

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT TRIAL AND APPEAL BOARD

MOTOROLA SOLUTIONS, INC.
Petitioner,

v.

STA GROUP LLC,
Patent Owner

CASE: IPR2024-00207
U.S. PATENT NO. 8,145,249

PATENT OWNER RESPONSE

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Exhibit No.	Description
2001	US 7,386,000 B2 to Löppönen et al.
2002	Expert Declaration of Dr. Robert Akl
2003	Deposition Testimony of Dr. Sayfe Kiaei (Oct. 3, 2024)
2004	Claim Construction Order, <i>STA Group LLC v. Motorola Solutions, Inc.</i> , Case No. 2:23-CV-00030-JRG (E.D. Tex.)

Patent Owner, STA Group LLC (“Patent Owner”), submits this Patent Owner Response pursuant to 37 C.F.R. § 42.107(a) in response to the *Inter Partes* Review petition (“Petition”) filed by Petitioner Motorola Solutions, Inc. (“Petitioner”) for claims 1-25 and 38-39 (“Challenged Claims”) of U.S. Patent 8,145,249 (“’249 Patent,” Ex. 1001). A summary of the challenges from the Petition is below.

Ground	Basis for Challenge
1	Claims 1-7, 9, 13-19, 21, 25, 38, and 39 are obvious over Botha
2	Claims 1, 7-9, 12-13, 19-21, 24, 25, 38, and 39 are obvious over the combination of Radenkovic and McDonald
3	Claims 2-6, 10-11, 14-18, and 22-23 are obvious over the combination of Radenkovic, McDonald, and Koren

I. INTRODUCTION

The Board should find the Challenged Claims not unpatentable for several reasons. *First*, the Challenged Claims recite, in part, “receiving a plurality of monitored push-to-talk communication streams over a high bandwidth connection, each monitored push-to-talk communication stream comprising audio communications from a plurality of users” and “mixing the plurality of monitored push-to-talk communication streams into a mixed communication stream such that the audio communications communicated in each of the monitored push-to-talk communication streams can be heard on the mixed stream.” None of the references relied upon by Petitioner include a *plurality* of communications streams *each*

comprising communications from a *plurality* of users or *mixing* a plurality of *monitored* push-to-talk communication streams such that audio in *each stream* can be heard *on the mixed stream*.

Second, insufficient motivation has been described for a person of ordinary skill in the art (“POSITA”) to combine the embodiments and groups of references relied upon by the Petitioner.

Third, the Challenged Claims recite, in part, “wherein each of the push-to-talk communication streams comprises communications from a respective virtual talk group comprising a plurality of endpoints of different communication networks.” None of the references relied upon by Petitioner include a *virtual talk group* comprising a *plurality of endpoints of different communication networks*.

In short, the Petition does not “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 petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge.”)).

II. THE ’249 PATENT

A. The Invention of the ’249 Patent

The ’249 Patent issued on March 27, 2012, from an application filed November 4, 2005. Ex. 1001, Cover; Ex. 2002, ¶31. The ’249 Patent issued with thirty-nine claims. Ex. 2002, ¶31. The Petition challenges claims 1-25 and 38-39. *Id.*

Claims 1, 13, 25, and 38 are independent claims. *Id.*

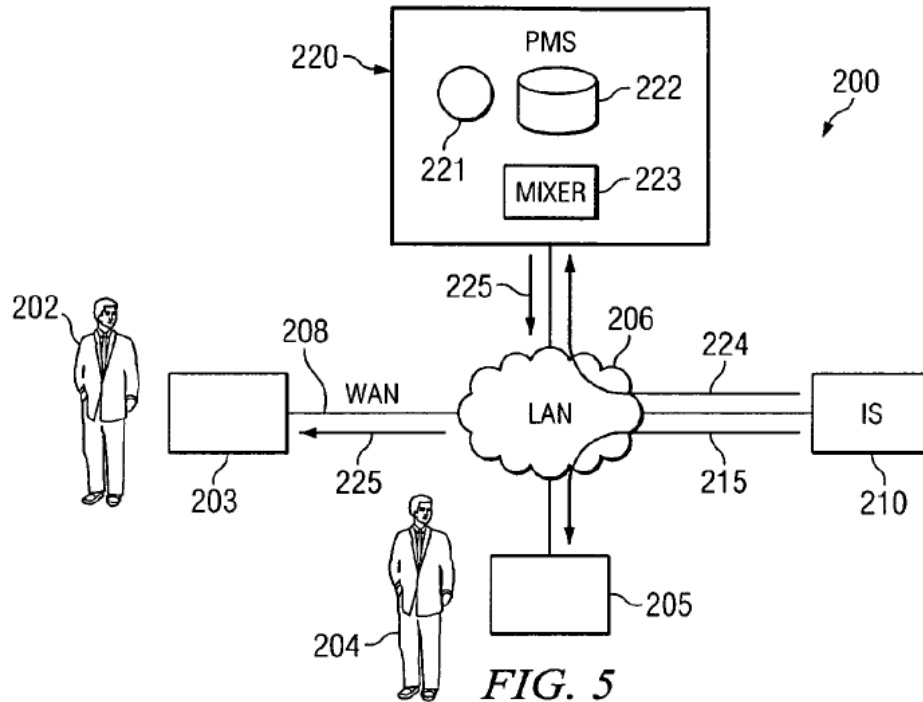
The invention of the '249 Patent is directed to methods and systems for providing a push-to-talk proxy media service. Ex. 1001, Abstract; Ex. 2002, ¶32. Independent claims 1, 13, 25, and 38 recite mixing monitored push-to-talk communication streams including audio communications from a number of different talk groups. Ex. 1001, cls. 1, 13, 25, 38; Ex. 2002, ¶32.

As disclosed in the Background of the '249 Patent, talk groups facilitate audio communications among a number of users. Ex. 2002, ¶33. During a session, users communicate only with other users that are part of the talk group. *Id.* At the time of the filing of the '249 Patent, collaboration between different talk groups was ad hoc and inefficient such that different talk groups usually did not communicate with each other without substantial manual intervention. *Id.*

The independent claims are directed to how a plurality of talk groups are mixed together into a single stream. *Id.*, ¶34. Specifically, the independent claims recite receiving a plurality of monitored push-to-talk communication streams over a high bandwidth connection. *Id.* Each monitored push-to-talk communication stream comprises audio communications from a plurality of users that are part of a talk group. *Id.* The independent claims also recite mixing the plurality of monitored push-to-talk communication streams into a mixed communication stream such that the audio communications communicated in each of the monitored push-to-talk

communication streams can be heard on the mixed stream. *Id.* The mixing of the plurality of monitored push-to-talk communication streams beneficially allows users in different talk groups to communicate with each other. *Id.*

As shown in Figure 5 below, a centralized proxy media service (220) receives a plurality of monitored push-to-talk communication streams (224). Each monitored push-to-talk communication stream includes a talk group that includes audio communications from a number of users. *Id.*, ¶35. Without the centralized proxy media service (220), users on different communications streams cannot communicate with each other. *Id.* To enable cross-stream communication between the users on each stream (e.g., between the different talk groups), the centralized proxy media service (220) mixes the plurality of monitored push-to-talk communication streams into a mixed communication stream (225). *Id.*, ¶36. This mixing enables the audio communications transmitted in each of the monitored push-to-talk communication streams to be heard on the mixed stream. *Id.*, ¶37. For instance, endpoint (203) receives the mixed communication stream (225) and can communicate with users on the different talk group communication streams. *Id.*



Ex. 1001, Fig. 5.

B. Claim Construction

The Petition was filed after November 13, 2018, and as such, the proper claim construction standard to be applied is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*), in accordance with its regulation, 37 C.F.R. § 42.100(b). *See also Apple Inc. v. Firstface Co.*, No. 2021-1001, 2021 WL 4156323 at *1 (Fed. Cir. 2021).

The claims, therefore, should be “given their ordinary and customary meaning [and] that the ordinary and customary meaning of a claim term is the meaning that the term would have to a [POSITA] in question at the time of the invention, *i.e.*, as

of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1312-13 (internal citations omitted).

On July 10, 2024, the district court in related litigation (“Parallel Proceedings”) issued a claim construction order. *See* Ex. 2004. Patent Owner’s positions are consistent with each of the following constructions:

Claim Term	Court’s Construction
“high bandwidth connection”	“connection that is capable of communicating a plurality of separate steams”
“low bandwidth connection”	“connection that is capable of communicating only a single stream”
“mixing the plurality of monitored push-to-talk communication streams into a mixed communication stream such that the audio communications communicated in each of the monitored push-to-talk communication streams can be heard on the mixed stream” / “a mixer coupled to the interface and operable to mix the plurality of monitored push-to-talk communication streams into a mixed communication stream such that the audio communications communicated in each of the monitored push-to-talk communication streams can be heard on the mixed stream”	plain and ordinary meaning

Ex. 2004, 20–28; *see* Ex. 2002, ¶¶39–41.

C. Level of Ordinary Skill in the Art

At this stage of the proceeding, Patent Owner does not dispute the proposal provided by Petitioner as to who would qualify as a POSITA: an individual “would

have had at least a B.S. degree in electrical engineering, computer science, or a similar field, plus approximately three years of industry in networking or communication systems, in particular address [sic] interoperability between different types of networks and satellite communications.” Petition, 7-8; Ex. 2002, ¶¶, 28–30; *see* Ex. 2002, ¶¶1–19 (discussing the qualifications and materials considered of Dr. Akl).

III. THE PETITION FAILS TO ESTABLISH A REASONABLE LIKELIHOOD OF SUCCESS ON ANY CHALLENGED CLAIMS

A. Summary of the Alleged Prior Art

1. U.S. Patent No. 8,121,057 (“Botha”)

Botha was filed on October 29, 2004, and issued on February 21, 2012. Ex. 1004, Cover; Ex. 2002, ¶¶42–43. Botha was not published until its issuance on February 21, 2012. Ex. 1004, Cover; Ex. 2002, ¶43. Botha describes a system and method “for establishing a homogenized communications infrastructure that enables a variety of disparate communication devices to communicate transparently with each other over a computer data network.” Ex. 1004, Abstract; Ex. 2002, ¶43. Users are insulated from the type and implementation of all other participants’ devices. Ex. 1004, Cover; Ex. 2002, ¶43.

Botha discloses the bridging of various audio files from endpoints to channels. Ex. 1004, 13:24-27; Ex. 2002, ¶44. In some instances, an “N minus x” operation is

carried out on the data from the endpoint to the channel to efficiently aggregate the data flowing to that channel. Ex. 1004, 13:24-27; Ex. 2002, ¶44. Bridging can also occur without a channel by means of a gateway. Ex. 1004, 13:24-27; Ex. 2002, ¶44. Any one endpoint can tune into a channel, allowing disparate endpoints to communicate. Ex. 1004, 11:55-61; Ex. 2002, ¶44.

2. U.S. Patent Application Publication No. 2003/0182001 (“Radenkovic”)

Radenkovic was filed as a PCT application on August 9, 2001, and published on September 25, 2003. Ex. 1005, Cover; Ex. 2002, ¶45. Radenkovic “provides a method, software program and system for processing audio data streams (206) transmitted in a communications network.” Ex. 1005, Abstract; Ex. 2002, ¶45. Radenkovic discloses dynamic mixing of packets from sources to sinks such that some of the audio streams sent to a sink are mixed together and indistinguishable. Ex. 1005, ¶¶ [0017], [0049], [0053]; Ex. 2002, ¶45. The sinks receive some data as mixed data and some data in its native state as the data was sent from a source. Ex. 1005, ¶¶ [0017], [0049], [0053]; Ex. 2002, ¶45.

Mixing in Radenkovic is based on a priority that is designated to a corresponding audio data stream. Ex. 1005, ¶¶ [0029], [0063]; Ex. 2002, ¶46. In Radenkovic, the data streams designated as low priority are mixed into a single stream while data streams designated as high priority are left in their native states.

Ex. 1005, ¶¶ [0029], [0063]; Ex. 2002, ¶46. Radenkovic indicates that there is no need to know who is speaking on the low priority streams because that audio is less important than the audio on the streams designated as high priority. *See, e.g.*, Ex. 1005, [0051] (“The audio mixer component is arranged to average selected audio data streams to create a single combined data stream comprising the same number of bits as each unmixed data stream.”); Ex. 2002, ¶46.

3. U.S. Patent Application Publication No. 2002/0097746 (“McDonald”)

McDonald was filed December 1, 2000, and was published on July 25, 2002. Ex. 1007, Cover; Ex. 2002, ¶47. McDonald later issued on July 19, 2005. Ex. 1007, Cover; Ex. 2002, ¶47. McDonald describes a method of “call control in a packet-based communication system having consoles, distributed among one or more console sites, that are adapted to monitor talkgroup calls.” Ex. 1007, Abstract; Ex. 2002, ¶47.

McDonald describes the ability of console sites to hear audio (McDonald calls this “payload”) and, if necessary, repackage the audio to be sent back to endpoints. Ex. 1007, ¶ [0016]; Ex. 2002, ¶48. However, not all audio makes it to the console sites when there is too much traffic, due to bandwidth constraints. Ex. 1007, ¶¶ [0020], [0032]; Ex. 2002, ¶48. Priority assignments are used to determine which

streams make it to the console sites when traffic is too high for all streams to be transmitted. Ex. 1007, ¶¶ [0020], [0032]; Ex. 2002, ¶48.

4. U.S. Patent No. 7,580,706 (“Koren”)

Koren was filed on September 2, 2004, and was issued on August 25, 2009. Ex. 1006, Cover; Ex. 2002, ¶49. Koren describes “methods in an interoperability system for: notifying a user in a first communication system that a trunked radio system is ready to receive data” Ex. 1006, Abstract; Ex. 2002, ¶49. Koren describes a method for allowing a trunked radio system to communicate with a user on a full radio system by sending a series of signals between the trunked radio system and the full radio system denoting when the trunked radio system is ready to receive audio messages. Ex. 1006, 6:1-6; Ex. 2002, ¶49.

5. U.S. Patent Application Publication No. 2005/0239486 (“D’Avello”)

D’Avello was filed on April 5, 2004, and was published on October 27, 2005. Ex. 1011, Cover; Ex. 2002, ¶50. D’Avello describes systems for “controlling the audio broadcast to users participating in a group conversation.” Ex. 1011, Abstract; Ex. 2002, ¶50. D’Avello describes a system where a user diminishes a volume of certain other users based on their perceived importance. Ex. 1011, [0055]; Ex. 2002, ¶50. D’Avello is primarily concerned with communications in motor vehicles. Ex. 1011, [0031]; Ex. 2002, ¶50.

B. The Legal Framework for Assessing Unpatentability

“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*, 815 F.3d at 1363. The burden of persuasion in an IPR “never shifts to the patentee.” *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). Moreover, a petitioner should not “place the burden on [the Board] to sift through information presented by the Petitioners, determine where each element [of the Challenged Claims] is found in [the cited references], and identify any differences between the claimed subject matter and the teachings of [the cited references.]” *Google Inc. v. EveryMD.com LLC*, Case No. IPR2014-00347, Paper 9 at 25 (PTAB May 22, 2014).

A claim is unpatentable under 35 U.S.C. § 103 only 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). “To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

Finally, a petition seeking to establish obviousness based on more than one reference, as is the case in at least one of the Grounds here, “must articulate sufficient reasoning with rational underpinnings to combine the teachings.” *Wilson Elec., LLC v. Cellphone-Mate, Inc.*, Case No. IPR2018-01778, Paper 10 at 15 (PTAB Apr. 23, 2019) (citing *KSR Int’l*, 550 U.S. at 418). Specifically, “obviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.” *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (emphasis in original). “It does not suffice to simply be known. A reason for combining must exist.” *Virtek Vision International ULC v. Assembly Guidance Systems, Inc.*, Nos. 2022-1998, -2022, slip op. at 8 (Fed. Cir. Mar. 27, 2024).

C. Ground 1: The Petition Does Not Establish That Claims 1-7, 9, 13-19, 21, 25, 38, and 39 are Obvious Over Botha

The Petition fails to show that Botha teaches or discloses all the elements of independent claims 1, 13, 25, and 38. Ex. 2002, ¶51. As such, the Petition fails to demonstrate that the Challenged Claims are unpatentable based on obviousness.

1. Botha fails to disclose “mixing the plurality of monitored push-to-talk communication streams”

Independent claims 1, 13, 25, and 38 recite, in relevant part, “mixing the plurality of monitored push-to-talk communication streams into a mixed communication stream.” Claims 1, 13, 25, and 38 recite that *each* “push-to-talk communication *stream compris[es]* audio communications from a *plurality of users.*” ’249 Patent, clm. 1.¹ The Petition correctly points out that this claim element was one of the amendments that was key to the finding of allowability in during prosecution of the ’249 Patent. Petition, 6-7.

Botha discloses a precursor system that provides a bridge between different communication streams. Specifically, Botha discloses a bridge proxy (997):

bridging can allow different “talk groups” on two-way radio systems to communicate between each other—for example a UHF two-way radio system on one channel and a VHF two-way radio system on the other.

Ex. 1004, 15:43-46; Ex. 2002, ¶53.

¹ All emphasis herein added unless otherwise stated.

Bridging is not the same as mixing. Bridging is the simple transfer of data from one side of a bridge to another side of the bridge. Ex. 2002, ¶54. Mixing, on the other hand, involves the manipulation of data streams to construct a new data stream. *Id.*, ¶55. Botha's proxy (997) transmits communications from a UHF two-way radio system to a VHF two-way radio system. *Id.*, ¶55–56. Similarly, Botha's proxy (997) transmits communications from the VHF two-way radio system to the UHF two-way radio system. *Id.* Botha's proxy *bridges* the inoperability between VHF and UHF radio systems. *Id.*

Botha is silent about *mixing* communications from the VHF two-way radio system with communications from the UHF two-way radio system. *Id.*, ¶57. To mix, as recited in each of independent claims 1, 13, 25, and 38, the proxy (997) would have to individually receive communications from the VHF two-way radio system and communications from the UHF two-way radio system. *Id.*, ¶56. Botha's proxy (997) would then have to mix the communications and then transmit the mixed communications back to each of the VHF two-way radio system and the UHF two-way radio system. *Id.* Botha instead transmits the communications from the VHF two-way radio system to the UHF two-way radio system without any disclosure of those communications being mixed with the communications of the UHF two-way radio system. *Id.*, ¶57. Further, Botha transmits the communications from the UHF two-way radio system to the VHF two-way radio system without any disclosure of

those communications being mixed with the communications of the VHF two-way radio system. *Id.* Accordingly, Botha's proxy (997) is a bridge rather than a mixer. *Id.*, ¶56; Ex. 2003, 43:24-44:2 (“[T]he 997 call session proxy is to bridge and connect the two channel sets, channels A, B, C to the channel sets on the right D, E, F.”). Each communication stream from the VHF two-way radio system and the UHF two-way radio system remains a singular stream comprising a singular user communication. Ex. 2002, ¶57.

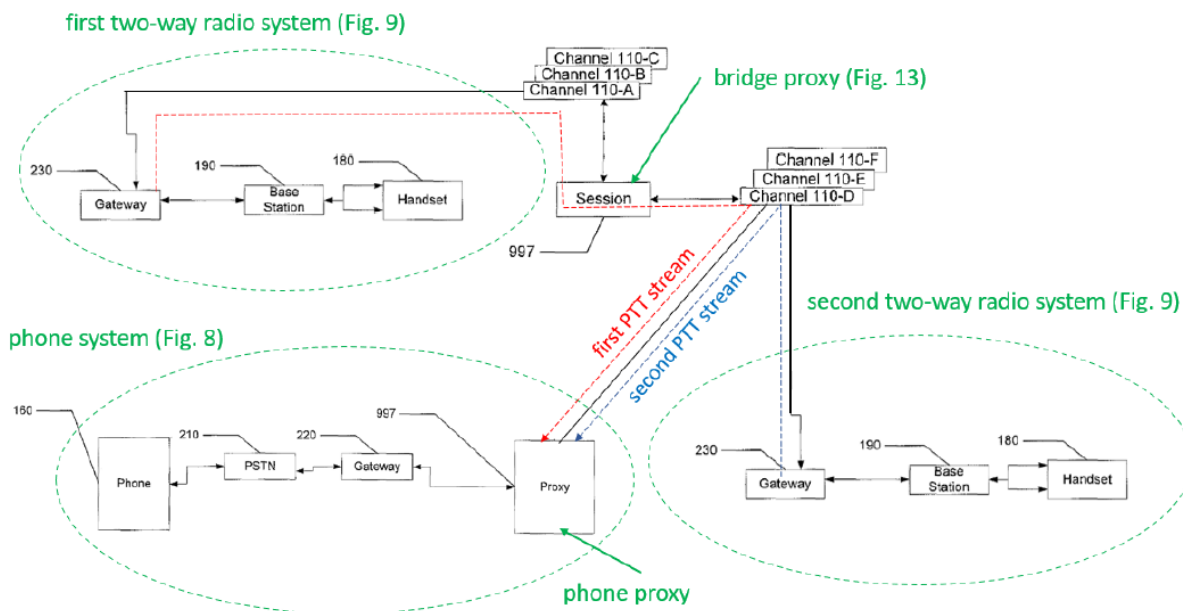
Recognizing this deficiency, the Petition instead relies on the “phone proxy” 997 of its manufactured system to purportedly teach the claimed mixing function. *See* Petition, 39 (“The phone proxy 997 connected to the phone 160, or alternatively the gateway 220 (the location of the mixing function is a design choice), creates an aggregate/mixed communication stream.”); Ex. 2002, ¶58. But the phone proxy also fails to render obvious this limitation. Ex. 2002, ¶59. The phone proxy does not mix a “plurality of monitored push-to-talk communication streams” with “each monitored push-to-talk communication stream comprising audio communications from a plurality of users.” *See* Section III.C.2; Ex. 2002, ¶59.

The Petition accordingly fails to establish that Botha discloses the mixing of a plurality of push-to-talk communication streams, where each push-to-talk communication stream comprises audio communications from a plurality of users.

Ex. 2002, ¶¶52, 60. For this further reason, Ground 1 fails and the Board should not find unpatentable at least the independent claims of the '249 Patent.

2. Botha fails to disclose “the plurality of monitored push-to-talk communication streams,” as recited in at least Claims 1, 13, 25, and 38

Independent claims 1, 13, 25, and 38 recite that each monitored push-to-talk communication stream comprises audio communications from a plurality of users. The Petition’s Botha System, however, is made up of communication streams from *singular* users:



Petition, 37; Ex. 2002, ¶¶61.

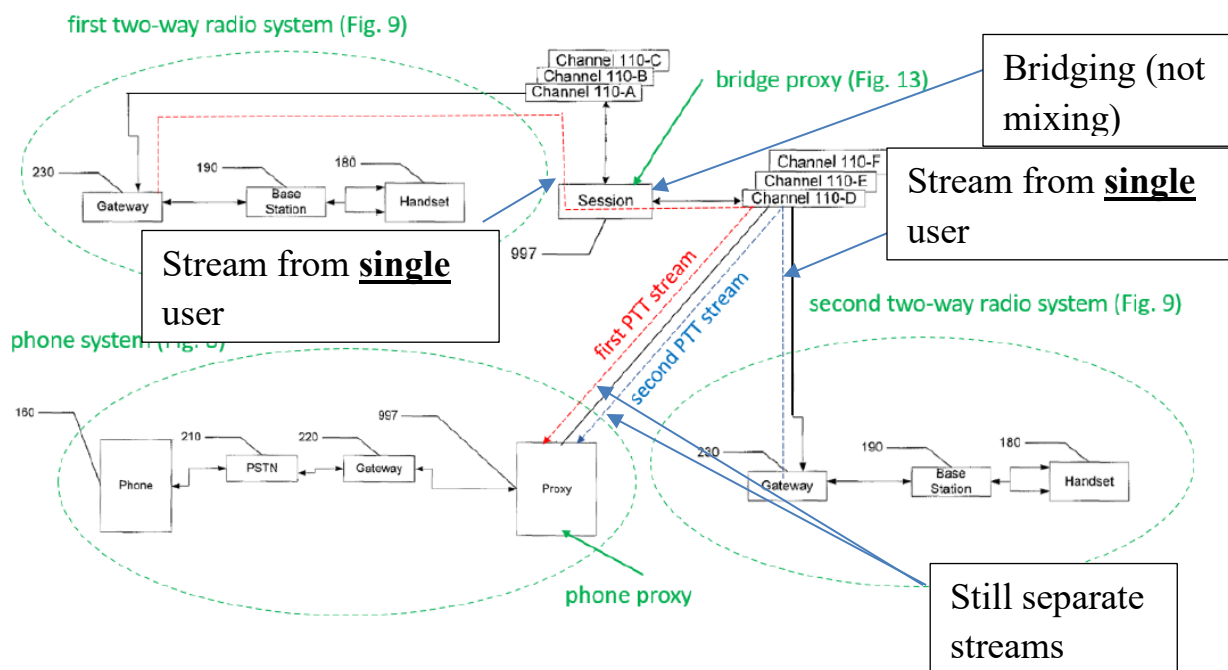
As shown above, Botha discloses combining audio from *individual* participants, not audio of a plurality of media streams that each contain a plurality of participants. Ex. 1004, 10:29-37; Ex. 2002, ¶¶62. Specifically, Botha discloses “the

combination of a variety of audio streams—*each from a different participant*—in such a way that each participant will hear all other participants’ voices except their own.” Ex. 2002, ¶62. Botha creates a mixed single audio stream that has audio from streams of *individual* participants. Ex. 2002, ¶62.

Botha discloses creating a single talk group by combining audio from the streams of individual participants. Ex. 2002, ¶63. To arrive at the elements of the independent claims, the Petition relies on the expert declaration to assert Botha discloses receiving and mixing at least two multicast streams. Petition, 36; Ex. 1002, ¶99. The Petition does not cite to any evidence from Botha that push-to-talk communication streams, comprising audio from a plurality of users, are mixed. Ex. 2002, ¶62. Botha instead discloses that all audio streams are mixed from individual participants on a given channel, “[r]ather, a ‘virtual’ channel of one example embodiment is present by virtue of participants’ packets that contain session identification (ID) or other ID information that identifies the particular multicast and/or unicast session or group that is associated with the participant.” Ex. 1004, 7:13-18; Ex. 2002, ¶63. In other words, Botha focuses on creating a single talk group from individual participants and does not disclose combining audio from different talk groups. Ex. 2002, ¶63.

This deficiency is readily apparent from the fictional Botha System itself. Ex. 2002, ¶64. For example, the fictional Botha System illustration keeps each

participant's communication separate and singular before mixing at the phone proxy (997 of the Fig. 8 embodiment). Ex. 2002, ¶64. The annotated fictional Botha System below demonstrates how the fictional Botha System, at the most, mixes multiple communications streams where each stream is a communication *from a singular user*:



Ex. 2002, ¶64 (Botha System, annotated).

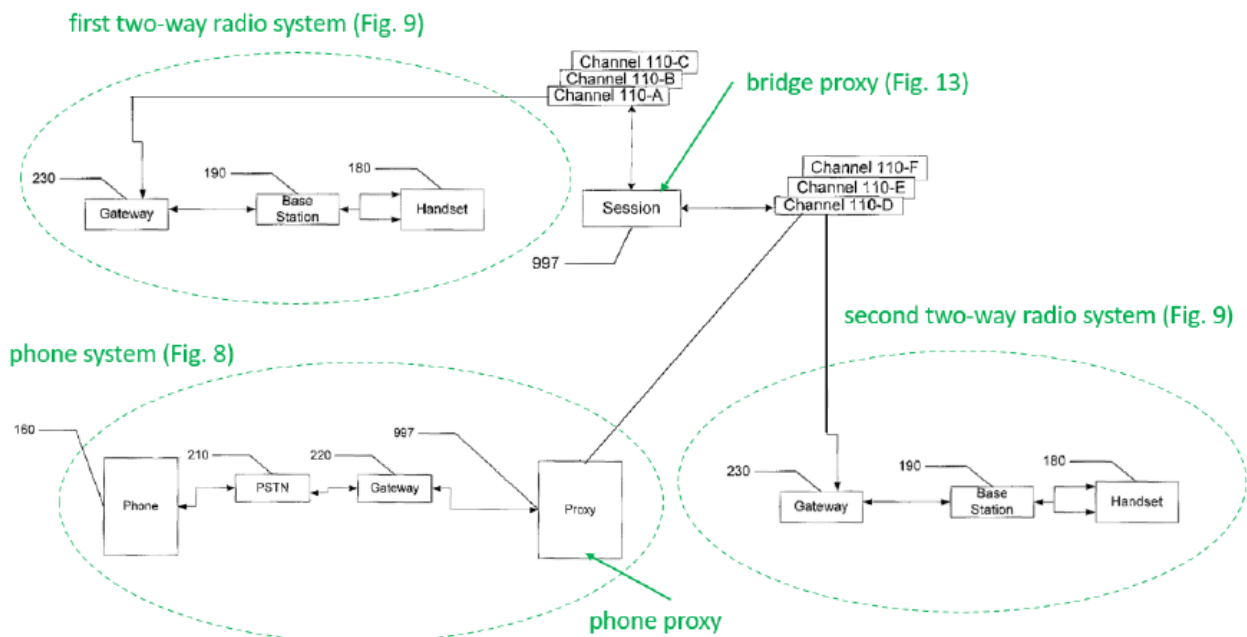
The first PTT stream (indicated in red) and the second PTT stream (indicated in blue) from the Petition and the Declaration of Petitioner's Expert (Ex. 1002) explicitly illustrates the phone proxy (997 of the Fig. 8 embodiment) receiving streams which comprise *communications from a singular user*, in direct contradiction to the streams mixed in the independent claims of the '249 Patent. Ex. 2002, ¶64–65.

An even further deficiency of the fictional Botha System illustration is that the second PTT stream is not shown reaching the bridge proxy (997 of the Fig. 13 embodiment) at any point, which would mean that a user of the first two-way radio system would not hear communications from the user of the second two-way radio system, as discussed previously. Ex. 2002, ¶66. Even if the Botha System did contemplate the second PTT stream going to the bridge proxy (997 of the Fig. 13 embodiment), the bridge proxy of the fictional Botha System cannot cure the deficiency of the communications streams only being communications from singular users, because the only function of the bridge proxy is bridging, which leaves the data streams distinct. Ex. 2002, ¶66; Ex. 2003, 43:24-44:2. Put simply, the bridge proxy of the fictional Botha System is irrelevant to the claims of the '249 Patent, because it does not change the amount of user communications on a single stream. Ex. 2002, ¶66.

The Petition accordingly fails to establish that Botha discloses the mixing of a plurality of push-to-talk communication streams, where each push-to-talk communication stream comprises audio communications from a plurality of users. Ex. 2002, ¶67. For this additional reason, Ground 1 fails to demonstrate that the independent claims are unpatentable.

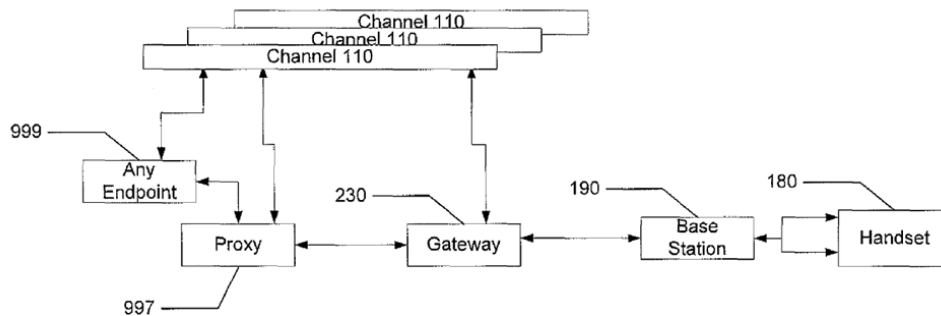
3. The Petition fails to disclose a motivation to combine the multiple embodiments of Botha

As discussed above, Botha's disclosure of bridging audio between different two-way radio systems is not the same as mixing audio together from those systems. To remedy this deficiency, the Petition creates a fictional system, referred to as the "Botha System." This fictional system is an amalgam of Figures 8, 9, and 13 from Botha, with multiple instances of Figure 9 included. Petition, 33-34. Botha fails to disclose a motivation to combine the separate embodiments to allow Petitioner to create the purported Botha System, which is reproduced below:



Petition, 34; Ex. 2002, ¶68.

As an initial matter, the fictional Botha System fails to include all the elements from Figure 9. Ex. 2002, ¶68. For convenience, the complete version of Figure 9 from Botha is reproduced below:



Ex. 1004, Fig. 9.

Figure 9 describes an embodiment for “Two-Way Radio Systems.” Botha discloses that this embodiment is used exclusively for two-way radio systems:

This stream, when transmitted by the gateway device 230 onto the medium, is treated by an *embodiment of the invention* as one of its own streams of data (i.e., a channel) and is therefore processed as if it came from one of its own, native, endpoints. In those circumstances where the gateway device 230 does not have suitable support for the channels, an embodiment of the invention may be installed on the gateway device 230 so as to add the logic so as to enable the gateway device 230 to communicate directly on the channels.

Ex. 1004, 14:2-11; Ex. 2002, ¶69.

The Botha System from the Petition omits the endpoints (999) and proxies (997) of Figure 9 for the first and second two-way radio systems. Ex. 2002, ¶70.

Botha discloses that the handset (180) (two-way radio) requires the use of the proxy (997) to enable communication with any endpoint (999). *Id.* Removing the proxy (997) from Figure 9 in the fictional Botha System removes the essential component that allows the handset (180) to communicate with the endpoint (999) for that particular embodiment. *Id.* According to Botha, the proxy (997) is required to be connected to the handset (180), via a gateway device (230), to allow the handset (180) to have “full support for channels.” Ex. 1004, 13:1-11; Ex. 2002, ¶71. Removing the proxy (997) from the purported Botha System prevents some handsets (180) from communicating via channels (110), and directly contradicts the use of Botha’s proxy (997) for this embodiment. Ex. 2002, ¶71.

In addition to Figure 9, Botha fails to disclose adding the embodiment of Figure 13 to create the Petition’s Botha System. *Id.*, ¶72. Botha describes Figure 13 as a separate embodiment regarding another use of the proxy (997) as a network bridge. Ex. 1004, 15:39-43; Ex. 2002, ¶72; *see* Ex. 2003, 51:9-19 (conceding that the proxy of Figures 9 and 23 have differences). It would not have been apparent to a POSITA at the time of filing the ’249 Patent how the proxy (997) of Botha Figure 13 could be combined with the proxy (997) disclosed in the embodiments of Botha Figures 8 and 9, let alone whether the embodiments of Figures 8 and 9 are combinable with the embodiment of Figure 13. Ex. 2002, ¶¶72–73.

The Petition asserts that Botha “explicitly” teaches combinations of the embodiments in Figures 8, 9, and 13. Petition, 32. To make this assertion, the Petition cites portions of Botha and the expert declaration (Ex. 1002). None of these citations from Botha, however, teach combining the separate embodiments. Instead, Botha discloses the ability of the embodiments to be carried out repetitively (Botha terms this as “recursively”). Botha states, in relevant part:

The *flow* may be of numerous, and potentially recursive, combinations of the *channels’* participation *in the operation being carried out on the device 997* including, but not limited to direct channel-to-channel streaming, aggregation of data from one or more channels to one or more channels, conversion of data from one or more channels to one or more channels, translation of data from one or more channels to one or more channels, or any inclusive or exclusive combination thereof.

Ex. 1004, 15:59-67.

None of the listed operations from the Botha citation above are relevant for combining the different embodiments of Botha such that a handset and a phone are shared on a channel. Ex. 2002, ¶73. The recursion is directed only to the operation of the proxy (997), which is not specific to the type of endpoint it services. *Id.* Rather, a POSITA would have understood “numerous” and “recursive” to mean that multiple iterations of information can be communicated to the channels by the proxy (997), not that any disparate embodiments would be combinable. *Id.*

The other portion of Botha cited for support of this combination fails for similar reasons. The Petition cites to the line, “[i]t is noted that an embodiment of the invention is itself recursive in nature, in that the output of an instance of the invention may be input to another instance of the invention.” Petition, 33. As stated above, a POSITA would have understood the term “recursive” to mean that the inventive aspect may be repeated, not that different embodiments of the Botha invention could be stripped of essential components and then combined. Ex. 2002, ¶73. The Petition also cites to 11:55-12:3 of Botha, which is a description of Figures 1 and 2, not relied upon in the Botha System displayed above, and only teaches the use of a single channel. Paragraph 94 of the expert declaration (Ex. 1002) does no more to show a motivation to combine, but rather reiterates the portions of Botha cited above to conclusively state that Botha teaches combinations of its embodiments. The Petition relies on mere conclusory statements, rather than articulating specific reasoning to support a finding that it would have been obvious to combine the embodiments. *In re Magnum Oil Tools*, 829 F.3d at 1380. Additionally, the Petition fails to show anything more than that the elements are “simply [] known. A reason for combining must exist.” *Virtek Vision*, slip op. at 8.

Botha in fact teaches away from centralized audio mixing recited in the ’249 Patent. Ex. 2002, ¶74. Botha discloses that the endpoints themselves provide audio mixing from different sources. *Id.* When an endpoint does not have the appropriate

mixing capability, Botha discloses the use of a proxy instead to perform the mixing for that endpoint:

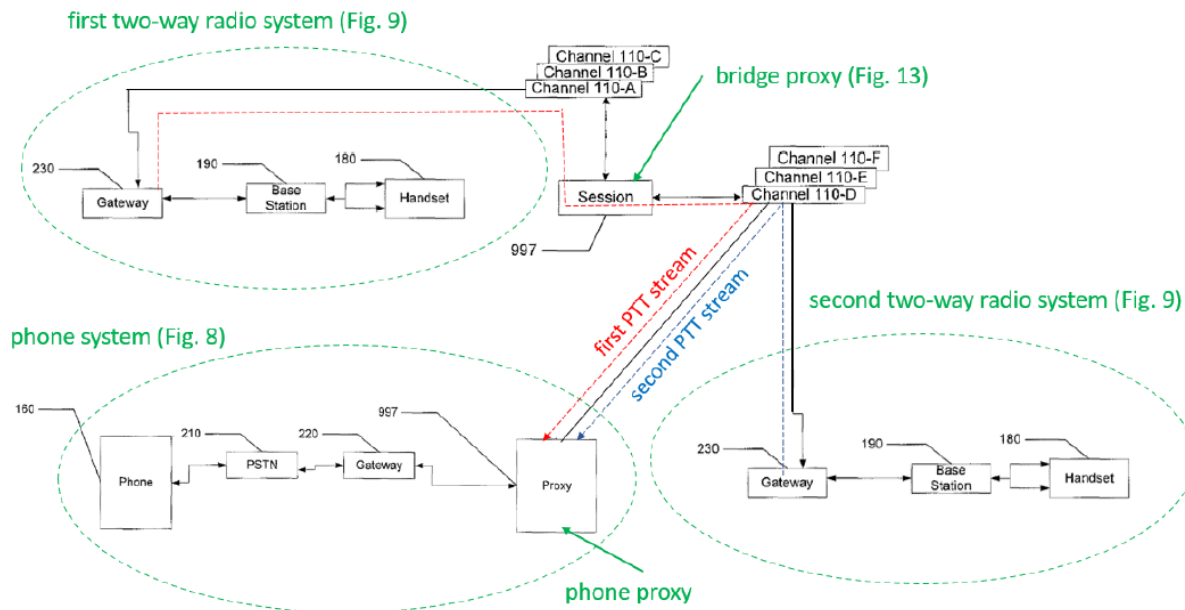
Assuming each of the endpoints have mixing capabilities of their own, a multicast environment therefore has no need for a centralized mixer and therefore no bandwidth duplication. In an embodiment of the invention, endpoints have this capability either directly available to them or proxied through a device or application that can perform the mixing on their behalf.

Ex. 1004, 6:24-30; Ex. 2002, ¶74.

The audio mixing is performed at the endpoint itself by the end device itself or a proxy acting on its behalf.

Ex. 1004, 7:10-13; Ex. 2002 ¶75.

The decentralized mixing of Botha is especially salient in view of the illustration of the fictional Botha System's performance, reproduced below for convenience:



The second PTT stream is not shown reaching the bridge proxy (997 of the Fig. 13 embodiment) at any point, which would mean that a user of the first two-way radio system would not hear communications from the user of the second two-way radio system. Ex. 2002, ¶66. A POSITA would not have been motivated to combine the system in this manner to reach the claimed aspects of the '249 Patent because the fictional Botha System would not allow the desired functionality of all users being able to hear communications from the other users. *Id.*

For at least the reasons above, there is no motivation to combine Figures 8, 9, and 13 to arrive at the fictional Botha System. Ex. 2002, ¶76. Botha discloses that proxies are provisioned for end devices themselves when those devices do not have mixing capability. Ex. 1004, 7:10-13; Ex. 2002, ¶74. For at least this additional

reason, Ground 1 fails and the Board should not find at least the independent claims of the '249 Patent unpatentable.

4. Botha fails to disclose a plurality of “virtual talk groups” (VTGs) as recited in at least Claims 2, 14, and 38 of the '249 Patent

The Petition uses the term “virtual talk group” to describe embodiments of Botha which are not equivalent to the virtual talk groups (“VTGs”) recited by the '249 Patent. Ex. 2002, ¶¶77–78. The '249 Patent describes VTGs as “represent[ing] interoperability of a *group of channels*” Ex. 1001 at 9:54-56. The '249 Patent then describes an example of a *single* VTG as comprising:

[A] conference or meeting of the following: (1) a ***channel*** or other multicast path used by certain users of a police department’s radio network, (2) a ***channel*** or other multicast path used by certain users of a fire department’s radio network, (3) a ***channel*** or other multicast path used by certain users of a corporation’s security radio network and (4) a ***plurality of users*** of IP-enabled PDAs or PCs.

Ex. 1001, 10:1-9. The '249 Patent contemplates a VTG as a layer higher than a channel. Ex. 2002, ¶78. The Petition, on the other hand, equates a virtual talk group to communications on a singular channel. Petition, 43 (“[Connecting] . . . two-way radio systems 190 . . . to *channel 110-A* . . . to form a *first virtual talkgroup*, and [connecting] . . . two-way radio systems 190 . . . on another *channel 110-D* . . . to form a *second virtual talkgroup*.”); Ex. 2002, ¶78. The “VTGs” of Botha, as stated

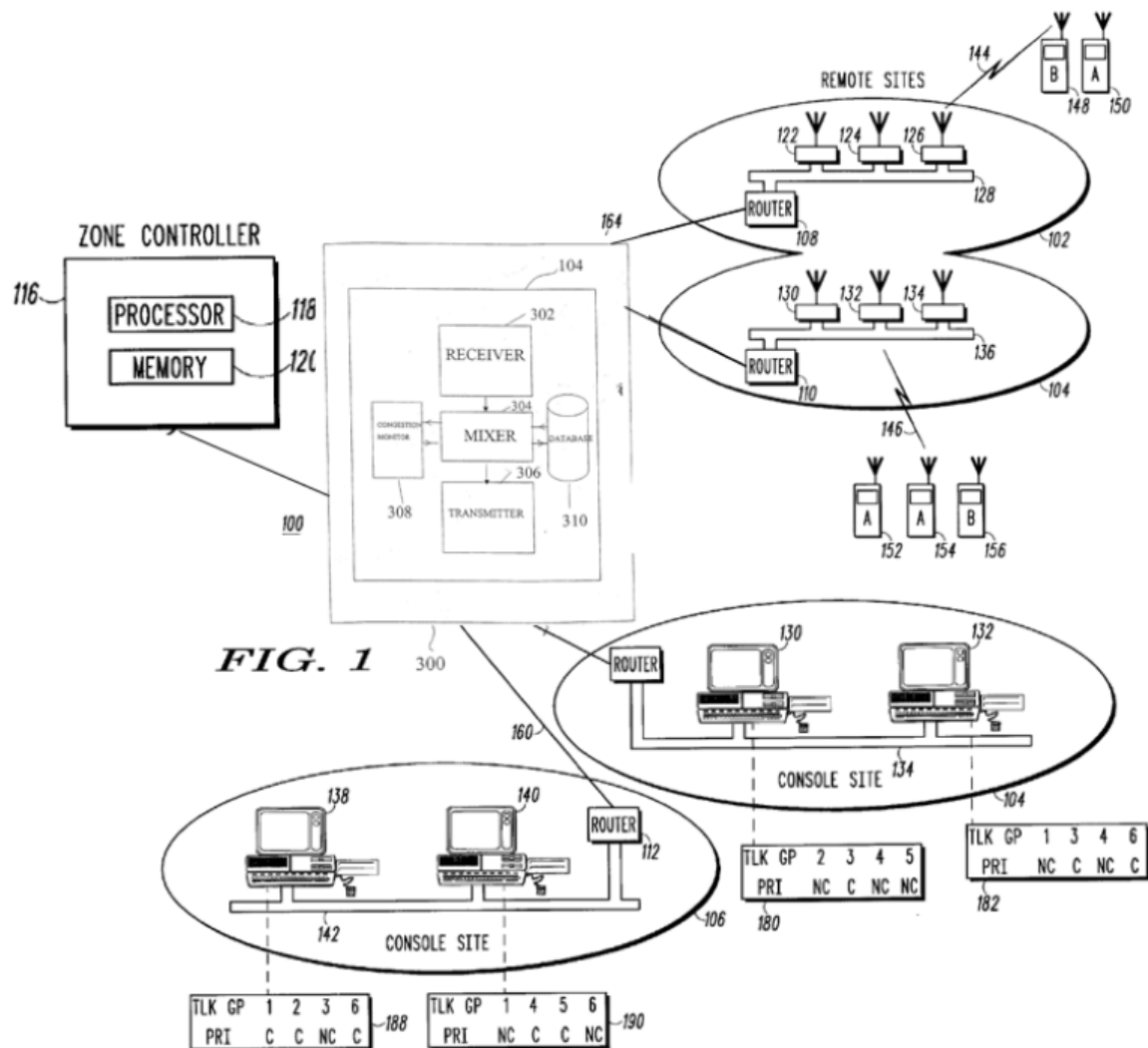
in the Petition, are not *groups* of channels, but rather the same as channels. Ex. 2002, ¶78. The Petition does not distinguish between a channel and a VTG, while the '249 Patent defines VTGs using a *group* of channels. Ex. 2002, ¶78. The “virtual talk groups” in the Petition are indistinguishable from a (non-virtual) “talk group” from a technical viewpoint. Ex. 2002, ¶78. Botha simply cannot be stretched to accommodate the features of Claims 2, 14, and 38 of the '249 Patent. The Petition has thus failed to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim.” *Dynamic Drinkware*, 800 F.3d at 1378.

D. Ground 2: The Petition Does Not Establish That Claims 1, 7-9, 12-13, 19-21, 24, 25, 38, and 39 are Obvious Over the Combination of Radenkovic and McDonald

The Petition fails to show that the combination of Radenkovic and McDonald discloses all the elements of independent claims 1, 13, 25, and 38. Ex. 2002, ¶79. As such, the Petition fails to demonstrate that the Challenged Claims are unpatentable based on obviousness.

- 1. The combination of Radenkovic and McDonald fails to disclose “receiving a plurality of [] push-to-talk communication streams . . . comprising audio communications from a plurality of users” and “mixing the plurality of [] push-to-talk communication streams” as is recited in Claim 1 of the ’249 Patent and the subject matter of which is also present in Claims 13, 25, and 38 of the ’249 Patent**

Similar to Botha, the combination of Radenkovic and McDonald fails to disclose “mixing the plurality of monitored push-to-talk communication streams into a mixed communication stream,” where *each* monitored push-to-talk communication *stream comprises* audio communications from a *plurality of users*. Ex. 2002, ¶80. Instead, the combination of Radenkovic and McDonald discloses that routers are employed to send singular user communications to a core router. *Id.* The combination of Radenkovic and McDonald discloses endpoints, each assigned to a talkgroup (A or B), which send audio to repeaters to be transmitted to the other endpoints in that talkgroup. *Id.*, ¶81. It appears that the communications of each endpoint (148-156) are discrete in the Radenkovic and McDonald combination when sent to the core router (114), or mixer of Radenkovic, rather than any stream comprising communications from a plurality of users, since the routers (108, 110) are associated with the repeaters (122-126, 130-134), which receive singular, one-sided communications from singular user endpoints (148-156). *Id.* The fictional Mixed McDonald System of the Petition is reproduced below, for convenience:



Petition, 57.

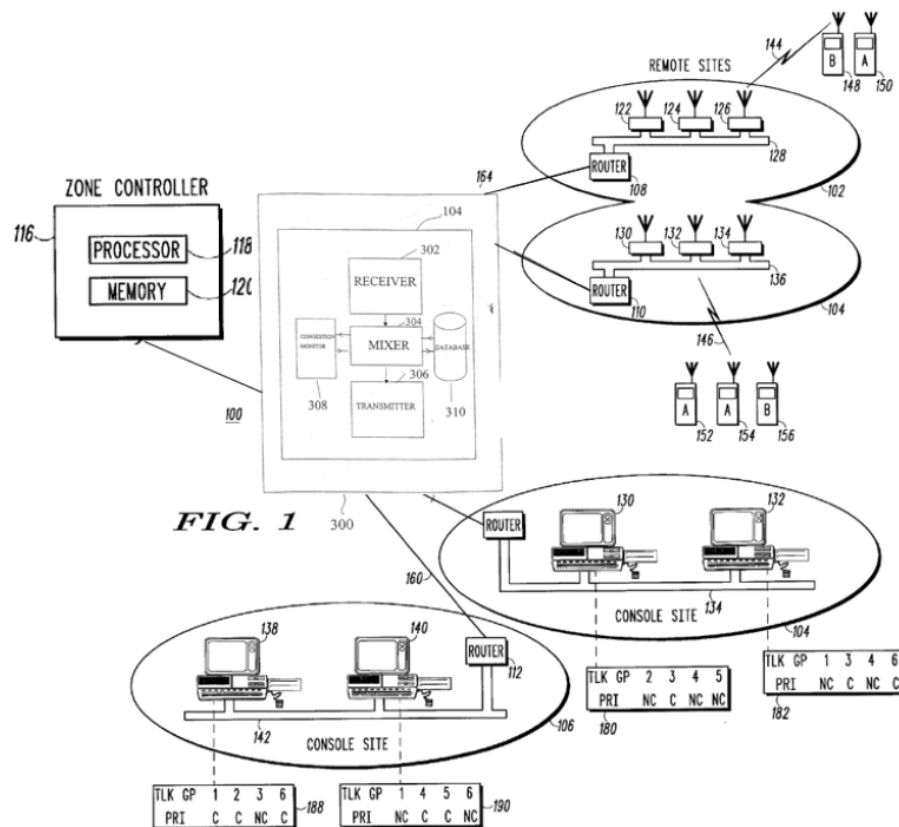
It is unclear *how* the communication data from the communication units (148, 150, 152, 154, 156) is transferred by the repeaters (122, 124, 126, 130, 132, 134) or the routers (108, 110) in the fictional Mixed McDonald System from the description of McDonald. Ex. 2002, ¶82. The Petition and the Declaration of Petitioner's Expert do not address how the data is transferred either. *Id.* A POSITA at the time of the filing of the '249 Patent would have considered the most likely explanation for how

the data is transferred is that individual packets of single user communications are sent one at a time over the communications lines connecting these features. *Id.* This is especially likely in light of the McDonald description, which states that the “routers 108-114 are specialized or general purpose computing devices configured to receive IP packets or datagrams from a particular host in the communication system 100 and relay the packets to another router or another host” Ex. 1007, [0018]; Ex. 2002, ¶82. When these communications reach the mixer of Radenkovic in the fictional Mixed McDonald System, they are still individual data packets from individual users. Ex. 2002, ¶82.

Radenkovic and McDonald do not receive a plurality of *communications streams* comprising communications from a *plurality of users*. Ex. 2002, ¶83. The data is individual, and all sent alongside each other to the mixer, rather than comprising communications streams that include communications from a plurality of users, while at the same time the talkgroups are sending discrete audio communications back and forth over the repeaters. Ex. 2002, ¶¶80–83. The Petition has thus failed to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim.” *Dynamic Drinkware*, 800 F.3d at 1378. For at least this reason, the independent claims of the ’249 Patent is patentable.

2. The Petition fails to disclose a motivation to combine the teachings of Radenkovic and McDonald, and the combination of Radenkovic and McDonald has unintended results that would discourage the combination

As discussed above, Radenkovic and McDonald fail to disclose “mixing the plurality of monitored push-to-talk communication streams into a mixed communication stream,” where *each* monitored push-to-talk communication *stream* comprises audio communications from a *plurality of users*. To cure the deficiencies of Radenkovic and McDonald, the Petition creates a fictional system, referred to as the “Mixed McDonald System.” Petition, 52 to 56; Ex. 2002, ¶84. The Mixed McDonald System is reproduced below:



Petition, 57.

The proposed combination of Radenkovic and McDonald creates an unworkable, inconsistent communication system where a mixed stream of non-critical talk groups would be incoherent to a dispatcher monitoring the stream. Ex. 2002, ¶85. Despite the incompatibility of Radenkovic and McDonald, the Petition conclusively states that it would have been obvious to a POSITA to incorporate the mixing technique of Radenkovic into the McDonald disclosure, which suffered from not transmitting all audio streams to a dispatcher console (132-140). Petition, 54. No motivation is given for this combination besides listing that both of these elements are separately present in the cited references. Petition, 54; Ex. 1002, ¶¶ 138-39. The Petition thus fails to show anything more than that the elements are “simply [] known. A reason for combining must exist.” *Virtek Vision*, slip op. at 8.

The Petition relies on Radenkovic’s mixers for mixing audio streams, “e.g. the mixer 304 of [Figure] 3 in Radenkovic.” Petition, 62. In addition, the Petition relies on McDonald for monitoring communication streams. Petition, 60-61.

McDonald discloses that certain streams are assigned a *high priority* such that those streams are transmitted over lower priority streams. Ex. 1007, ¶ [0026]; Ex. 2002, ¶¶86–87. In the combined fictional Mixed McDonald System, the Petition argues that McDonald would use Radenkovic’s mixers to allow *all* communication streams to be transmitted, rather than only transmitting high priority streams when bandwidth is limited. Petition, 62. The Petition further states:

In situations where there was not sufficient bandwidth to transmit audio streams for all talkgroups selected by a dispatcher, a POSITA would have found it obvious to dynamically mix two or more selected non-critical talkgroup audio streams into a single audio stream as taught by Radenkovic so that the mixed audio stream including all audio from both selected streams could be transmitted to a console 132-140 for passive monitoring by the dispatcher.

Petition, 54.

Mixing audio streams would not have been useful in the Petition's fictional Mixed McDonald System. For instance, mixing audio from different push-to-talk groups would have confused users as to which group the audio was coming from. Ex. 2002, ¶88. For passive monitoring, mixed audio might confuse McDonald's dispatcher since the dispatcher would not know to which group the mixed audio is associated. Ex. 2002, ¶88. McDonald instead needs to keep the audio separate for active and passive users to know what is going on with each separate group. Ex. 1007, ¶ [0026]; Ex. 2002, ¶88. Specifically, McDonald states:

For example, at site 104, talkgroups 1, 2, 4 and 5 are non-critical because neither of consoles 130, 132 have designated them as critical.

Id.

According to the Petition, McDonald would mix talkgroups 1, 2, 4, and 5 in the fictional Mixed McDonald System. Petition, 62; Ex. 2002, ¶89. This would be

problematic since the talkgroups would be intermixed, creating confusion between the users. Ex. 2002, ¶89. For instance, when a non-priority speaker on a mixed stream of the fictional Mixed McDonald System becomes important, the dispatcher will not immediately be able to designate that speaker as critical (no longer mixed) because the dispatcher will first need to distinguish who is the speaker without any mechanism for identifying the speaker. *Id.*

Radenkovic's system is envisioned for videoconferencing where there are simultaneous speakers. Ex. 1005, ¶ [0002]. Everyone in Radenkovic's system knows they are in the same meeting such that mixing audio from multiple speakers makes sense. In contrast, mixing audio in this manner would make McDonald's call control system inoperable since McDonald's system needs to know the identities of users. Ex. 1007, ¶ [0011]; Ex. 2002, ¶90.

Further, in McDonald, certain consoles at the same site may have different designations for the same user communication. Ex. 2003, 29:23-5 (explaining that Figure 1 shows "talkgroups are given the different priorities...for given talkgroups"); Ex. 2002, ¶91. For example, in the fictional Mixed McDonald System, two different consoles (138, 140) at the same console site (106), which share the same router (112) have different designations for talk group 1. Ex. 2002 ¶91. The first console (138) has designated talk group 1 as critical (C), while the second console (140) has designated talk group 1 as non-critical (NC). *Id.*, ¶¶91–92. If the

router (112) is receiving a mixed stream of data from the mixer of Radenkovic, there will be no practical way for the fictional Mixed McDonald System to mix talk group 1 for the second console (140), while simultaneously maintaining the unmixed talk group 1 stream for the first console (138). *Id.*, ¶92. Therefore, a POSITA would not have found the mixer of Radenkovic useful in combination with the system of McDonald to arrive at the claimed features of the '249 Patent. Ex. 2002, ¶92.

Thus, the Petition has failed to “articulate sufficient reasoning with rational underpinnings to combine the teachings.” *Wilson Elec., LLC v. Cellphone-Mate, Inc.*, Case No. IPR2018-01778, Paper 10 at 15 (PTAB Apr. 23, 2019) (citing *KSR Int’l*, 550 U.S. at 418). For this additional reason, the independent claims of the '249 Patent should not be found unpatentable.

3. The Petition entirely fails to give reasoning as to why the “Mixed McDonald System” renders Claims 38-39 obvious

The Petition states that Claims 38 and 39 of the '249 Patent are allegedly obvious based on Ground 2. Petition, 52. However, Ground 2 *never addresses* Claim 38 or 39. Petition, 52-67. The Petition has thus failed to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim.” *Dynamic Drinkware*, 800 F.3d at 1378.

E. Ground 3: The Petition Does Not Establish That Claims 2-6, 10-11, 14-18, and 22-23 are Obvious Over Radenkovic, McDonald, and Koren

As discussed above, independent Claims 1, 13, 25, and 38 are not rendered obvious over the combination of Radenkovic and McDonald. For this ground, Koren is not relied upon to dispute the patentability of the independent claims. Claims 2-6, 10-11, 14-18, and 22-23 each, therefore, depend from a patentable base claim and as such are patentable for that reason and for further patentably distinct features therein. Ex. 2002, ¶93. Additionally, the ground fails to demonstrate that at least Claims 2 and 14 of the '249 Patent are obvious. *Id.*

1. The combination of Radenkovic, McDonald, and Koren fails to disclose the elements of claims 2 and 14, at least the element that “each of the push-to-talk communications streams comprises communications from a respective virtual talk group”

This combination suffers from a misunderstanding of what makes up a virtual talk group (VTG), similar to the misunderstanding of the fictional Botha System of Ground 1. *See supra*, Section III.C.4. Here again, the Petition equates a channel to a VTG. Ex. 2002, ¶94. The Petition states that Fig. 2 of Koren, when input and viewed in Fig. 1 of Koren (both reproduced below as shown in the Petition), discloses each push-to-talk communications stream comprising communications from a respective VTG. Petition, 71.

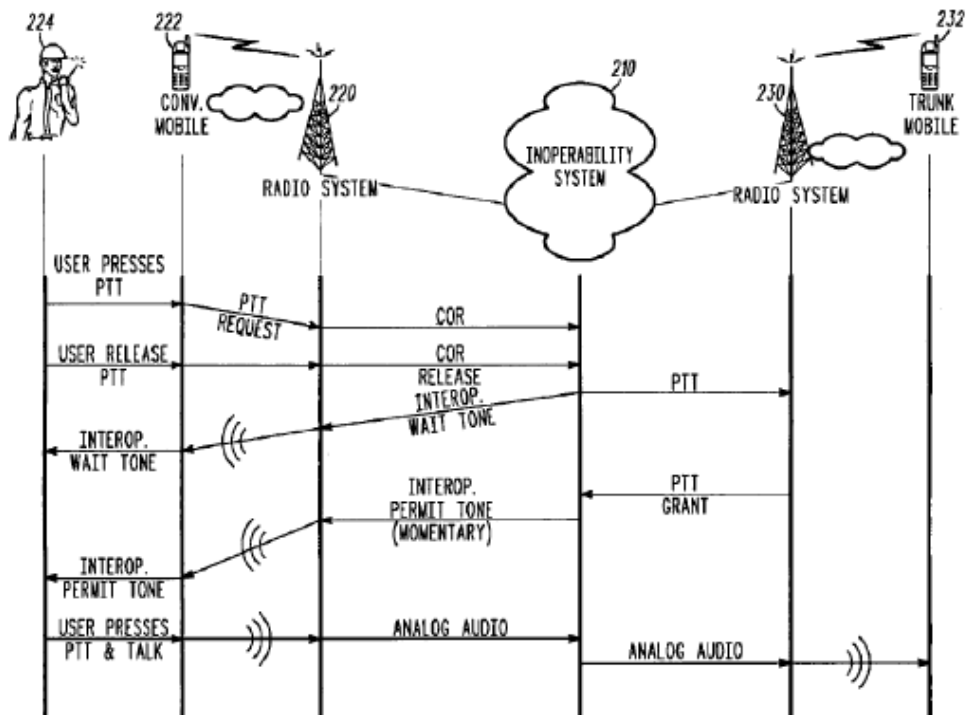
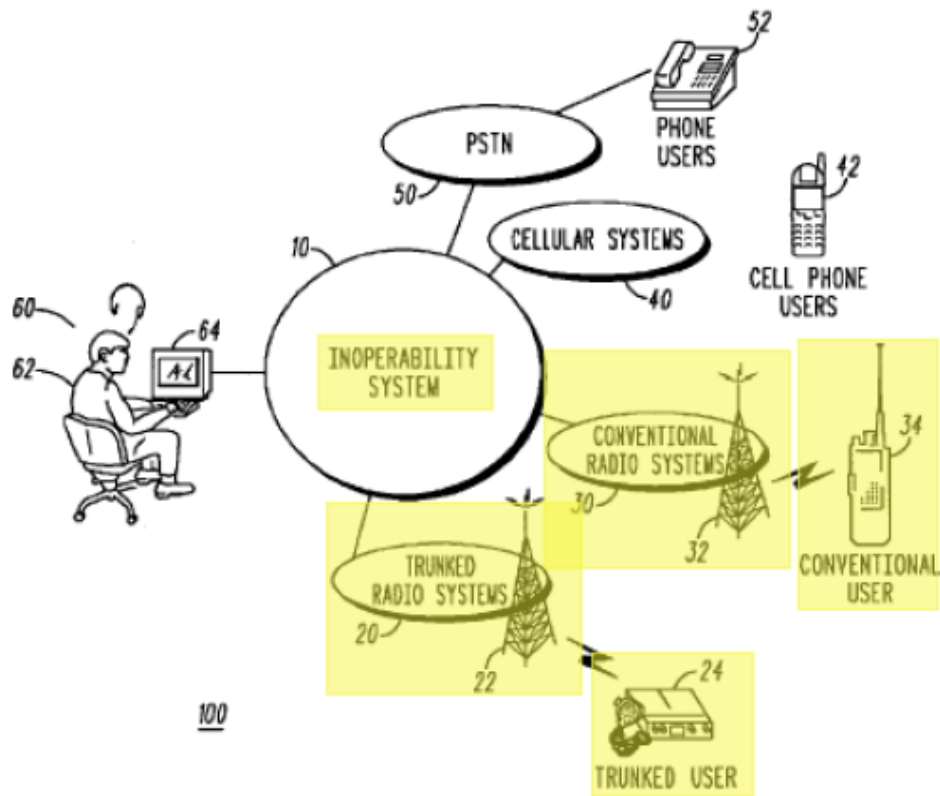


FIG. 2

Id. (highlights in original). However, as previously demonstrated, the VTG described in the '249 Patent refers to “represent[ing] interoperability of a *group of channels*” Ex. 1001 at 9:54-56; Ex. 2002, ¶95. The Petition only describes at most a *single* VTG making up the entirety of the system because it is a singular instance of interoperability (arguably not interoperability of a group of *channels*, even). *Id.* Koren simply fails to contemplate the interoperability of channels needed to comprise a single VTG of the '249 Patent, let alone the multiple VTGs which must be mixed to arrive at Claims 2 and 14 of the '249 Patent. *Id.* The '249 Patent recites a *plurality* of communications streams (Claim 1) that comprise VTGs (Claim 2), which means there is a plurality of VTGs recited in Claim 2 of the '249 Patent. *Id.* There is no disclosure as to how multiple VTGs can be monitored and mixed into a single stream able to be heard by all endpoints in the Petition using Koren. *Id.* The Petition has thus failed to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim.” *Dynamic Drinkware*, 800 F.3d at 1378.

IV. CONCLUSION

Petitioner has failed to demonstrate obviousness with respect to any of the claims challenged in the Petition, and, therefore, the Board should find each of the Challenged Claims not unpatentable.

Dated: November 22, 2024

Respectfully submitted by

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CLAIM APPENDIX OF THE CHALLENGED CLAIMS

- [1pre] A method for providing a push-to-talk proxy media service, comprising:
 - [1a] receiving a plurality of monitored push-to-talk communication streams over a high bandwidth connection, each monitored push-to-talk communication stream comprising audio communications from a plurality of users;
 - [1b] mixing the plurality of monitored push-to-talk communication streams into a mixed communication stream such that the audio communications communicated in each of the monitored push-to-talk communication streams can be heard on the mixed stream; and
 - [1c] transmitting the mixed communication stream to a user endpoint over a low bandwidth connection.
- [2] The method of claim 1, wherein each of the push-to-talk communication streams comprises communications from a respective virtual talk group comprising a plurality of endpoints of different communication networks.
- [3pre] The method of claim 2:
 - [3a] wherein the mixed communication stream comprises a first communication of a first virtual talk group; and
 - [3b] further comprising transmitting an identification of the first virtual talk group when transmitting the mixed communication stream comprising the first communication.
- [4] The method of claim 2, wherein the plurality of monitored push-to-talk communication streams are received over the high bandwidth connection from an interoperability system operable to configure each virtual talk group to facilitate communications among its member endpoints.

- [5] The method of claim 2, wherein at least one of the virtual talk groups comprises a plurality of endpoints of different communication networks whose communications are mapped to a multicast IP address or SIP dialed nailed connection.
- [6] The method of claim 2, wherein at least one of the virtual talk groups comprises a plurality of endpoints of different communication networks whose communications are bridged.
- [7] The method of claim 1, wherein receiving a plurality of monitored push-to-talk communication streams comprises receiving eight monitored push-to-talk communication streams.
- [8pre] The method of claim 1, further comprising:
 - [8a] receiving from the user endpoint volume instructions associated with at least one of the push-to-talk communication streams; and
 - [8b] adjusting the volume of the at least one of the push-to-talk communication streams according to the instructions when mixing the plurality of monitored push-to-talk communication streams into a mixed communication stream.
- [9pre] The method of claim 1:
 - [9a] further comprising receiving from the user endpoint a selection of a group of the push-to-talk communication streams for mixing; and
 - [9b] wherein mixing the plurality of monitored push-to-talk communication streams into a mixed communication stream comprises mixing the selected group of the push-to-talk communication streams into a mixed communication stream.
- [10pre] The method of claim 2, further comprising receiving from the user over the low bandwidth connection:
 - [10a] a user communication; and
 - [10b] a selection of a plurality of virtual talk groups of the respective virtual talk groups; and

- [10c] transmitting the received user communication to the selected plurality of virtual talk groups over the high bandwidth connection.
- [11] The method of claim 10, further comprising transmitting to the user endpoint an identification of the selected plurality of virtual talk groups when transmitting the received user communication to the selected plurality of virtual talk groups.
- [12] The method of claim 1, further comprising presenting functionality indicators for a user at the user endpoint in the same manner as if the plurality of monitored push-to-talk communication streams had been individually transmitted over a high bandwidth connection to the user endpoint and mixed at the user endpoint for the user.
- [13pre] A system for providing a push-to-talk proxy media service, comprising:
 - [13a] an interface operable to receive a plurality of monitored push-to-talk communication streams over a high bandwidth connection, each monitored push-to-talk communication stream comprising audio communications from a plurality of users;
 - [13b] a mixer coupled to the interface and operable to mix the plurality of monitored push-to-talk communication streams into a mixed communication stream such that the audio communications communicated in each of the monitored push-to-talk communication streams can be heard on the mixed stream; and
 - [13c] a processor operable to transmit the mixed communication stream to a user endpoint over a low bandwidth connection.
- [14] The system of claim 13, wherein each of the push-to-talk communication streams comprises communications from a respective virtual talk group comprising a plurality of endpoints of different communication networks.
- [15pre] The system of claim 14:

- [15a] wherein the mixed communication stream comprises a first communication of a first virtual talk group; and
- [15b] wherein the processor is further operable to transmit an identification of the first virtual talk group when transmitting the mixed communication stream comprising the first communication.
- [16] The system of claim 14, wherein the plurality of monitored push-to-talk communication streams are received over the high bandwidth connection from an interoperability system operable to configure each virtual talk group to facilitate communications among its member endpoints.
- [17] The system of claim 14, wherein at least one of the virtual talk groups comprises a plurality of endpoints of different communication networks whose communications are mapped to a multicast IP address or SIP dialed nailed connection.
- [18] The system of claim 14, wherein at least one of the virtual talk groups comprises a plurality of endpoints of different communication networks whose communications are bridged.
- [19] The system of claim 13, wherein an interface operable to receive a plurality of monitored push-to-talk communication streams comprises an interface operable to receive eight monitored push-to-talk communication streams.
- [20pre] The system of claim 13, wherein:
 - [20a] the interface is further operable to receive from the user endpoint volume instructions associated with at least one of the push-to-talk communication streams; and
 - [20b] the mixer is further operable to adjust the volume of the at least one of the push-to-talk communication streams according to the instructions when mixing the plurality of monitored push-to-talk communication streams into a mixed communication stream.
- [21pre] The system of claim 13, wherein:

- [21a] the interface is further operable to receive from the user endpoint a selection of a group of the push-to-talk communication streams for mixing; and
- [21b] a processor operable to mix the plurality of monitored push-to-talk communication streams into a mixed communication stream comprises a processor operable to mix the selected group of the push-to-talk communication streams into a mixed communication stream.
- [22pre] The system of claim 14, wherein:
 - [22a] the interface is operable to receive from the user over the low bandwidth connection:
 - [22b] a user communication; and
 - [22c] a selection of a plurality of virtual talk groups of the respective virtual talk groups; and
 - [22d] the processor is operable to transmit the received user communication to the selected plurality of virtual talk groups over the high bandwidth connection.
- [23] The system of claim 22, wherein the processor is further operable to transmit to the user endpoint an identification of the selected plurality of virtual talk groups when transmitting the received user communication to the selected plurality of virtual talk groups.
- [24] The system of claim 13, wherein the processor is further operable to present functionality indicators for a user at the user endpoint in the same manner as if the plurality of monitored push-to-talk communication streams had been individually transmitted over a high bandwidth connection to the user endpoint and mixed at the user endpoint for the user.
- [25pre] A system for providing a push-to-talk proxy media service, comprising:

- [25a] means for receiving a plurality of monitored push-to-talk communication streams over a high bandwidth connection, each monitored push-to-talk communication stream comprising audio communications from a plurality of users;
- [25b] means for mixing the plurality of monitored push-to-talk communication streams into a mixed communication stream such that the audio communications communicated in each of the monitored push-to-talk communication streams can be heard on the mixed stream; and
- [25c] means for transmitting the mixed communication stream to a user endpoint over a low bandwidth connection.
- [38pre] A method for providing a push-to-talk proxy media service, comprising:
 - [38a] receiving from a user endpoint over a low bandwidth connection:
 - [38b] a user communication; and
 - [38c] a selection of a plurality of virtual talk groups, each virtual talk group comprising a push-to-talk communication stream comprising communications from a plurality of endpoints of different communication networks, each push-to-talk communication stream comprising audio communications from a plurality of users; and
 - [38d] transmitting the received user communication to each of the selected plurality of virtual talk groups over a high bandwidth connection.
- [39] The method of claim 38, further comprising transmitting to the user endpoint an identification of the selected plurality of virtual talk groups when transmitting the received user communication to the selected plurality of virtual talk groups.

CERTIFICATE OF SERVICE

I hereby certify that on November 22, 2024, a true and correct copy of the foregoing was caused to be served electronically on the following counsel of record for Petitioner at the following email addresses:

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