmission privilege to one member at a time.”
Id. at 5:54–57, 6:12–14. Arbitration device 150 may be located at communications manager 140, at MSC 120, or at any of base stations 110A–N, or may also be connected to data network 160. *Id.* at 6:1–5.

2. Overview of Shepherd

Shepherd “relates to resolving conflicts when making point to multipoint calls involving first and second communication systems of equal status and which are linked by way of a virtual circuit.” Ex. 1004, 1:7–12.

Figure 1 of Shepherd is reproduced below.

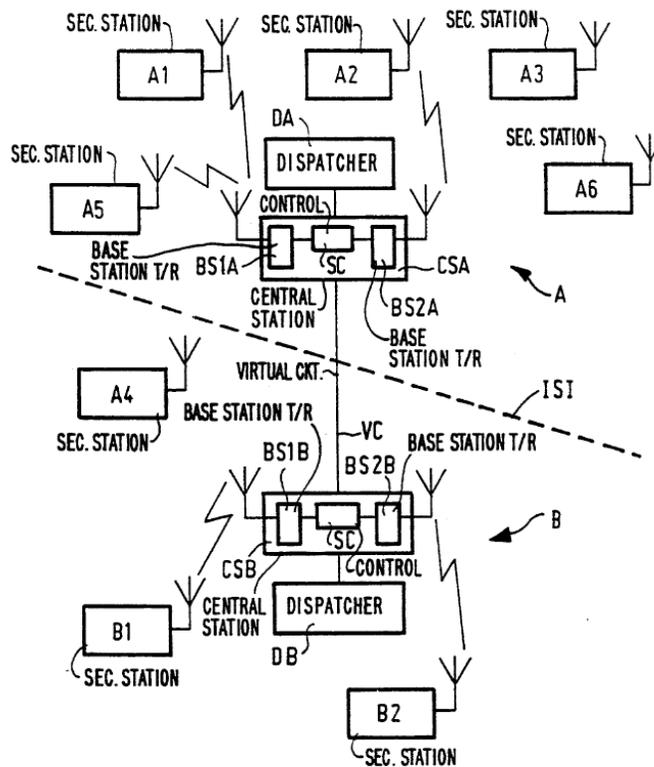


FIG.1

Figure 1 is a block diagram of two digital trunked mobile radio systems having central stations linked by a virtual circuit. *Id.* at 2:39–41. In the drawing, the two trunked radio systems A and B “operate within their own radio coverage areas,” with each system comprising central station CSA or CSB, dispatcher DA or DB, and a plurality of secondary stations A1–A6 or B1 and B2. *Id.* at 2:54–66. Central station CSA or CSB comprises system controller SC and base station transceivers BS1A and BS2A or BS1B and BS2B. *Id.* at 2:58–60.

3. *Combination of Maggenti and Shepherd*

In the Institution Decision, we noted that Petitioner intimates that Maggenti anticipates the challenged claims, but “does not unambiguously advance an anticipation ground,” which we therefore do not consider. Dec. 19–20. Rather, the Petition instead articulates a challenge based on the combination of Maggenti and Shepherd, arguing that any deficiency in Maggenti’s disclosure of conflict resolution at the sub-network level is remedied by Shepherd’s teaching of “a point-to-multipoint communication system wherein *each radio sub-network* has a ‘central station’ that resolves conflicts caused by simultaneous calls.” Pet. 16 (citing Ex. 1004, 3:64–68). Petitioner offers the following rationale for combining the references’ teachings: “One of ordinary skill in the art would have been motivated to combine the conflict resolution taught in Shepherd with the group

communication system disclosed in Maggenti to avoid bottlenecks caused by centralized processing.” *Id.* (citing Ex. 1002 ¶ 97).

Petitioner’s conclusory rationale for combining the teachings of Maggenti and Shepherd is insufficient to satisfy its burden, and appears guided by hindsight to reconstruct the invention. *See In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) (“It is impermissible to use the claimed invention as an instruction manual or ‘template’ to piece together the teachings of the prior art so that the claimed invention is rendered obvious” (citation omitted)). Rather, we agree with Patent Owner that “Petitioner does not attempt to explain how bottlenecks would be reduced or how the two references would be harmonized given that they teach two different methods of implementing call arbitration.” PO Resp. 52.

As Patent Owner observes, “Maggenti’s system uses a centralized arbitration device to make fair allocations of bandwidth regardless of latency,” while Shepherd “uses direct communication between two localized central stations to allocate a common virtual circuit for a call.” *Id.* at 51. Of particular relevance, we agree with Patent Owner that both Maggenti and Shepherd “disclose network topologies with only a single level of conflict resolution, with neither providing a scalable solution for bridging point-to-multipoint communications across different networks and technologies.” *Id.* at 52. Patent Owner persuasively argues that a person of skill in the art “would understand that each [of Maggenti and Shepherd] describes a

different architecture: the centralized topology in Maggenti and the distributed topology in Shepherd.” *Id.* at 19–20.

We raised these concerns in the Institution Decision, and Petitioner offers no further reasoning in its Reply that causes us to reconsider our preliminary conclusion that Petitioner articulates insufficient reasoning to combine the references’ teachings. Dec. 20–21; Tr. 57:1–3 (“you had the last word on Maggenti and Shepherd and the Patent Owner’s response because it wasn’t addressed in the reply”).

Accordingly, we conclude that Petitioner does not demonstrate, by a preponderance of the evidence, that claims 1, 6, 7, 11–13, 15, and 16 are unpatentable under 35 U.S.C. § 103(a) over Maggenti and Shepherd.

F. Obviousness over Grube and Shepherd

1. Overview of Grube

Grube “relates generally to communication systems and, in particular, to a method and apparatus to link dissimilar communication system types together to provide cross-system communication.” Ex. 1005, 1:6–9.

Figure 1 of Grube is reproduced below.

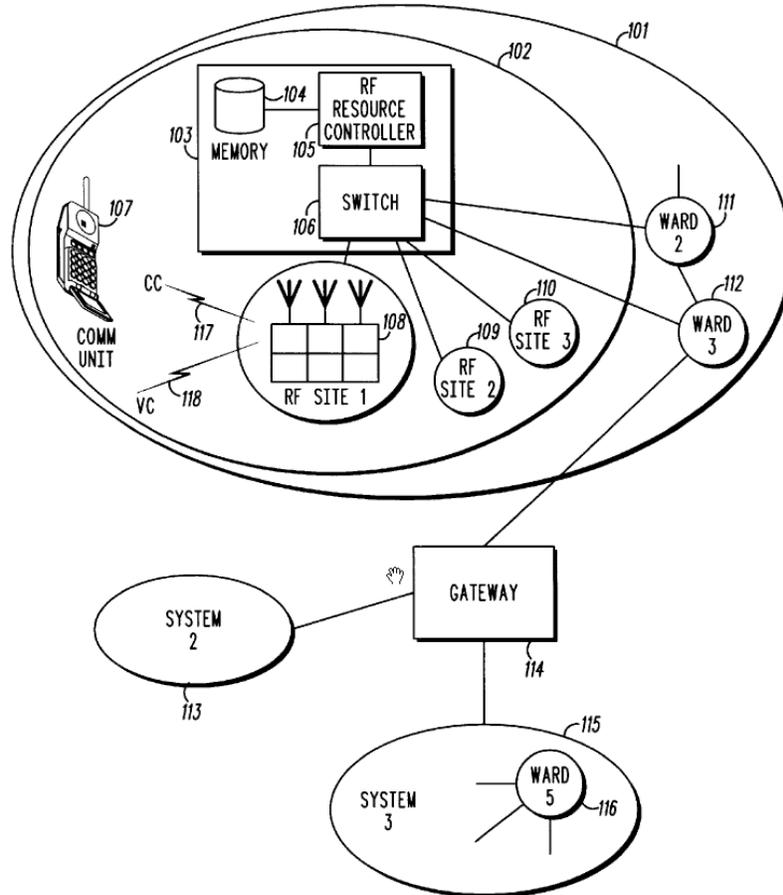


FIG. 1

Figure 1 is a schematic drawing that shows “varying layers of communication subsystems joined together.” *Id.* at 2:22–24. In particular, Grube allows “a communication unit to operate from a first system type 101 while communicating with other members of a common talkgroup where those other members are operating from at least one or more other communication systems 113 and 115 where the one or more other communication systems are of at least a second type.” *Id.* at 2:44–50.

Communication requests are directed from the first communication system to gateway 114, which translates the identity and call type information from the first system to at least a second system. *Id.* at 2:51–55. Gateway 114 also translates message payload into a format compatible with the other communication systems 113 and 115, and distributes the translated message payload to those communication systems for broadcast within those systems. *Id.* at 2:62–3:6. Within each of the communication systems, at least one “ward,” such as wards 102, 111, and 112 of system 101, provides communications for a regional geographic area. *Id.* at 3:34–50.

Figure 3 of Grube is reproduced below.

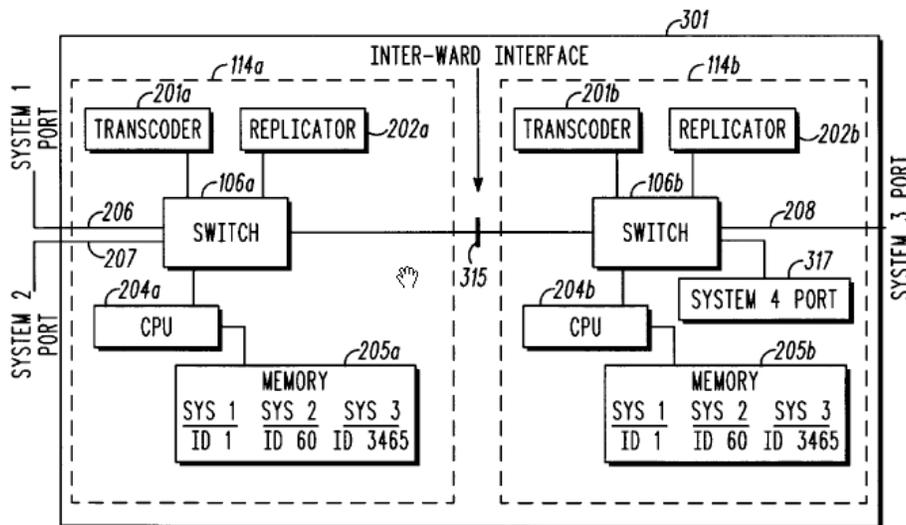


FIG. 3

Figure 3 illustrates an embodiment for a multi-ward gateway that provides a bridge between two or more communication systems of more than one type. *Id.* at 5:41–44. When there are multiple systems of the same type, interfaces to such systems may be made with common ward controller 114a or 114b.

Id. at 5:44–46. Of particular relevance in the drawing is inter-ward interface 315, which “provides a communication path between the ward controllers 114A and B.” *Id.* at 6:52–53. According to Grube,

[t]he physical interface could be any suitable interface (e.g., parallel data bus, multi-drop parallel data bus, a V.35 interface, an Ethernet interface, or other physical communication connection know[n] in the art). In addition, the protocol used on these communication paths could be any appropriate protocol as known in the art (e.g., TCP/IP, X.25, and others).

Id. at 6:53–59.

2. *Combination of Grube and Shepherd*

Petitioner contends that “Grube discloses all of the essential elements of the challenged claims,” with the exception of conflict resolution, which it contends is taught by Shepherd. Pet. 40. Accordingly, Petitioner proposes to combine the teachings of the references to meet the limitations of each of the challenged claims. *Id.* Of particular relevance is Petitioner’s identification of the “group controller” recited in each of independent claims 1 and 13. Ex. 1001, 11:29–34, 13:9–10. For this element, Petitioner identifies inter-ward interface 315, shown in Figure 3 of Grube, reproduced above. Pet. 42–43, 51.

As explained above, we construe the recited “group controller” as a computational device that manages a point-to-multipoint communication session. But the inter-ward interface that Petitioner identifies for this element is merely a connection between ward controllers and does not

perform any functions that “manage” a PTM communication session. *See* Ex. 1005, 6:52–53 (“[t]he inter-ward interface 315 provides a communication path between the ward controllers 114A and B”).

Such a passive connection is quite unlike the active management contemplated by the ’111 patent. For example, the ’111 patent devotes an entire drawing (Figure 8, reproduced above) and related description to explaining the management performed by the group controller. Ex. 1001, 9:27–10:53. Such management includes a filtering task to filter packets received from the data communication network, *id.* at 9:39–46; a first querying task to determine whether packets containing monolog traffic have been received from a radio sub-network, *id.* at 9:47–56; a first duplicating and distributing task to duplicate the packets and distribute them to all non-originating radio sub-networks for the group, *id.* at 9:57–10:3; a second querying task to determine whether a token grant message has been received from a radio sub-network, *id.* at 10:4–11; a conflict-resolution task to resolve conflicts that may be occurring, *id.* at 10:11–17; a returning task to send the token grant to all non-originating radio sub-networks, *id.* at 10:18–34; a third querying task to determine whether a token release message has been received from a radio sub-network, *id.* at 10:35–45; and a second duplicating and distributing task to duplicate the release message and distribute it to all non-originating radio sub-networks, *id.* at 10:45–50. In marked contrast, Grube’s inter-ward interface plays no active role in distributing message payloads among Grube’s communication systems. Instead, message

distribution is handled exclusively by switch 106a and associated components of ward controller 114a. *See id.* at 6:7–15.

This is not to say that we import into the claims the particular management functionality described for a specific embodiment of the '111 patent. The claims are not so limited. Rather, these various functions illustrate the active nature of managing a PTM communication session, nothing like which is described as performed by Grube's passive inter-ward interface. The mere fact that message payload is distributed to multiple communication systems via the inter-ward interface does not make it "configured to manage a point-to-multipoint communication session between a first radio sub-network and second radio sub-network" as Petitioner suggests. *See* Pet. 43 (citing Ex. 1002 ¶ 119). Instead, by consolidating such active functionality in the group controller recited in the claims, the '111 patent permits greater scaling with multiple sub-networks that use differing protocols. Furthermore, this deficiency is not remedied by the teachings of Shepherd, which Petitioner does not, in any event, rely on in identifying the recited group controller.

Accordingly, we conclude that Petitioner does not demonstrate, by a preponderance of the evidence, that independent claims 1 and 13 are unpatentable under 35 U.S.C. § 103(a) over Grube and Shepherd. We similarly conclude, by virtue of their dependence from those independent claims, that Petitioner also does not demonstrate, by a preponderance of the

evidence, that claims 6, 7, 11, 12, 15, and 16 are unpatentable under 35 U.S.C. § 103(a) over Grube and Shepherd.

III. MOTION TO EXCLUDE

Petitioner filed a Motion that moves to exclude two categories of Patent Owner's evidence. Paper 33. First, Petitioner moves to exclude paragraphs 63 and 78 of Dr. Almeroth's Declaration, which relate to Patent Owner's argument that Petitioner articulates insufficient reason to combine the teachings of Stubbs and Kent. *Id.* at 3–5. Petitioner contends that those paragraphs “fail to disclose the underlying facts or data on which the opinions set forth in those paragraphs are based.” *Id.* at 3. Accordingly, Petitioner asks that “[t]he Board should exclude or accord no weight” to those paragraphs. *Id.* In making that argument, Petitioner cites 37 C.F.R. § 42.65(a), which does not provide for exclusion of the testimony, but instead provides that “[e]xpert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.” *See Fox Factory, Inc. v. SRAM, LLC*, Case IPR2017-00118, slip op. at 49 (PTAB Apr. 2, 2018) (Paper 59) (“To begin with, we note that the portion of 37 C.F.R. § 42.65(a) relied on by Petitioner deals only with the weight that can be given evidence, not its admissibility. Thus, it is not a proper basis for a motion to exclude.”).

We thus disagree that Dr. Almeroth's testimony in those paragraphs should be excluded. In addressing Petitioner's rationale for effecting the

combination of teachings from Stubbs and Kent above, we do not specifically cite to those paragraphs. Although we have considered the entirety of Dr. Almeroth's testimony, we address the relative weight we accord his and Mr. Davies's testimony above. We accordingly deny this portion of Petitioner's Motion.

Second, Petitioner moves to exclude evidence related to Patent Owner's arguments regarding objective indicia of nonobviousness, namely paragraphs 120 and 121 of Dr. Almeroth's Declaration, as well as Exhibits 2005–2012. Paper 33, 5–12. With respect to this portion of Dr. Almeroth's testimony, Petitioner contends that “these paragraphs rely on [Exhibits 2005–2012], which . . . are irrelevant.” *Id.* at 5. With respect to Exhibits 2005–2012, Petitioner contends that they should be excluded under Fed. R. Evid. 401, 402, 801, and 802, and further contends that Exhibits 2005–2007 should also be excluded under Fed. R. Evid. 403. *Id.* at 5–12.

We agree with Patent Owner that, even if Dr. Almeroth relied on inadmissible evidence, that is not a proper basis to exclude his testimony. Paper 36, 6–7 (citing Fed. R. Evid. 703). As for Exhibits 2005–2012 themselves, we again find that Petitioner's arguments go to the weight that should be accorded to them, not to their admissibility. For example, Petitioner contends that Exhibits 2006 and 2007, offered by Patent Owner in support of its assertion that “the ‘111 patent addressed a long felt but unresolved need others had failed to solve,” are irrelevant because they “are dated after the filing date of the ‘111 patent.” Paper 33, 6; PO Resp. 62. But

the mere date of the documents' creation does not render them irrelevant in supporting Petitioner's point, although it may impact the weight properly accorded to them.

We are also not persuaded by Petitioner's argument that the probative value of Exhibits 2005–2007 is outweighed by the danger of unfair prejudice because of the “extremely emotional and traumatic events” they describe, such as the 9/11 incident. *See* Paper 33, 6. That evidence is being considered by the Board, an administrative tribunal, where “the risk [that] the trier of fact will be unfairly affected by the admission of improper evidence is far less than in a jury trial.” *Fox Factory, Inc. v. SRAM, LLC*, Case IPR2016-01876, slip op. at 59 (PTAB Apr. 2, 2018) (Paper 59). And as Patent Owner points out, the nature of the invention of the '111 patent is such that “it is not surprising that the long-felt need arises from communications during emergency situations.” Paper 36, 9.

As for Petitioner's hearsay objections to Exhibits 2005–2012, we agree with Patent Owner that those exhibits are not being proffered for the truth of the matter asserted, but rather as “evidence [of] what has been publicly discussed about these issues.” *Id.*

We are also not persuaded by Petitioner's argument that Exhibits 2009 and 2011 should be excluded as irrelevant because they were “prepared by Dr. Almeroth for a separate ITC proceeding” that was terminated without rulings made with respect to the contentions they set forth. *See* Paper 33, 10–11. Rather, as Patent Owner explains, “Dr. Almeroth created this

evidence based on (and encompassing) reliable facts and data, and submitted them under oath to the ITC.” Paper 36, 12. The lack of any ruling regarding the evidence by the ITC again perhaps impacts the weight to accord them, but not their admissibility in this proceeding. In addressing objective indicia of nonobviousness, we discuss the weight accorded to the different evidence in light of the considerations raised by Petitioner. Accordingly, we also deny the remainder of Petitioner’s Motion.

IV. ORDER

It is

ORDERED that, based on a preponderance of the evidence, claims 1, 6, 7, and 12 of U.S. Patent No. 6,591,111 B1 have been shown to be unpatentable;

FURTHER ORDERED that, based on a preponderance of the evidence, claims 11, 13, 15, and 16 of U.S. Patent No. 6,591,111 B1 have not been shown to be unpatentable;

FURTHER ORDERED that Petitioner’s Motion to Exclude (Paper 33) is *denied*; and

FURTHER ORDERED that, because this is a final written decision, parties to this proceeding seeking judicial review of our decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2018-00176
Patent 6,591,111 B1

PETITIONER:

Todd Tucker
Mark McDougall
Joshua Friedman
ttucker@calfee.com
mmcdougall@calfee.com
jfriedman@calfee.com

PATENT OWNER:

Jon Carter
Eugene Goryunov
Akshay Deoras
carterj@kirkland.com
egoryunov@kirkland.com
akshay.deoras@kirkland.com