Trials@uspto.gov
571-272-7822

Paper 10
Entered: January 9, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD, and
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner,

v.

STATON TECHIYA, LLC,
Patent Owner.

IPR2022-01106
Patent 11,039,259 B2

Before NATHAN A. ENGELS, MONICA S. ULLAGADDI, and RUSSELL E. CASS, *Administrative Patent Judges.*

CASS, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. Background

Samsung Electronics Co., Ltd, and Samsung Electronics America, Inc. ("Petitioner") filed a Petition requesting an *inter partes* review of claims 1–6, 11, 12, 15, and 16 (the "challenged claims") of U.S. Patent No. 11,039,259 B2 (Ex. 1001, "the '259 patent"). Paper 3, 1 ("Pet."). Patent Owner filed a Preliminary Response. Paper 7 ("Prelim. Resp."). With our permission, Petitioner filed a Preliminary Reply (Paper 8 ("Prelim. Reply")) and Patent Owner filed a Preliminary Sur-reply (Paper 9 ("Prelim. Sur-reply")).

An *inter partes* review may not be instituted unless it is determined that "the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314 (2018); *see also* 37 C.F.R § 42.4(a) (2021) ("The Board institutes the trial on behalf of the Director."). The reasonable likelihood standard is "a higher standard than mere notice pleading," but "lower than the 'preponderance' standard to prevail in a final written decision." *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 13 (PTAB Dec. 20, 2019) (precedential).

For the reasons provided below and based on the record before us, we determine that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing the unpatentability of at least one of the challenged claims. Patent Owner has not persuaded us that we should exercise our discretion to deny institution of trial. Accordingly, we institute an *inter partes* review on all grounds set forth in the Petition.

B. Real Parties in Interest

Petitioner states that the real parties in interest are Samsung Electronics Co., Ltd, and Samsung Electronics America, Inc. Pet. 1, 76. Patent Owner states that Staton Techiya, LLC and Synergy IP Corporation are the real parties in interest. Paper 5, 1.

C. Related Proceedings

The parties state that the '259 patent was asserted in *Staton Techiya, LLC v. Samsung Electronics Co., Ltd.*, No. 2:21-cv-00053 (E.D. Tex.), which was filed on February 14, 2022 (the "00053 District Court Case"). Pet. 76; Paper 5, 1. Patent Owner also states that the 00053 District Court case was consolidated with *Staton Techiya, LLC et al. v. Samsung Elecs. Co., Ltd. et al.*, Case No. 2:21-cv-413 (E.D. Tex.) (the "413 District Court Case").

D. The '259 Patent (Ex. 1001)

The '259 patent is directed to a method and system for sound monitoring over a network. Ex. 1001, code (54). An overview of a mobile communication environment used in the invention is shown in Figure 1, reproduced below.

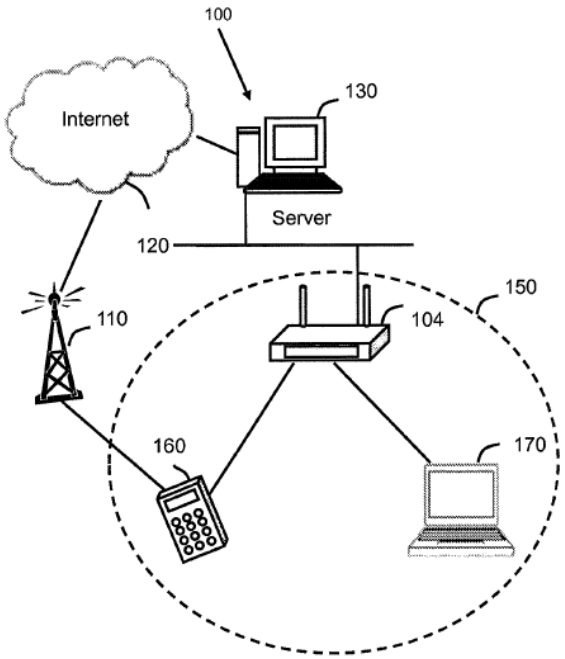


FIG. 1

Figure 1 of the ’259 patent shows a mobile communication environment used with the invention. Ex. 1001, Fig. 1, 2:10.

As shown in Figure 1, mobile communication environment 100 includes mobile device 160 that can communicate with base receiver 110 using a standard communication protocol. Ex. 1001, 3:40–48. Mobile device 160 can be “a cell phone, a personal digital assistant, a portable music player, a laptop computer, or any other suitable communication device.” *Id.* at 4:16–18. Base receiver 1001 can connect mobile device 160 over a packet switched link to the Internet 120, which can support application services and service layers for providing media or content to mobile device 160. *Id.* at 3:51–55. Mobile device 160 can also establish connections with a server 130 on the network and with another mobile device 170 for exchanging data and information. *Id.* at 3:57–60.

In one embodiment, mobile device 160 can open a communication channel to server 130 and stream captured audio to the server. *Id.* at 6:23–

25. The audio stream may be analyzed at server 130 to determine if any recognized sounds are present in the audio stream. *Id.* at 6:25–27. Server 130 may send a message back to mobile device 160 identifying the sounds recognized in the audio stream. *Id.* at 6:28–30.

Figure 8 of the '259 patent, reproduced below, depicts a method for sound monitoring, measuring, and reporting over a network using mobile devices in accordance with one embodiment of the '259 patent.

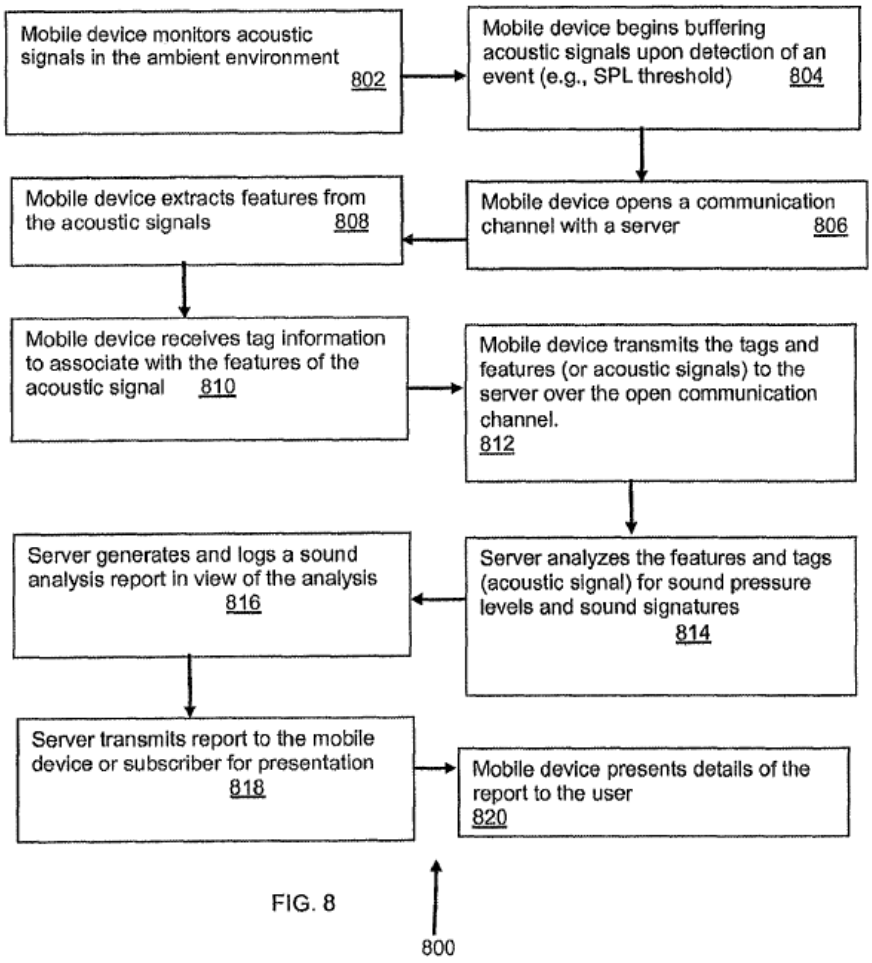


Figure 8 of the '259 patent depicts a method for sound monitoring, measuring, and reporting over a network using mobile devices. Ex. 1001, Fig. 8, 2:31–33; 12:6–8.

As shown in Figure 8, at step 802, the mobile device monitors acoustic signals in the ambient environment. Ex. 1001, 12:14–15. The mobile

device's microphone "can actively analyze acoustic signals in the environment and begin processing of the acoustic signals upon detection of a trigger event." *Id.* at 12:15–17. In step 804, "mobile device 160 begins buffering the acoustic signals" when "a trigger event occurs." *Id.* at 12:18–20. A "trigger event" is "is an event that initiates the collection of audio content or the measurement of sound pressure level, that is sent to server 130 (or an associated database for storage)." *Id.* at 6:60–63. "Examples of trigger events for mobile device 160 to collect audio content are the detection of a sound similar to a sound signature, a time window, geographic location, sound pressure level, and sensor data (biological, acceleration/velocity, odor, chemical detection, visual, etc.)." *Id.*at 6:63–67.

In step 806 of Figure 8, "[t]he trigger event initiates the mobile device 160 to proceed to open a communication channel with the server 130." Ex. 1001, 12:33–35. In step 808, "mobile device 160 extracts features from the acoustic signals." *Id.* at 12:46–47. "Metadata or tag information is generated and automatically attached with the features or acoustic signals." *Id.* at 13:1–2. In step 812, the mobile device "transmits the tags and features (or acoustic signals) to the server 130 over the open communication channel," which "can be packaged together or sent separately over the network." *Id.* at 13:17–20. In step 814, "the server 130 analyzes the features and tags (acoustic signal) for sound pressure levels (SPLs) and sound signatures," which are "specific sound event[s] such as a car horn, a siren, [or] a whistle." *Id.* at 13:25–27, 13:41–44. "Upon detection of a sound signature and SPL levels," server 130 at step 816 "can generate and log a sound analysis report in view of the analysis," which "can identify the sound signatures detected, their corresponding SPL levels, and other

information such as whether the sound is a threat or the type of sound detected." *Id.* at 13:61–66. At step 818, server 130 "transmits the report to the mobile device or subscriber by way of the open communication channel, or other means." *Id.* at 14:9–11. At step 820, "the mobile device presents the details of the report to the user," for example "in a visual or audible format, or a combination thereof. *Id.* at 14:9–14.

E. Illustrative Claims

Of challenged claims 1–6, 11, 12, 15, and 16, claims 1 and 12 are independent. For purposes of the issues raised at this stage of the proceeding, claim 1 is illustrative and is reproduced below.

> 1. [pre] A wearable device, comprising:
>
> [a] a microphone;
>
> [b] a memory that stores instructions; and
>
> [c] a processor that executes the instructions to perform operations, the operations comprising:
>
> [d] receiving an acoustic signal from the microphone configured to measure an ambient environment;
>
> [e] analyzing the acoustic signal to detect a trigger event;
>
> [f] opening a communication channel with a remote server if a trigger event is detected;
>
> [g] generating metadata;
>
> [h] transmitting the metadata, and the acoustic signal to the server via the communication channel; and
>
> [i] receiving, from the server an analysis of the acoustic signal including whether a sound signature has been detected.

Ex. 1001, 18:2–18 (indents and bracketed paragraph identifiers added).

F. Applied References

Petitioner relies upon the following references:

Couper, US 9,135,797 B2, issued September 15, 2015 (Ex. 1008, "Couper");

Lemelson, US 6,028,514, issued February 22, 2000 (Ex. 1009, "Lemelson");

Jones, US 8,018,337 B2, issued September 13, 2011 (Ex. 1010, "Jones");

Lagassey, US 2006/0092043 A1, published May 4, 2006 (Ex. 1011, "Lagassey");

White, US 6,408,272 B1, issued June 18, 2002 (Ex. 1012, "White");

Soufflet, US 2005/0102142 A1, published May 12, 2005 (Ex. 1013, "Soufflet");

Comerford, US 2007/0043563 A1, published February 22, 2007 (Ex. 1014, "Comerford").

Pet. v, 2. Petitioner submits the Declaration of Dr. Les Atlas. (Ex. 1002). Patent Owner submits the Declaration of David Kleinschmidt (Ex. 2001).

G. Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1–6, 11, 12, 15, and 16 of the '259 patent based on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–4, 6, 11, 12	103(a)	Couper, Lemelson
5	103(a)	Couper, Lemelson, Jones
5	103(a)	Couper, Lemelson, Jones, Lagassey
1, 5, 12, 15, 16	103(a)	White, Soufflet, Comerford

Pet. 2.

II. DISCUSSION

A. Discretion Under 35 U.S.C. § 314(a) Based on Related District Court Litigation

Patent Owner asserts that institution should be denied under 35 U.S.C. § 314(a), in deference to the parallel district court litigation between the parties, which Patent Owner asserts would be a more efficient and fair forum for resolving the parties' disputes. *See* Prelim. Resp. 39–47; Prelim. Sur-reply. Petitioner disagrees. Pet. 73–76; Prelim. Reply.

Under 35 U.S.C. § 314(a), the Director has discretion to deny institution of review. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1356 (2018) ("[Section] 314(a) invests the Director with discretion on the question whether to institute review." (emphasis omitted)); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) ("[T]he agency's decision to deny a petition is a matter committed to the Patent Office's discretion."); *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) ("[T]he PTO is permitted, but never compelled, to institute an IPR proceeding.").

In determining whether to exercise this discretion based on an early trial date in related litigation, the Board assesses all relevant circumstances, including the merits, to balance considerations such as system efficiency, fairness, and patent quality. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) ("*Fintiv* Order"); *NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 19–20 (PTAB Sept. 12, 2018) (precedential). The Board evaluates six factors when making this assessment:

> 1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;

2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;

3. investment in the parallel proceeding by the court and the parties;

4. overlap between issues raised in the petition and in the parallel proceeding;

5. whether the petitioner and the defendant in the parallel proceeding are the same party; and

6. other circumstances that impact the Board's exercise of discretion, including the merits.

Fintiv Order at 5–6. In evaluating these factors, we "take[] a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review." *Id.* at 6.

On June 21, 2022, the Director issued an Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation ("Interim *Fintiv* Guidance").[1] The Interim *Fintiv* Guidance provides "several clarifications" to "the PTAB's current application of *Fintiv* to discretionary denial where there is parallel litigation" in response to comments received from stakeholders in response to a Request for Comments. Interim *Fintiv* Guidance 2.

We now turn to an analysis of the *Fintiv* factors. As discussed above, the '259 patent was asserted in the 00053 District Court Case, which was consolidated with the 413 District Court Case. *See* § I.C, *supra*.

With respect to factor 1, both parties agree that this factor is neutral. Pet. 73; Prelim. Resp. 40.

[1] The Interim *Fintiv* Guidance is available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf.

With respect to factor 2, the Interim *Fintiv* Guidance states that "[a] court's scheduled trial date . . . is not by itself a good indicator of whether the district court trial will occur before the statutory deadline for a final written decision." Interim *Fintiv* Guidance 8. The Guidance also explains that "[p]arties may present evidence regarding the most recent statistics on median time-to-trial for civil actions in the district court in which the parallel litigation resides for the PTAB's consideration." *Id.* at 8–9. The most recent statistics for the Eastern District of Texas's median time to trial is 24.2 months, which would put the anticipated trial date in November 2023. *See* https://www.uscourts.gov/statistics/table/na/federal-court-management-statistics/2022/03/31-1; Ex. 1030. The deadline for our final written decision in this proceeding will be in early January 2024. Because the deadline for our final written decision is close to but (approximately two months) later than the November 2023 expected trial date in the 413 District Court Case, we find that factor 2 weighs slightly in favor of exercising discretion to deny institution.

Turning to factor 3, Patent Owner argues that fact discovery in the 413 District Court Case is ongoing, and that the dates for document production and claim construction briefing in that case will have passed by the time of our institution decision in this case. Prelim. Resp. 42. Petitioner responds that significant investment remains to be made in the related litigation, including the completion of fact discovery and expert reports, a claim construction ruling, and dispositive motions. Prelim. Reply 3. Petitioner also argues that it was diligent in filing its Petition less than four months after the district court complaint was filed. Pet. 73; Prelim. Reply 3. Because of the significant investment that remains in the 413 District Court

Case, and Petitioner's diligent filing of this *inter partes* review proceeding, we find that factor 3 weighs against exercising discretion to deny institution.

With respect to factor 4, Petitioner has stipulated that if a trial is instituted in this proceeding, it will not challenge the '259 patent in the related litigation on any ground that includes the Couper or White references. Pet. 75; Prelim. Reply 4; Ex. 1033, 2. Petitioner argues that this stipulation is broader than the one in *Sand Revolution II, LLC v. Continental Intermodal Group-Trucking LLC*, IPR2019-01393, Paper 24 at 11–12 (PTAB June 16, 2020) (informative), and that the Board has weighed a similar stipulation against exercising discretion to deny institution in *Google LLC v. Parus Holdings, Inc.*, IPR2022-00358, Paper 7 at 14 (PTAB Aug. 4, 2022) and *Samsung Electronics Co. v. Scramoge Tech. Ltd.*, IPR2022-00385, Paper 14 at 16 (PTAB June 23, 2022). Pet. 75; Prelim. Reply 4. We agree with Petitioner that its stipulation is broader than the stipulation at issue in *Sand Revolution*, and that Petitioner's stipulation will meaningfully reduce the potential for overlap between the cases. Accordingly, we find that factor 4 weighs against exercising our discretion to deny institution.

With respect to factor 5, the parties in this proceeding are also parties in the 413 District Court Case. Pet. 75; Prelim. Resp. 45. As discussed with respect to factor 2, the estimated trial date for the 413 District Court Case is earlier than, but close in time to, the expected date of our final written decision. Thus, we find that factor 5 weighs slightly in favor of exercising discretion to deny institution.

With respect to factor 6, the Interim *Fintiv* Guidance explains that the Board "considers the merits of a petitioner's challenge when determining whether to institute a post-grant proceeding in view of parallel district court

litigation." Interim *Fintiv* Guidance at 4. "Where the information presented at the institution stage is merely sufficient to meet the statutory institution threshold, the PTAB has the authority, where warranted, to exercise discretion to deny institution in view of the other *Fintiv* factors." *Id.* "In contrast, where the PTAB determines that the information presented at the institution stage presents a compelling unpatentability challenge, that determination alone demonstrates that the PTAB should not discretionarily deny institution under *Fintiv*." *Id.* at 4–5.

As discussed below, we determine that Petitioner has shown a reasonable likelihood of unpatentability of at least independent claim 1. Beyond that, given the facts relating to the other *Fintiv* factors in this case, we need not determine at this time whether Petitioner's showing is "compelling" in order to decide whether to exercise our discretion to deny institution in this proceeding. Therefore, we treat this factor as neutral in our analysis.

As noted above, we take "a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review." *Fintiv* Order at 6. Weighing all of the factors, we are not persuaded that the interests of efficiency and integrity of the system would be best served by invoking 35 U.S.C. § 314(a) to deny institution of a potentially meritorious Petition. Based on the record before us, we determine the facts of this case do not warrant discretionary denial.

B. Claim Construction

A claim "shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b)." 37 C.F.R. § 42.100(b).

Petitioner proposes that no express claim construction is necessary and "the claims should be given their plain and ordinary meaning." Pet. 13–14.

Patent Owner proposes constructions for two terms: "trigger event" and "sound signature." Prelim. Resp. 22. Patent Owner argues that "trigger event" should be construed as "an event that initiates the collection of audio content or the measurement of sound pressure level." *Id.* at 23. Patent Owner argues that its construction "captures the definition provided in the specification," which is "an event that initiates the collection of audio content or the measurement of sound pressure level that is sent to server 130 (or an associated database for storage)." *Id.* (citing Ex. 1001, 6:60–63). Patent Owner argues that the term "sound signature" should be construed as "a specific sound event" based on the '259 patent specification's statement that "[a] sound signature is a specific sound event such as a car horn, a siren, [or] a whistle." *Id.* at 23–24 (citing Ex. 1001, 13:43–44). Based on the present record, we determine that it is not necessary to provide an express interpretation of the terms "trigger event" or "sound signature" for purposes of institution. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1374 (Fed. Cir. 2019) ("The Board is required to construe 'only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.'") (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Additionally, when addressing Ground 1, Patent Owner appears to construe the language "analyzing the acoustic signal to detect a trigger event" in limitation 1[e] to exclude analyzing an acoustic signal to determine whether it matches a sound signature. Prelim. Resp. 25–28. As discussed

further in Section II.E.3(e) below, we do not agree with Patent Owner's apparent construction of this phrase based on the present record. *See* § II.E.3(e), *infra*.

Furthermore, when addressing Ground 3, Patent Owner appears to construe the phrase "opening a communication channel with a remote server if a trigger event is detected" in limitation 1[f] to require that if a trigger event is detected, the processor must ***always*** open a communication channel with a remote server. Prelim. Resp. 34–35. As discussed below in Section II.H.4(f), we do not agree with Patent Owner's interpretation of this phrase based on the present record. *See* § II.H.4(f), *infra*.

We also determine that it is not necessary to construe any other claim terms at this stage of the proceeding. *See Realtime Data*, 912 F.3d at 1374; *Vivid Techs.*, 200 F.3d at 803.

C. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103 if "the differences between the subject matter sought to be patented 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) where in evidence, objective evidence of non-obviousness.[2] *Graham v. John Deere Co. of Kansas City*, 383 U.S.

[2] At this stage of the proceeding, Patent Owner has not presented objective evidence of non-obviousness.

1, 17–18 (1966). When evaluating a combination of teachings, we must also "determine 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)). Whether a combination of prior art elements would have produced a predictable result weighs in the ultimate determination of obviousness. *Id.* at 416–417.

In an *inter partes* review, the petitioner must show with particularity why each challenged claim is unpatentable. *Harmonic*, 815 F.3d at 1363; 37 C.F.R. § 42.104(b) (2020). The burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

D. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art at the time of the alleged invention would have had "a bachelor's degree in electrical engineering, computer science, or a similar field and two years of experience in the design of digital audio systems and associated signal processing such as voice or speech processing and/or acoustic pattern recognition." Pet. 13. Petitioner further states that the person of ordinary skill "could have also obtained similar knowledge and experience through other means." *Id.* Patent Owner "applies the level of ordinary skill in the art that is proposed in the Petition." Prelim. Resp. 22.

For purposes of this Decision, we adopt Petitioner's assessment of the level of ordinary skill in the art.

E. Ground 1:[3] Asserted Obviousness of Claims 1–4, 6, 11, and 12 Based on Couper in view of Lemelson

Petitioner contends that claims 1–4, 6, 11, and 12 would have been obvious over Couper in view of Lemelson. Pet. 14–33. Patent Owner disagrees, arguing that Petitioner has failed to establish that these claims would have been obvious based on Couper and Lemelson. Prelim. Resp. 25–31.

1. Overview of Couper (Ex. 1008)

Couper is directed to "a method of identifying incidents using mobile devices." Ex. 1008, 1:34–35. Couper explains that "[f]ixed location audio sensors" for crime prevention were known, but that those systems are "costly to deploy," and Couper proposes "a method of identifying incidents using mobile devices." *Id.* at 1:6–9, 1:25–26, 1:34–35.

Figure 1 of Couper, reproduced below, discloses an embodiment of Couper's incident identification system.

[3] Here, and elsewhere in the Decision, the identification of the grounds using designations such as "Ground 1" and "Ground 2" refers to the designation of the grounds as presented in the Petition.

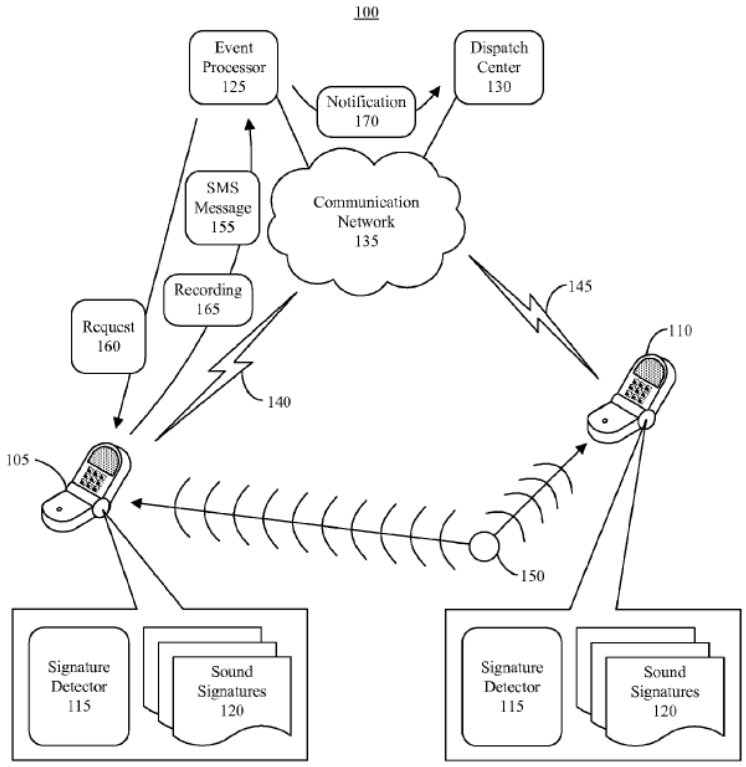


FIG. 1

Figure 1 shows an embodiment of Couper's incident identification system using mobile devices. Ex. 1008, Fig. 1, 4:8–9.

Ex. 1008, Fig. 1, 4:8–9. As shown in Figure 1, system 100 can include a plurality of mobile devices 105 and 110, which "can be implemented as mobile phones, personal digital assistants, or any other device capable of sending and receiving data over wireless communication links 140 and 145 via the communication network 135." *Id.* at 4:8–14, 4:30–34. Mobile devices 105 and 110 can include signature detector 115, which can compare audio received by the internal microphone of a mobile device with sound signatures 120, which "are audio profiles of sounds that have been determined to be indicative of an incident," such as "gunshots, explosions, sirens, alarms, breaking glass, auto accidents, yelling or screaming, [or] calls for help." *Id.* at 4:43–44, 4:62–5:1.

"Upon determining that the sound 150 matches a sound signature 120, the mobile device 105 can send a communication to the event processor 125," which "can include any information determined by the signature detector 115" and may, "in one embodiment, initially exclude any audio that ha[s] been recorded or collected by the mobile device 105." *Id.* at 6:20–22, 6:31–36. Event processor 125 "can analyze the received information from the various mobile devices and compare that information with an incident validation policy to determine when a valid incident has taken place or is taking place." *Id.* at 6:54–57. Event processor 125 "optionally can request audio from one or more of the mobile devices" and "perform its own analysis and comparison of the detected sound, from the recording(s) furnished by the mobile device(s), with one or more sound signatures," which can be useful because event processor 125 "can include more robust and/or sophisticated audio analysis software than can reasonably included or executed in a mobile device." *Id.* at 9:1–2, 9:42–49.

2. Overview of Lemelson (Ex. 1009)

Lemelson is directed to "emergency warning systems and methods, and, in particular, to systems and methods that have the capability to automatically warn individuals of a variety of types of emergencies in their immediate vicinity." Ex. 1009, 1:5–8. Lemelson's system includes a "portable warning unit that is carried by a person" and is similar in size to a "telecommunications pager, cellular telephone, or a traditional walkie-talkie." *Id.* at 3:4–5, 17:25–27. An embodiment of the portable warning unit is shown in Figure 2, reproduced below.

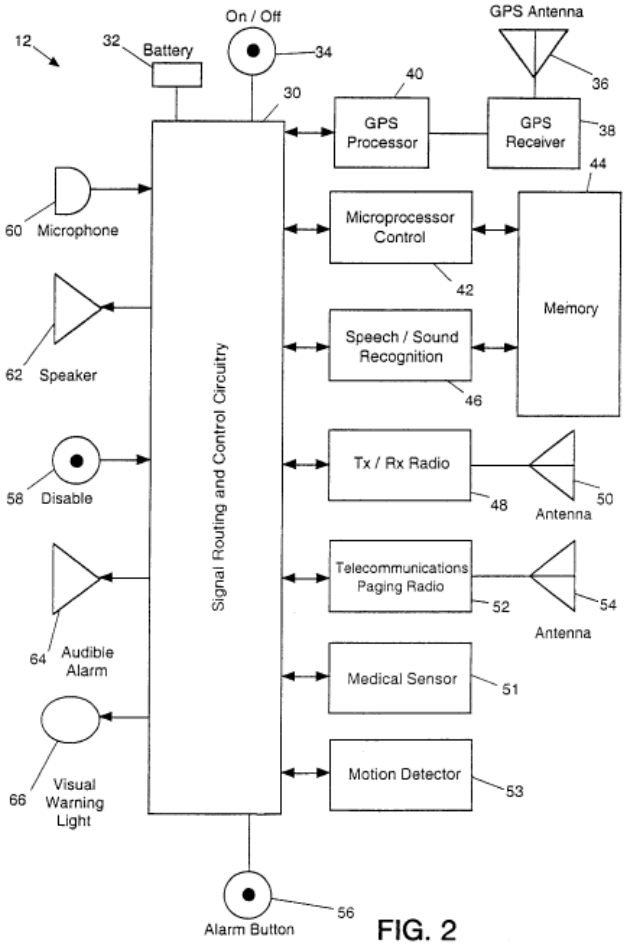


FIG. 2

Figure 2 of Lemelson shows an embodiment of comprehensive integrated personal emergency warning and safety system unit 12. Ex. 1009, Fig. 2, 11:1–2.

Warning unit 12 includes microphone 60, along with microprocessor control 42 and memory 44 which are "used to control the overall operation of the warning unit 12." Ex. 1009, 11:12–14, 11:28–30.

Lemelson's warning unit includes "speech detection circuitry" which "is used to determine whether or not human speech is present." Ex. 1009, 14:29–31. If speech is recognized, "[t]he spoken words are compared with a speech library stored in memory" which indicate "whether an alarm or distressful situation is occurring that requires attention or immediate response," for example, "robbery," "rape," "help," "heart attack," or "similar

selected phrases indicating an emergency situation." *Id.* at 14:31–40. If an emergency is detected, an alarm is activated, which can be an audible alarm, a vibration, a visible alarm, or any combination thereof. *Id.* at 13:25–28, 14:41–44.

Individual emergency warning units may request assistance from a monitor/response center and may receive signals from a monitor/response center. Ex. 1009, 10:43–48. The monitor/response center may transmit messages back to the warning unit that "will serve to inform the user of warning unit 12 that help is on the way and also to issue warning to an attacker or to provide instructions for emergency medical assistance (i.e. instructions for a diabetic in need of medication etc.) or emergency help." *Id.*, 15:61–16:4.

3. Analysis of Independent Claim 1

a) 1[pre]: "[a] wearable device, comprising:"

Petitioner argues that, to the extent the preamble is limiting, the Couper-Lemelson combination discloses or suggests it. Pet. 14 (citing Ex. 1002 ¶¶ 74–81). "For example," Petitioner asserts, "Couper discloses implementing the mobile devices 105 and 110 as 'any . . . device capable of sending and receiving data' over a network," and "Lemelson further discloses a 'warning unit 12' that is a size 'similar to that of a modem [sic] day telecommunications pager, cellular telephone, or a traditional walkie talkie' and 'is worn by the user[.]'" *Id.* at 14–15 (citing Ex. 1008, 4:30–34; Ex. 1009, 4:4–32, 12:24–27, 13:20–25, 17:23–27, 20:7–18).

According to Petitioner, one of ordinary skill "would have been motivated to implement Couper's method of identifying incidents using devices sized and configured to be worn by the user as taught by Lemelson"

at least because "such a device would be convenient to carry and better equipped to measure ambient sound than devices that required being held in the hand or carried in a pocket, as the microphone would be able to receive ambient sound in a less attenuated or muffled manner." *Id.* at 15 (citing Ex. 1002 ¶¶ 78–79). Petitioner further argues that one of ordinary skill "would have had a reasonable expectation of success inasmuch as Couper discloses that mobile devices it discusses may be 'any other device' capable of communicating over a network." *Id.* (citing Ex. 1008, 4:30–34; Ex. 1002 ¶ 80).

Patent Owner does not present arguments regarding the preamble. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding the preamble.[4]

b) 1[a]: "a microphone;"

Petitioner argues that Couper in combination with Lemelson discloses this limitation. Pet. 15 (citing Ex. 1002 ¶¶ 82–83). "For example," Petitioner asserts, "Couper discloses a mobile device with an 'internal microphone' that receives audio." *Id.* (citing Ex. 1008, 4:34–35, 4:60–62).

Patent Owner does not present arguments directed to this limitation. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

[4] Because we are persuaded that Petitioner has shown that Couper teaches the subject matter recited in the preamble, we need not decide whether the preamble is limiting for purposes of this Decision.

c) *1[b]: "a memory that stores instructions; and"*

1[c]: "a processor that executes the instructions to perform operations, the operations comprising:

Petitioner argues that Couper in combination with Lemelson discloses or suggests these limitations. Pet. 16 (citing Ex. 1002 ¶¶ 84–85). Petitioner asserts that Couper discloses that "each of the mobile devices includes a processor" and discloses providing "computer program instructions to a processor" that are "stored in a computer-readable memory." *Id.* (citing Ex. 1008, 3:22–44, 4:34–35). According to Petitioner, Couper "further discloses implementing the operation of its flow charts by providing the instructions to a processor for execution." *Id.* (citing Ex. 1008, 3:22–44). "Accordingly," Petitioner contends, the Couper-Lemelson system "discloses or suggests a wearable device with computer-readable memory ('a memory') that stores and provides computer program instructions to a processor ('that stores instructions')," and "a processor ('a processor') that executes instructions of a computer program ('that executes the instructions') to perform the functions/acts specified in the flowcharts and/or block diagrams ('to perform operations')." *Id.* (citing Ex. 1002 ¶ 85). Additionally, Petitioner argues that the combination discloses the wearable device's processor performing the remaining limitations. *Id.*

Patent Owner does not present arguments directed to these limitations. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding these limitations.

d) 1[d]: "receiving an acoustic signal from the microphone configured to measure an ambient environment;"

Petitioner argues that Couper in combination with Lemelson discloses or suggests this limitation. Pet. 16 (citing Ex. 1002 ¶¶ 86–91). Petitioner asserts that Couper "discloses a signature detector that compares the received audio to sound signatures for 'gunshots, explosions, sirens, alarms, breaking glass, auto accidents, yelling or screaming, calls for help, etc.'" *Id.* at 17 (citing Ex. 1008, 4:43–5:4). According to Petitioner, one of ordinary skill would have understood, therefore, that Couper's microphone "picks up sounds in the ambient environment." *Id.* (citing Ex. 1002 ¶ 88). "Moreover," Petitioner contends, one of ordinary skill "would have understood Couper to disclose that the signature detector is executed by the processor, and that the processor receives the audio detected by the microphone from the microphone." *Id.* "Accordingly," Petitioner argues, "the combination of Couper and Lemelson discloses or suggests a wearable device having a processor that receives audio ('receiving an acoustic signal') from the wearable device's microphone that detects audio from the ambient environment ('from the microphone configured to measure an ambient environment')." *Id*. (citing Ex. 1002 ¶ 89).

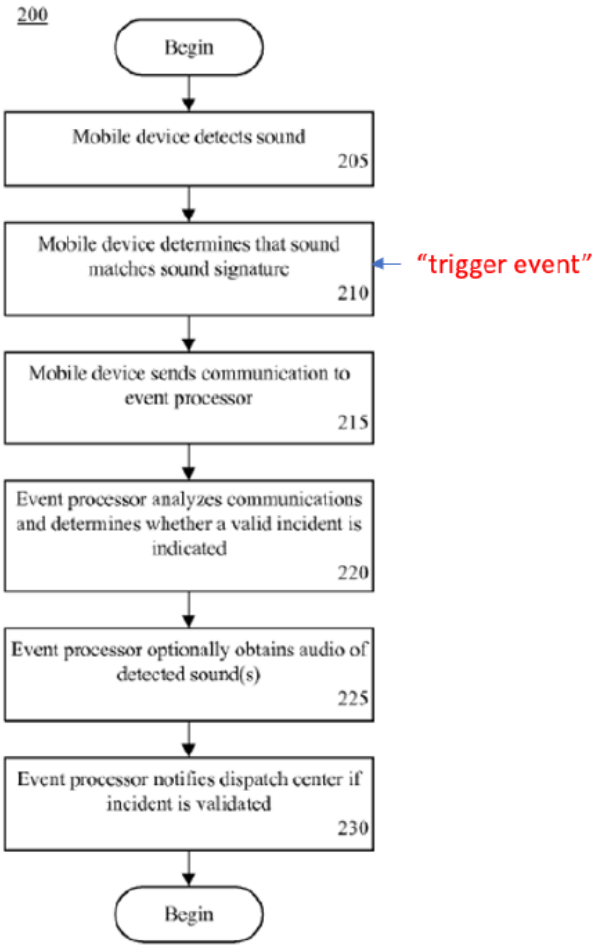
Patent Owner does not present arguments directed to this limitation. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

e) 1[e]: "analyzing the acoustic signal to detect a trigger event;"

Petitioner argues that Couper in combination with Lemelson discloses or suggests this limitation. Pet. 18 (citing Ex. 1002 ¶¶ 92–96). Petitioner argues that one of ordinary skill would have understood Couper to disclose

or suggest a signature detector, executed by the processor, that compares received audio to sound signatures. *Id.* (citing Ex. 1008, Fig. 2 (step 210); Ex. 1002 ¶ 92). Petitioner asserts that Couper "further discloses sending a communication to the event processor" if "the signature detector determines a sound signature match," which "is consistent with how the '259 patent descries detecting trigger events." *Id.* (citing Ex. 1008, 5:60–64; 6:20–22; 6:63–7:3; Ex. 1002 ¶¶ 93–94; Ex. 1001, 6:63–7:3, 10:65–11:1). Petitioner also submits an annotated diagram to show how one of ordinary skill would have understood Couper's disclosure to map to the claimed "trigger event," which is reproduced below.



Petitioner's annotated version of Couper's Figure 2, identifying the "trigger event" as step 210. Pet. 19 (citing Ex. 1008, Fig. 2; Ex. 1002 ¶ 95).

Accordingly, Petitioner contends, "the combination of Couper and Lemelson discloses or suggests a wearable device having a processor that compares the audio received from the microphone ('analyzing the acoustic signal') to detect a sound signature ('to detect a trigger event')." Pet. 20 (citing Ex. 1002 ¶ 96).

Patent Owner criticizes the Petition for relying on the determination that a sound matches a sound signal for both limitation 1[e] and limitation 1[i], and contends that Petitioner's argument "is unsound because a 'trigger event' and 'sound signature' are not the same." Prelim. Resp. 25 (citing Pet. 18–19, 22). According to Patent Owner, "[a] 'trigger event' is 'an event that initiates the collection of audio content or the measurement of sound pressure level,' e.g., sound pressure level, geographic location, detection of a sound similar to a sound signature, a time window, duration of a detected signal, biological data, [or] odor." *Id.* at 25–26 (citing Ex. 1001, 6:63–67, 10:12–20). "By contrast," Patent Owner contends, "a 'sound signature' is 'a specific sound event.'" *Id.* at 26. Patent Owner argues that "[i]t is unreasonable to equate 'trigger event' and 'sound signature'" because "a purpose of performing the steps that follow the detection of a trigger event is to determine whether a sound signal exists in the acoustic signal" and that, if these terms "were equivalent, upon detection of a trigger event, it would already be known that a sound signature resides within the acoustic signal." *Id.* at 26–27 (citing Ex. 2001 ¶ 52). Patent Owner further argues that its interpretation of "trigger event" is "revealed by the structure of claim 1, under which the steps of opening a communication channel, generating metadata, and transmitting the metadata and acoustic signal to the server are performed so that the server can perform an analysis to detect whether a

sound signature exists within the acoustic signal." *Id.* (citing Ex. 2001 ¶ 52).

Patent Owner argues that "[t]he specification of the '259 patent further supports the distinction between a 'trigger event' and 'sound signature'" because, after defining a "trigger event," the specification "provides the following examples of trigger events: '***a sound similar to a sound signature***, a time window, geographic location, sound pressure level, and sensor data (biological, acceleration/velocity, odor, chemical detection, visual, etc.).'" Prelim. Resp. 27 (citing Ex. 1001, 6:63–67). "Thus," according to Patent Owner, "the detection of something similar to a sound signature may trigger the collection of audio content or the measurement of sound pressure level, and the collected content/data may then be transmitted to a server to detect whether an actual sound signature is included in the audio signal." *Id.* (citing Ex. 2001 ¶ 53). "Notably," Patent Owner asserts, "the '259 patent does not suggest that the trigger event may be a sound signature." *Id.* at 27–28.

Based on the present record, we determine that Petitioner has made a sufficient showing for limitation 1[e] for purposes of institution. Patent Owner's argument largely relies on its assertion that the phrase "analyzing the acoustic signal to detect a trigger event" in limitation 1[e] cannot include analyzing an acoustic signal to detect a sound signature. Prelim. Resp. 25–28. We do not see support in the intrinsic record for such a construction. Although claim 1[i] separately recites receiving from the server an analysis of the acoustic signal including whether a "sound signature" has been detected, we see nothing in the claim that requires that mobile station's

detection of a sound signal cannot also be the "trigger event" detected in limitation 1[e].

Turning to the '259 specification, the specification expressly states that "[e]xamples of trigger events for mobile device 160 to collect audio content are the ***detection of a sound similar to a sound signature***." Ex. 1001, 6:63–65 (emphasis added). Later, the specification states that "[a] trigger event is an event that initiates the measurement of a sound pressure level" by the mobile device, and that "[e]xamples of events that are used to trigger the collection of a sound pressure level are sound pressure level, time, geographic location, ***sound signature detection***, biological data, acceleration/velocity data, temperature, visual/chroma data, odor (smell), atmospheric data (barometric pressure, wind speed, humidity, etc.), chemical detection, to name but a few." *Id.* at 10:11–20 (emphasis added). Thus, the specification includes sound signature detection as an example of a "trigger event."

Additionally, we interpret the '259 patent specification's reference to "detection of a sound similar to a sound signature" to refer to sound signature detection. *See* Ex. 1001, 6:63–65. For example, sound signature detection may occur when the audio content is close to, but not completely identical to, the sound signature. We note that Mr. Kleinschmidt distinguishes detecting "something ***similar to*** a sound signature" from "detecting" "whether an ***actual*** sound signature is included," but he fails to explain why this distinction is meaningful or why the claimed trigger event would not encompass both possibilities. Ex. 2001 ¶ 53. Moreover, even if we agreed with Patent Owner that the phrase "detection of a sound similar to a sound signature" meant something different than "detecting a sound

signature," we would not understand the '259 patent specification to be excluding detecting the exact sound signature from the scope of possible "trigger events," especially because the specification elsewhere refers to "sound signature detection" as a trigger event." Ex. 1001, 10:11–20.

We also disagree with Mr. Kleinschmidt's assertion that "once a wearable device detects a trigger event within an acoustic signal, there would be no benefit in performing an analysis remote from the wearable device (e.g., at a server) to detect whether the acoustic signal includes the trigger event (because a positive determination has already been made)." Ex. 2001 ¶ 52. Such a benefit is described in Couper, which explains that a server (the event processor) "can include more robust and/or sophisticated audio analysis software than can reasonably be included or executed in a mobile device," and thus provide a more detailed and accurate analysis. Ex. 1008, 9:42–49.

We also agree with Petitioner that Couper discloses "analyzing the acoustic signal to detect a trigger event." In step 210 of Figure 2 and the accompanying description, Couper states that a mobile device "can analyze the detected sound and compare the detected sound against one or more sound signatures stored within the mobile device." Ex. 1008, Fig. 2, 8:49–53. Then, in step 215, "the mobile device, upon determining that the detected sound matches one of the stored sound signatures, can send a communication to the event processor." *Id.*, Fig. 2, 8:53–56. Based on the present record, we determine that the comparison of the detected sound against sound signatures stored within the mobile device "analyz[es] the acoustic signal to detect a trigger event," as limitation 1[e] requires.

f) 1[f]: "opening a communication channel with a remote server if a trigger event is detected;"

Petitioner argues that Couper in combination with Lemelson discloses or suggests this feature. Pet. 20 (citing Ex. 1002 ¶¶ 97–103). Petitioner asserts that Couper "discloses implementing the event processor as a 'server' (Couper, 5:31-33, 4:15-42), and that the mobile devices are 'communicatively linked' to it via a network (*id*., 4:12-29)." *Id.* "Thus," according to Petitioner, one of ordinary skill "would have understood Couper discloses that event processor 125 is 'a remote server.'" *Id.* (citing Ex. 1002 ¶¶ 98–100).

Petitioner argues that "Couper further discloses sending a communication to the event processor" if "the signature detector determines a sound signature match," and that one of ordinary skill "would have understood this requires that the mobile devices open a communication channel with the event processor." Pet. 20 (citing Ex. 1008, 5:60–64, 6:20–24, Fig. 2; Ex. 1002 ¶ 102). According to Petitioner, one of ordinary skill "would have also considered it obvious to not open a communication channel prior to detecting the match and sending the communication so as to conserve the computing resources associated with opening and maintaining such a communication channel until such a connection was needed." *Id.* (citing Ex. 1002 ¶ 102).

"Accordingly," Petitioner argues, "the combination of Couper and Lemelson discloses or suggests a wearable device having a processor that sends a communication to an event processor ('opening a communication channel with a remote server') if the signature detector matches a received audio with a sound signature ('if a trigger event is detected')." *Id.* at 20–21 (citing Ex. 1002 ¶ 103).

Patent Owner does not present arguments directed to this limitation. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

g) 1[g]: "generating metadata;"

Petitioner argues that *Couper* in combination with *Lemelson* discloses or suggests this limitation. Pet. 21 (citing Ex. 1002 ¶¶ 104–107). Petitioner asserts that "Couper discloses including 'items of information relating to the detected sound' and '[o]ther data generated by the signature detector' in the communication to event processor 125, such as location, date, time," which "is consistent with how the '259 patent describes 'metadata.'" *Id.* (citing Ex. 1008, 6:20–50; Ex. 1001, 13:1–16). According to Petitioner, one of ordinary skill "would have understood that to provide such metadata, it is first generated, and that Couper discloses that it is the processor of the mobile device that generates it, or that, at a minimum, it would have been obvious to have the processor of the mobile device generate it." *Id.* (citing Ex. 1002 ¶ 106).

"Accordingly," Petitioner argues, "the combination of Couper and Lemelson discloses or suggests a wearable device having a processor that generates information related to the detected sound matching the sound signature such as the location and time of the detection ('generating metadata')." *Id.* (citing Ex. 1002 ¶ 107).

Patent Owner does not present arguments directed to this limitation. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

h) 1[h]: "transmitting the metadata, and the acoustic signal to the server via the communication channel; and"

Petitioner argues that Couper in combination with Lemelson discloses or suggests this limitation. Pet. 21 (citing Ex. 1002 ¶¶ 108–110). Petitioner asserts that "Couper discloses that the mobile device provides recorded audio to the event processor" and that "the processor of the mobile device include[es] metadata in the communication to the event processor." *Id.* at 21–22 (citing Ex. 1008, 5:25–30, 8, 4–5, 8:8–14). "Accordingly," Petitioner contends, "the combination of Couper and Lemelson discloses or suggests transmitting the information related to the detected sound matching the sound signature ('transmitting the metadata')" and "a recording of the audio detected by the internal microphone ('the acoustic signal') to the event processor ('to the server') over the communication network ('via the communication channel')." *Id.* at 22 (citing Ex. 1002 ¶ 110).

Patent Owner does not present arguments directed to this limitation. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

i) 1[i]: "receiving, from the server, an analysis of the acoustic signal including whether a sound signature has been detected."

Petitioner argues that Couper in combination with Lemelson discloses or suggests this limitation. Pet. 22 (citing Ex. 1002 ¶¶ 111–130). Petitioner asserts that "Couper discloses that the event processor performs its own sound signature detection and validation analysis." *Id.* (citing Ex. 1008, 7:47–61, 9:42–49). "If validated," Petitioner contends, "the event processor sends a notification to a dispatch center (*id.*, 9:50-51), which includes 'any

information . . . determined by the event processor 125' (*id.*, 8:14–17, 8:24–27)." *Id.*

Petitioner argues that "Lemelson discloses a system very similar to Couper," which includes "a device that detects sounds indicative of emergency or dangerous events and notifies a central command center." Pet. 22 (citing Ex. 1002 ¶ 115). According to Petitioner, Lemelson's "command center, like Couper's event processor, performs further processing, including by calculating 'degrees of danger,' and contacting emergency dispatch services if necessary." *Id.* at 22–23 (citing Ex. 1009, 4:50–5:7, 6:19–24, 6:57–7:8, 16:10–35). Petitioner contends that "Lemelson further teaches that it is advantageous for the command center to transmit to the user's device—and for the user's device to receive and output—a message" including "confirmation that emergency personnel is en route, instructions to the user for how to respond to the emergency and to find help, and/or to issue a warning to an attacker." *Id.* at 23 (citing Ex. 1009, 1:23–30, 2:1–3, 2:36–46, 15:43–16:9, 16:10–49, 17:47–53; Ex. 1002 ¶¶ 115–119). According to Petitioner, "Lemelson further discloses outputting an alarm to a user if the user's device detects speech or sound indicative of an emergency." *Id.* (citing Ex. 1009, 13:40–43, 13:58–64, 14:28–55).

Petitioner argues that one of ordinary skill "would have understood the Couper-Lemelson system to disclose or suggest that after Couper's event processor conducts its validation analysis and notifies the emergency dispatch center," the event processor "would send back to the wearable device—and the processor of the wearable device would receive and output—a message notifying the user that emergency personnel is en route, providing instructions for how to respond to the emergency situation, and/or

issuing a warning to an attacker." Pet. 23 (citing Ex. 1002 ¶ 120). "In addition," Petitioner contends, one of ordinary skill "would have understood the Couper-Lemelson system to disclose or suggest including within the message from the event processor an indication of the degree of danger and/or an identification of the sound signature validated by the event processor" because "that information would further assist the user, and in a practical sense, would have been necessary for the user to understand how to respond to the emergency situation." *Id*. at 23–24 (citing Ex. 1002 ¶ 121). According to Petitioner, "[i]t was also well-known that such a feature (i.e., receiving and outputting a message indicating a degree of danger and/or an identification of the sound signature) would be particularly advantageous for users that are hearing impaired, who may not have heard the initial sound." *Id.* at 24 (citing Ex. 1002 ¶¶ 121–123).

Petitioner further argues that "[t]he event processor's validation analysis is consistent with how the '259 patent describes the remote server's analysis of the acoustic signal," and that "providing the user with a message indicating a degree of danger and/or an identification of the validated sound signature is consistent with how the '259 patent describes the 'sound analysis report' provided by the server." *Id.* at 24 (citing ex. 1001, 6:25–27, 13:61–66).

Additionally, Petitioner argues that one of ordinary skill "would have been motivated to modify Couper's system and method to implement Lemelson's technique of transmitting a message from the command center back to the user in the manner described above." Pet. 24 (citing Ex. 1002 ¶¶ 125–129). Petitioner asserts that "Couper is concerned with 'sounds that are indicative of incidents including, but not limited to, crime, safety

hazards, terrorist threats, or any other event for which a response team may be dispatched or needed.'" *Id.* (citing Ex. 1008, 3:54–57). "Thus," according to Petitioner, a person of ordinary skill "implementing Couper would have been motivated to look for similar systems that advanced Couper's goals of efficiently dispatching response teams and reducing crime." *Id.* at 24–25 (citing Ex. 1002 ¶ 126). "In so looking," Petitioner contends, one of ordinary skill "would have readily found Lemelson, which is cited on the face of Couper." *Id.* at 25 (citing Ex. 1002 ¶ 126).

Petitioner also argues that, "[s]imilar to Couper, Lemelson is concerned with providing assistance in emergency situations." Pet. 25 (citing Ex. 1009, 2:66–3:3). According to Petitioner, "Lemelson's disclosure of a warning or alarm to the user of the device is consistent with Couper's disclosure that '[o]nce the notification is received by the dispatch center 130, personnel within that center can cause response personnel to be sent or dispatched to a location related to the detected sounds.'" *Id.* (citing Ex. 1008, 8:39–42; Ex. 1002 ¶ 127). "Thus," Petitioner asserts, one of ordinary skill "would have been motivated to modify Couper's system for identifying incidents to include Lemelson's technique of transmitting information back to the user's device and outputting it in order to, for example, provide its users with emergency instructions, identify the sounds detected, and provide warnings to attackers." *Id*. (citing Ex. 1002 ¶ 128). "Doing so," according to Petitioner, "would have been the application of Lemelson's known technique of providing information back to a user device to improve Couper's known system for identifying incidents to yield a predictable result of providing assistance to users of Couper's system and to reduce crime." *Id.* (citing Ex. 1002 ¶ 128).

Petitioner also argues that one of ordinary skill "would have had a reasonable expectation of success in making these modifications to the Couper-Lemelson system." Pet. 25 (citing Ex. 1002 ¶ 129). According to Petitioner, these modifications "would have required generating/transmitting information that was already being transmitted by the event processor to dispatch back to the user, or otherwise programming it to generate/transmit additional information well within the ken of a" person of ordinary skill. *Id.* at 25–26 (citing Ex. 1002 ¶ 129). "Moreover," Petitioner contends, "Couper's mobile device was already capable of receiving and outputting such information to the user." *Id*. at 26 (citing Ex. 1002 ¶ 129).

"Accordingly," Petitioner asserts, "the combination of Couper and Lemelson discloses or suggests a wearable device having a processor that receives from an event processor ('receiving, from the server') a communication including an analysis of the recordings provided by the mobile device ('an analysis of the acoustic signal')," the analysis "indicating that help is on the way, a degree of danger, identification of the sound signature detected, and instructions for emergency help based on whether the event processor determined a valid incident occurred ('including whether a sound signature has been detected.')." *Id*. (citing Ex. 1002 ¶ 130).

Patent Owner does not present arguments specifically directed to this limitation. *See* Prelim. Resp. 25–39. To the extent Patent Owner argues that limitations 1[e] and 1[i] cannot both cover analyzing a sound against a sound signature, we address that argument in Section II.E.3(e), above.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

j) Summary for Claim 1

For the foregoing reasons, Petitioner's cited evidence and reasoning demonstrates a reasonable likelihood that Petitioner would prevail in its contentions regarding claim 1.

4. Claim 2

Claim 2 depends from claim 1 and recites that the operations performed by the processor "further comprise transmitting the metadata and the acoustic signal as a package to the server over the communication channel." Ex. 1001, 18:19–21. Petitioner argues that Couper in combination with Lemelson discloses or suggests this feature. Pet. 26 (citing Ex. 1002 ¶¶ 131–135).

Petitioner argues that "Couper discloses sending a communication to the event processor upon determining a sound signature match, and that the communication includes metadata but may 'initially exclude any audio that ha[s] been recorded or collected.'" Pet. 26 (citations omitted) (citing Ex. 1008, 6:20–22, 6:32–36). Petitioner asserts that one of ordinary skill "would have understood this disclosure to encompass embodiments in which the metadata and audio recording are transmitted together (i.e., ***not*** initially excluded)." *Id.* at 26–27 (citing Ex. 1002 ¶ 133). "Indeed," according to Petitioner, "Couper's claim 2 discloses that the communication (which specifies information about a first detected sound, *see* claim 1) includes 'a recording of the sound . . . .'" *Id.* at 27 (citing Ex. 1008, 10:62–64). Petitioner contends that one of ordinary skill "would have understood that Couper's disclosure of transmitting both the information determined by the signature detector 115 (the metadata) and the sound recording (the acoustic signal) in a single communication responsive to a single event (i.e., detecting

a sound signature) would constitute sending them as a 'package.'" *Id.* (citing Ex. 1002 ¶ 134).

Petitioner argues that "Couper's disclosure is consistent with the '259 patent's specification, which a [person of ordinary skill in the art] would have understood to indicate that whether an acoustic signal and metadata are 'packaged together' is, as suggested by dependent claim 3, determined by whether the acoustic signal and metadata are sent 'via separate communications' or not." Pet. 27 (citing Ex. 2001 ¶ 134).

"Accordingly," Petitioner argues, "the combination of Couper and Lemelson discloses or suggests a wearable device having a processor configured ('wherein the operations further comprise') to detect a sound signature" and, in response, "send a communication including metadata ('transmitting the metadata') and a recording of the audio detected by the internal microphone ('and the acoustic signal as a package')" to "the event processor via the communication network ('to the server over the communication channel')." Pet. 27–28 (citing Ex. 1002 ¶ 135).

Patent Owner argues that Petitioner's argument fails because "the Petition finds disclosure in Couper's silence." Prelim. Resp. 28. Specifically, Patent Owner argues that Couper's disclosure that the mobile device may, "***in one embodiment, initially exclude any audio that ha[s] been recorded or collected by the mobile device 105***" does not "encompass embodiments in which the metadata and audio recording are transmitted together (i.e., ***not*** initially excluded)." *Id.* at 29 (citing Pet. 26–27; Ex. 1008, 6:20–36). Patent Owner also argues that "[t]he Petition misreads claim 2 of Couper" because claim 3, which recites "first selecting a mobile device from which the recording of the first detected sound is requested

from the plurality of mobile devices" indicates that "in claim 2 a recording is received after—not contemporaneous with—information about the sound is received." *Id.* at 30 (citing Pet. 27; Ex. 1008, claim 3; Ex. 2001 ¶ 61). Patent Owner further argues that Petitioner's interpretation of claim 2 "renders superfluous the last two limitations of claim 1 of Couper." *Id.*

Based on the present record, we find that Petitioner has made a sufficient showing as to claim 2 at this stage of the proceeding. Petitioner introduces testimony from Dr. Atlas that Couper's disclosure that the mobile station "can include any information determined by the signature detector" (e.g., metadata), and may "in one embodiment, initially exclude any audio that ha[s] been recorded or collected by the mobile device," suggests to one of ordinary skill that the communication can, in another embodiment, include both the metadata and audio that has been recorded or collected by the mobile device. We determine that this evidence is sufficient for purposes of institution. As for claims 1–3 of Couper, while it appears that there may be some ambiguity in this claim language, we do not determine based on the present record that this defeats Petitioner's showing based on Couper's specification combined with Dr. Atlas's testimony. The parties may address this issue further during the trial.

5. Claims 3, 4, 6, 11, and 12

Petitioner contends that claims 3, 4, 6, 11, and 12 are unpatentable over Couper in view of Lemelson. Pet. 28–33. Patent Owner relies on its arguments concerning claim 1 for these claims. *See* Prelim. Resp. 25–31. Based on the evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood that claims 3, 4, 6, 11, and 12 are unpatentable over Couper in view of Lemelson.

F. Ground 2A: Obviousness of Claim 5 Based on Couper, Lemelson, and Jones

Petitioner contends that dependent claim 5 would have been obvious over Couper in view of Lemelson and Jones. Pet. 33–40. Patent Owner disagrees. Prelim. Resp. 31–34.

1. Overview of Jones (Ex. 1010)

Jones relates to "remote emergency or warning notification devices," and discloses a system for remote monitoring of audio alarms. Ex. 1010, 1:12–14, 2:28–35. A diagram of an emergency detector is provided in Figure 1, reproduced below.

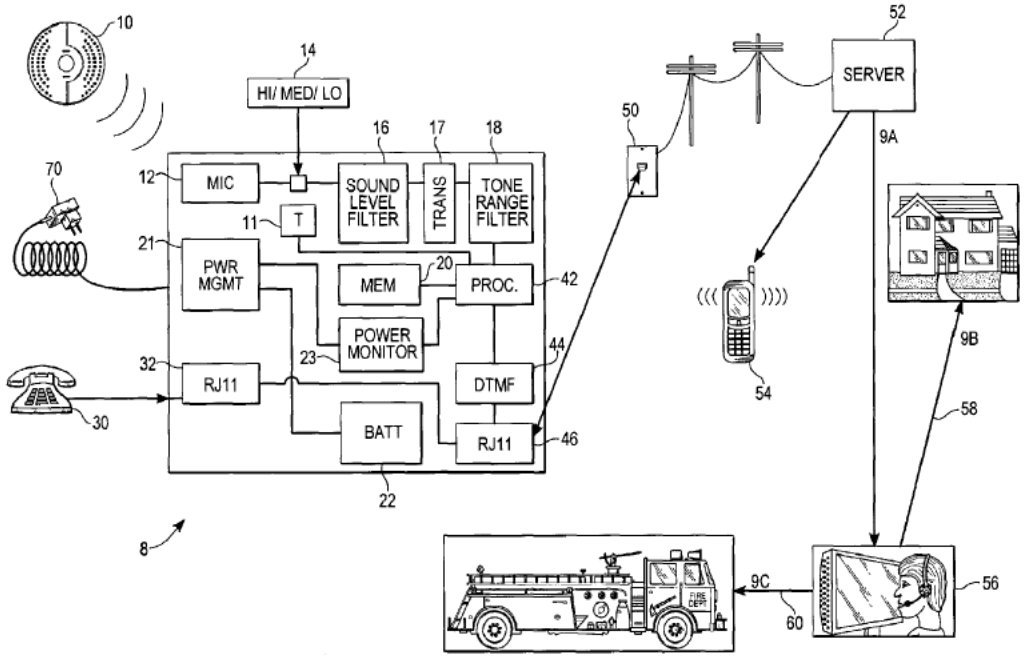


Figure 1 of Jones shows an overall diagram of an emergency detector according to an embodiment of the invention. Ex. 1010, Fig. 1, 3:21–23.

As shown in Figure 1, emergency detector 10 (such as a smoke detector) produces an audible indication of an emergency condition, which is detected by unit 8 using microphone 12. Ex. 1010, 3:34–43. Unit 8 includes "[a]n optional sound level switch (physical or embedded in electronic logic or software) 14" which "may set a threshold detection level"

above which the volume level of the sound "triggers activation of the rest of the system." *Id.* at 3:46–49. Processor 42 analyzes the sound and its duration, and identifies an alarm condition when the duration exceeds a threshold. *Id.* at 3:57–61. Unit 8 then contacts server 52 and sends information, such as the type of alarm being transmitted. *Id.* at 3:64–4:8. Server 52 may then contact phone 54 associated with unit 8, or contact monitoring center 56 which can contact emergency services such as a police or fire department. *Id.* at 4:30–46.

2. Claim 5

Claim 5 depends from claim 1 and recites that the operations performed by the processor "further comprise buffering the acoustic signal upon detection of the trigger event." Ex. 1001, 18:29–31. For element 1[e], Petitioner argues that one of ordinary skill "would have been motivated to modify Couper-Lemelson's method of continuous loop recording and sound signature detection based on Jones's teachings relating to the volume level switch." Pet. 35 (citing Ex. 1002 ¶ 164). "More particularly," Petitioner asserts, one of ordinary skill "would have recognized that activating Couper's continuous loop recording only upon detecting that the volume of the incoming signal was over a given threshold, such as the volume level typical of a fire alarm, would have provided the advantage of saving power in Couper's device." *Id.* (citing Ex. 1002 ¶ 165). "Thus," according to Petitioner, one of ordinary skill "would have considered the combination to be the application of Jones's volume level threshold technique to improve Couper in the same way it improves Jones'[s] system, i.e., by conserving power during periods of low sound levels." *Id.* (citing Ex. 1002 ¶ 166).

Petitioner argues that one of ordinary skill "would have had a reasonable expectation of success in making the combination" because "implementing Jones'[s] volume level switch would merely require modifying Couper-Lemelson's sound signature detector program such that it would check the volume level of the incoming signal prior to activating continuous recording and signature detection," which "would have been well within" the level of ordinary skill in the art. Pet. 35–36 (citing Ex. 1002 ¶ 167). According to Petitioner, "Couper already discloses that the signature detector is capable of extracting volume information from the signal." *Id.* at 36 (citing Ex. 1008, 5:5–14). Petitioner further contends, that, even if a volume level switch would undermine the system's "ability to detect, record, and/or transmit some highly transient sounds," one of ordinary skill "would have appreciated that implementing the switch would provide significant battery life improvements, and that Couper's objective includes detecting continuous, non-transient sounds such as alarms and sirens." *Id.* (citing Ex. 1008, 4:66; Ex. 1002 ¶ 168).

With respect to limitation 1[f], Petitioner argues that the claimed "trigger event" would map to the system's detection of a sound above the volume level threshold. Pet. 37–38 (citing Ex. 1008, Fig. 2; Ex. 1002 ¶ 172). Petitioner asserts that, even if "the volume level threshold switch does not immediately precede or directly cause transmission of a communication to the event processor," the claim language "does not require direct causation between the 'trigger event' and 'opening a communication channel with a remote server.'" *Id.* at 38–39 (citing Ex. 1002 ¶ 173).

With respect to dependent claim 5, Petitioner argues that "Couper discloses recording audio data in a 'continuous loop' and recording over it

unless a sound signature is detected," and that "[t]his 'continuous loop' recording and over-writing is consistent with how the '259 patent describes buffering the acoustic signal." Pet. 39 (citing Ex. 1008, 8:7–14; Ex. 1001, 6:54–59, 9:53–57; Ex. 1002 ¶ 176). According to Petitioner, in the combination, "the processor would perform volume level threshold detection prior to activating the continuous loop recording feature." *Id.* (citing Ex. 1002 ¶ 177). "Accordingly," Petitioner contends, one of ordinary skill "would have understood the combined system's processor would commence the continuous loop recording function ('buffering the acoustic signal') after the processor detected that the volume level threshold switch was met or exceeded ('upon detection of the trigger event[']))." *Id.* at 40 (citing Ex. 1002 ¶ 178).

Patent Owner argues that "inserting Jones's sound level switch 14 into Couper's system" would "significantly decrease its effectiveness while providing no appreciable benefit." Prelim. Resp. 31. Patent Owner asserts that the proposed combination "would have improved battery performance, if at all, only at the expense of not identifying certain incidents and not correctly determining the nature and location of the incidents that were identified." *Id.* at 32. For example, according to Patent Owner, "[t]he insertion of Jones's sound level switch 14 would impede Couper's ability to detect sudden sounds such as breaking glass, auto accidents, etc." because "the received sound signal would not be recorded and compared with a sound signature until after a determination is made that the sound exceeds the sound level threshold." *Id.* (citing Ex. 2001 ¶ 64).

Patent Owner also argues that, "under the Petition's proposed modification, sounds that do not exceed the sound level threshold would not

be detected," and thus "incidents that occur too distant from any mobile device so as to be sufficiently loud when they are received by the mobile devices would not be detected at all by the modified Couper system" and "incidents that occur near only one or a few devices" may not be properly identified. Prelim. Resp. 32–33. According to Patent Owner, "[t]he system of Couper is premised on receiving data from multiple mobile devices." *Id.* at 33 (citing Ex. 1008, 6:11–19). Patent Owner further argues that the Petition does not offer any technical analysis to back up its assertion that its modification would "provide significant battery life improvements," and that "introducing Jones['s] sound level switch and adding a step to Couper's algorithm could ***decrease*** battery life" due "to the increased computations required." *Id.* (citing Ex. 1002 ¶ 168; Ex. 2001 ¶ 67).

Based on the present record, we determine that Petitioner has made a sufficient showing as to claim 5 for purposes of institution. Specifically, we determine that Petitioner has presented sufficient evidence at this stage of the proceeding that one of ordinary skill would have been motivated to add Jones's volume level switch for recording sounds over a given threshold in order to conserve power, and that doing so would have been within the level of ordinary skill. *See* Ex. 1002 ¶¶ 164–167. Although the volume level switch may have interfered with the system's ability to detect transitory sounds, Petitioner has presented sufficient evidence that this was a tradeoff that would have been appreciated by one of ordinary skill, and would have been acceptable in certain circumstances, such as where battery life was an important consideration. *Id.* ¶ 168. We also disagree with Patent Owner's assertion that "[t]he system of Couper is premised on receiving data from multiple mobile devices" (Prelim. Resp. 33), because the cited portion of

Couper merely describes receiving data from many multiple devices as an embodiment, and does not indicate that Couper's system is limited to or premised on only that embodiment. Ex. 1008, 6:11–19.

Consequently, based on the present record, we determine that Petitioner has established a reasonable likelihood of unpatentability of claim 5 based on the Couper-Lemelson-Jones combination at this stage of the proceeding.

G. Ground 2B: Obviousness of Claim 5 Based on Couper, Lemelson, Jones, and Lagassey

Petitioner contends that dependent claim 5 would have been obvious over Couper in view of Lemelson, Jones, and Lagassey. Pet. 40–42. Patent Owner disagrees. Prelim. Resp. 31–34.

Ground 2B is similar to Ground 2A except that Petitioner argues that, "[t]o the extent [Patent Owner] argues that Couper alone does not disclose or suggest buffering," buffering would have been obvious based on Lagassey. Pet. 40 (citing Ex. 1002 ¶¶ 179–185). Petitioner asserts that Lagassey "discloses a control unit 25 that includes a circular buffer," and that "control unit 25 continuously stores all incoming audio data in a loop or circular buffer" while it "compares the audio signals against stored sound signatures indicative of an accident" and, "upon detecting an accident, preserves the audio data in the circular buffer by transferring it to a persistent storage device." *Id.* at 40–41 (citing Ex. 1011 ¶¶ 53–55, 67, 151, 175; Ex. 1002 ¶ 180).

Petitioner argues that one of ordinary skill "would have appreciated that Lagassey describes essentially the same functionality as the Couper-Lemelson-Jones system, but provides additional details regarding how to implement this functionality by explaining that the 'continuous loop'

recording may be implemented in a 'circular buffer.'" Pet. 41 (citing Ex. 1002 ¶ 181). According to Petitioner, it would have been obvious to combine Lagassey with the Couper-Lemelson-Jones system "because the combination would have amounted to no more than the use of a known technique (Lagassey's circular buffer and persistent storage mechanism) to improve similar devices (the Couper-Lemelson-Jones's wearable incident detection system) in the same way (to provide a buffer for continuously recording and overwriting incoming sound)." *Id.* at 41–42 (citing Ex. 1002 ¶ 184).

Patent Owner does not separately argue against the addition of Lagassey to the Couper-Lemelson-Jones system, but rather relies on its arguments concerning the Couper-Lemelson-Jones system. Prelim. Resp. 31–34.

Based on the present record, we determine that Petitioner has established a reasonable likelihood that claim 5 is unpatentable over Couper in view of Lemelson, Jones, and Lagassey.

H. Ground 3: Asserted Obviousness of Claims 1, 5, 12, 15, and 16 Based on White in view of Soufflet and Comerford

Petitioner contends that claims 1, 5, 12, 15, and 16 would have been obvious over White in view of Soufflet and Comerford. Pet. 42–73. Patent Owner disagrees, arguing that Petitioner has failed to establish that these claims would have been obvious based on White, Soufflet, and Comerford. Prelim. Resp. 34–39.

1. Overview of White (Ex. 1012)

White is directed to a "distributed voice user interface" (VUI). Ex. 1012, 1:20. An overview of White's system is shown in Figure 1, reproduced below.

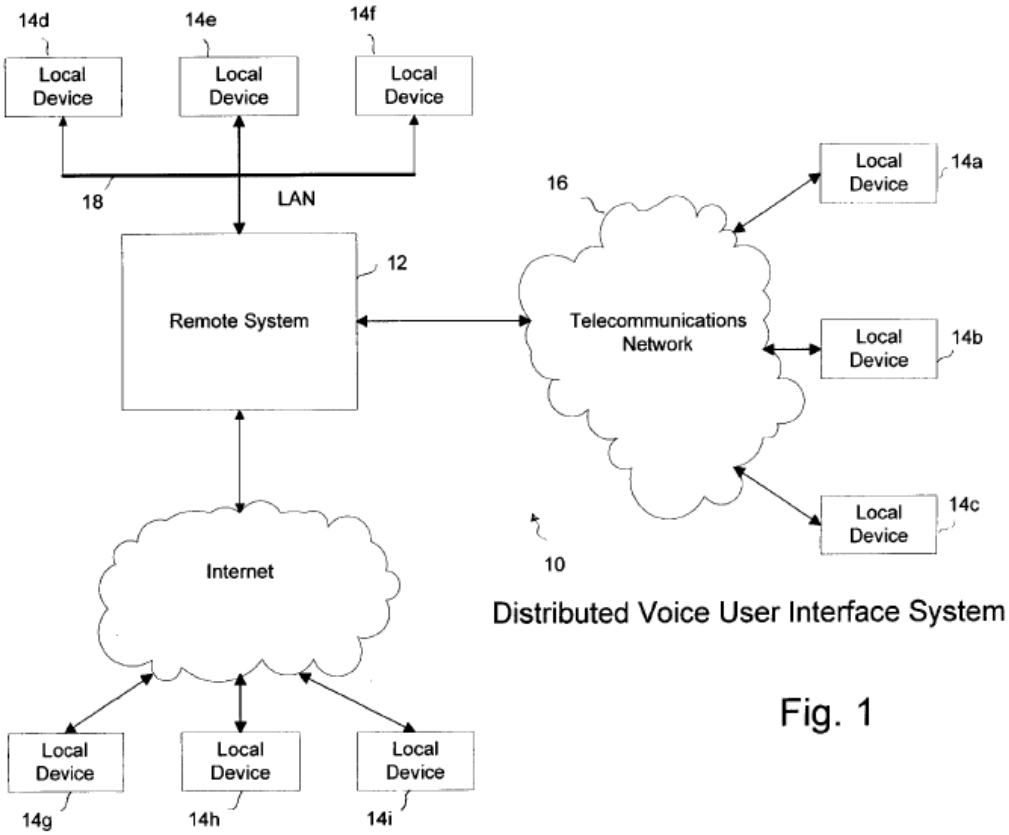


Fig. 1

Figure 1 of White shows a distributed voice user interface system. Ex. 1012, Fig. 1, 3:46–47.

Figure 1 shows distributed voice user interface (VUI) system 10, which "allows one or more users to interact—via speech or verbal communication—with one or more electronic devices or systems into which distributed VUI system 10 is incorporated, or alternatively, to which distributed VUI system 10 is connected." Ex. 1012, 4:54–61. VUI system 10 includes remote system 12 which communicates with local devices 14 to implement one or more distributed VUIs, such that remote system 12 cooperates with each local device 14 to deliver a separate VUI capable of

responding to a user and controlling that local device. Ex. 1012, 4:66–5:10. Local devices may each include a resident VUI including a microphone and speaker, as well as hardware and/or software for implementing speech recognition and speech output. *Id.* at 6:9–22. Where the speech recognition and/or speech output capability of a resident VUI of a local device is not sufficient, the resident VUI can be supplemented with more extensive capability provided by remote system 12. *Id.* at 6:46–50.

An exemplary method of operation of local device 14 is shown in the flow diagram of Figure 4, reproduced below.

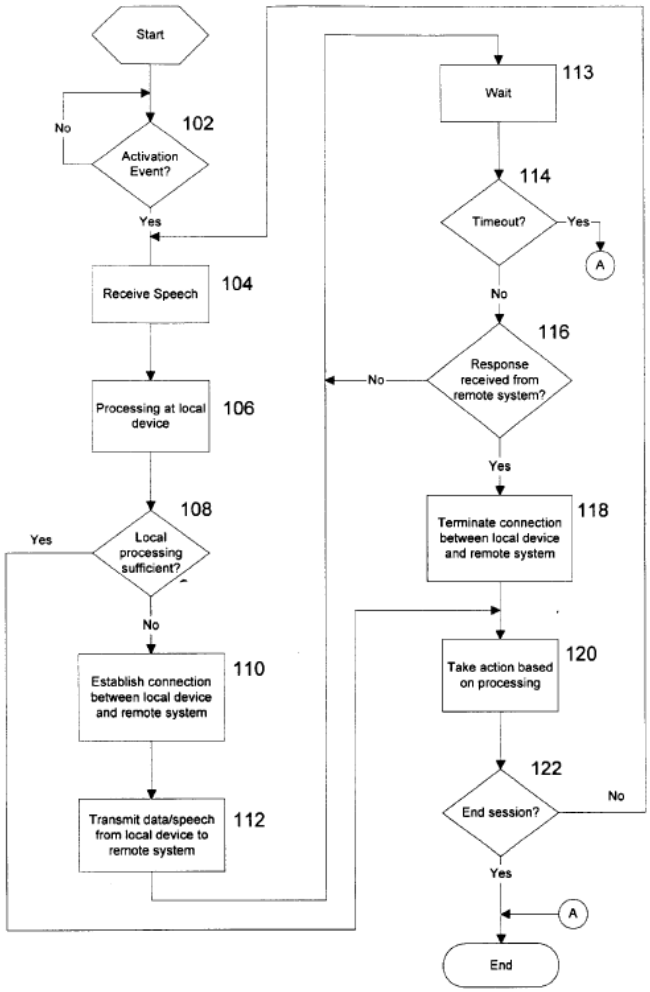


Fig. 4

Figure 4 is a flow diagram of an exemplary method of operation for a local device. Ex. 1012, Fig. 4, 3:53–55.

As shown in Figure 4, the local device waits for an "activation event," such as the user uttering a particular keyword or phrase such as "Start" or "Turn on" (step 102). Ex. 1012, 17:21–27. Next, the local device receives "speech input" from the user by a microphone, such as "audible expressions of commands, instructions, directions, or requests spoken by the user" (step 104). *Id*. at 17:40–41. If the local device is unable to process the user's speech input, it establishes a connection with remote system 12 and "transmits data and/or speech input to remote system 12 for processing therein" (steps 106–112). *Id*. at 18:3–8.

The remote system receives the user speech input and processes it, including by comparing it against grammars or acoustic models. Ex. 1012, 18:60–61, 19:1–14. If the remote system cannot identify a match, it requests more input from the user and, if necessary, provides the user with a list of recognizable commands or requests. *Id*. at 19:22–31, 19:54–67. If the remote server identifies a match, the system responds to the local device with, for example, a control signal for controlling the local device 14. *Id*. at 20:20–26.

2. Overview of Soufflet (Ex. 1013)

Soufflet relates to the "optimization of language models and/or of phonetic units in terminals using voice recognition." Ex. 1013 ¶ 2. According to Soufflet, "the requirements in terms of voice recognition are ever more considerable, both as regards the extent of recognition (very large vocabulary) and the speed of recognition (real time)." *Id.* ¶ 3. Soufflet explains that, in designing voice user interfaces, "it is not possible to exhaustively define a language," or to "take account of all the possible expressions and turns of phrase (from formal language to slang), and/or of

errors of grammar, etc." *Id.* ¶ 19. Thus, Soufflet seeks to provide a "voice recognition process and system making it possible to modify and improve a language model remotely, on the basis of the recordings of expressions unrecognized by the system." *Id.* ¶ 20.

An embodiment of Soufflet's system is provided in Figure 1, reproduced below.

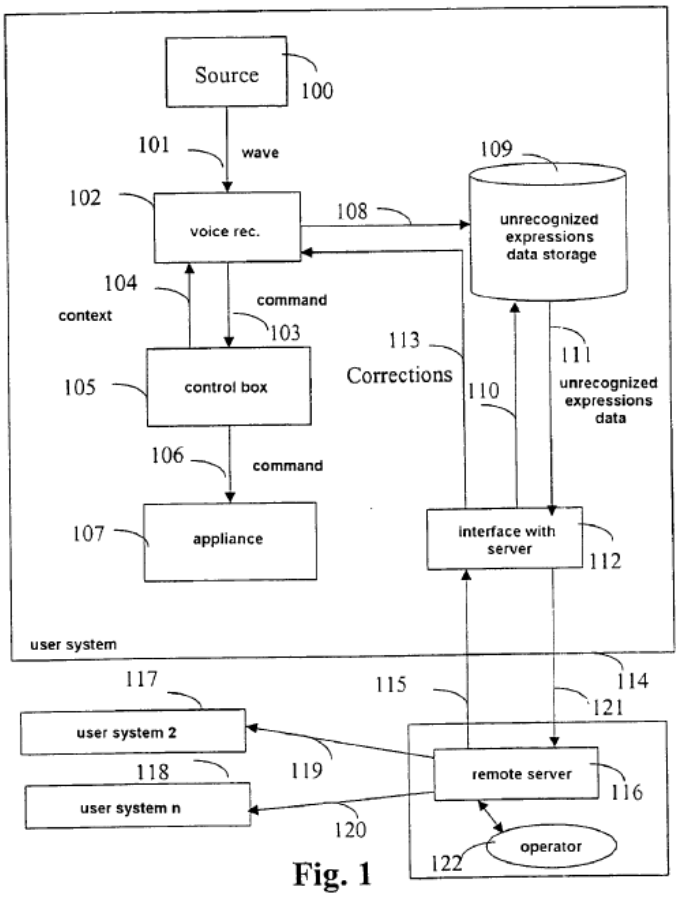


Fig. 1

Figure 1 of Soufflet shows a general schematic of a voice-controlled system. Ex. 1013, Fig. 1, ¶ 62.

As shown in Figure 1, Soufflet's system includes remote server 116 and multiple user systems 114, 117, and 118, each of which may be implemented as a "mobile telephone or a portable communication terminal." Ex. 1013 ¶¶ 94–96, 114. Each user system includes voice recognition box 102, which includes a dictionary and recognition engine that uses language

models to identify the words used in expressions. *Id.* ¶¶ 116–118, 120, 121 Fig. 2. In operation, the user terminal receives a user "expression" or "utterance" and, if that expression is not recognized, it is sent to remote server 116 for further processing. *Id.* ¶¶ 177–186, Figs. 5, 6. Contextual information related to the unrecognized expression, such as time and date, is also transmitted to the remote server. *Id.* ¶¶ 40–42, 44, 91.

At the remote server, the recording is processed and the server determines whether the expression is comprehensible. *Id.* ¶¶ 199–200. If it is, server 116 "constructs a correction of the language model" including "correcting data" including "an indicator specifying the nature of the correction (in particular substitution, modification, supplement, or deletion); and the correcting data themselves as a function of the indicator." *Id.* ¶¶ 202–204. Server 116 then broadcasts the correcting data to the user terminal, which receives the correcting data and uses it "to update the language model and/or its set of phonetic units used by the voice recognition module." *Id.* ¶¶ 190–194, 206, 212. The correcting data may require "substitut[ing] for existing data in the language model and/or its set of phonetic units," "modify[ing] existing data," "supplement[ing] existing data," or "deleting of existing data." *Id.*

3. Overview of Comerford (Ex. 1014)

Comerford is directed to techniques for overcoming errors in speech recognition systems. Ex. 1014, code (57). Comerford explains that "any errors that may occur in a speech recognition system that could cause loss of speech intended to be recognized" are referred to as "truncation errors." *Id.* ¶ 7. This may occur in the context of a speech recognition system that uses a "microphone-button" to activate speech recognition, for example if the

user pushes the microphone on button after speech has already begun, resulting in the loss of the speech before the button has been pressed. *Id.* ¶ 4.

To address the "truncation error" problem, Comerford discloses continuously recording into a first circular buffer, and then when a "MICON" (microphone on) signal is received (representing the time at which the system detects that the user is addressing the system to provide a speech command), buffering all further speech into a separate linear buffer, and prepending a copy of the circular buffer to the linear buffer. Ex. 1014 ¶¶ 29, 31–37. The composite buffer is fed into the speech recognition process. *Id.* ¶¶ 43–44.

4. Analysis of Independent Claim 1

a) 1[pre]: "[a] wearable device, comprising:"

Petitioner argues that, to the extent the preamble is limiting, White discloses it. Pet. 42 (citing Ex. 1002 ¶¶ 186–188). Specifically, Petitioner asserts that White "discloses implementing local device 14 as 'smart jewelry (e.g., an electronic watch).'" *Id.* at 42–43 (citing Ex. 1012, 5:46–47).

Patent Owner does not present arguments regarding the preamble. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding the preamble.

b) 1[a]: "a microphone;"

Petitioner argues that White discloses or suggests this limitation. Pet. 43 (citing Ex. 1002 ¶¶ 189–191). Specifically, Petitioner asserts, "White discloses that each local device has a 'microphone 20.'" *Id.* (citing Ex. 1012, 10:40, Fig. 2).

Patent Owner does not present arguments directed to this limitation. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

c) *1[b]: "a memory that stores instructions; and"*

1[c]: "a processor that executes the instructions to perform operations, the operations comprising:

Petitioner argues that White discloses or suggests these limitations. Pet. 44 (citing Ex. 1002 ¶¶ 192–197). "For example," Petitioner asserts, "White discloses that each local device 14 includes a 'processing component 28,' and further discloses implementing the processing component as a 'microprocessor connected to (or incorporating) supporting memory to provide the functionality described herein.'" *Id.* (citing Ex. 1012 10:37–42, 11:25–34, Fig. 2). According to Petitioner, one of ordinary skill "would have understood this to mean that the processor is connected to a memory that includes stored software instructions for performing the functionality described in the specification." *Id.* (citing Ex. 1002 ¶ 193). Petitioner further contends that White "expressly discloses implementing the functional units/components described throughout its specification as 'programs stored in non-volatile memory, such as read-only memory (ROM),' and discloses implementing various functionality of each local device in software." *Id.* (citing Ex. 1012, 2:65–3:3, 4:51–52, 5:20–22, 6:18–22, 11:53–58, 12:23–31, 13:9–12, 13:17–25).

"Accordingly," Petitioner argues, "White discloses or suggests a wearable device with a memory that stores software instructions for performing the functions of the wearable device ('a memory that stores instructions'), and a microprocessor ('a processor') that executes the

software instructions stored in the supporting memory ('that executes the instructions to perform operations')." *Id.* (citing Ex. 1002 ¶ 197).

Patent Owner does not present arguments directed to these limitations. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding these limitations.

d) 1[d]: "receiving an acoustic signal from the microphone configured to measure an ambient environment;"

Petitioner argues that White discloses or suggests this limitation. Pet. 45 (citing Ex. 1002 ¶¶ 198–208). "For example," Petitioner asserts, "White discloses that '[m]icrophone 20 detects the audible expressions issued by a user and relays the same to processing component 28,'" which one of ordinary skill would have understood "to mean that the microphone transduces the air pressure waves generated by the user's audible expressions into analog signals carrying the acoustic content of the user's expressions and transmits them to the processing component." *Id.* (citing Ex. 1012, 10:63–67; Ex. 1002 ¶ 200). According to Petitioner, "White further discloses receiving from the user (1) a wake up phrase or keyword such as 'Start' and (2) 'speech input' which comprises 'audible expressions of commands, instructions, directions, or requests spoken by the user.'" *Id.* (citing Ex. 1012, 10:16–22, 13:50–59, 17:21–37, 17:37–42). Petitioner contends that "White further discloses that the microphone picks up 'ambient noise' in addition to human speech." *Id.* (citing Ex. 1012, 11:67–12:1; Ex. 1002 ¶ 203).

"Accordingly," Petitioner argues, "White discloses or suggests a wearable device with a processing component that performs operations including receiving the user's speech including a 'wake up' keyword/phrase

and a 'speech input' (e.g., an audible expression of a command) captured by and relayed from a microphone ('receiving an acoustic signal from the microphone') wherein the signal includes sounds in the ambient environment ('configured to measure an ambient environment')." *Id.* at 45–46 (citing Ex. 1002 ¶ 204).

Patent Owner does not present arguments directed to this limitation. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

e) 1[e]: "analyzing the acoustic signal to detect a trigger event;"

Petitioner argues that White discloses or suggests this limitation. Pet. 46 (citing Ex. 1002 ¶¶ 208–215). Petitioner argues that "White discloses the processing component 28 receiving the user's speech from microphone 20" and that "the processing component 28 implements a resident VUI, configured to activate the local device when it detects 'triggering events.'" *Id.* at 46–47 (citing Ex. 1012, 6:9–15, 11:59–64, 13:50–59). "More particularly," Petitioner asserts, "White discloses implementing the resident VUI to be 'constantly operating—listening to speech issued from a user, extracting feature parameters (e.g., cepstral, Fourier, or LPC) from the speech, and/or scanning for keyword "wake up" phrases.'" *Id.* at 47 (citing Ex. 1012, 13:55–59). According to Petitioner, one of ordinary skill "would have understood this to mean that White's resident VUI is constantly performing parameter extraction and comparing resulting parameters to previously stored acoustic models of particular keyword 'wake up' phrases to determine if the incoming speech includes any such keywords/phrases," which "is consistent with how the '259 patent

describes 'analyzing' an acoustic signal." *Id.* (citing Ex. 1002 ¶¶ 213–214; Ex. 1001, 6:23–27).

"Accordingly," Petitioner contends, "White discloses or suggests a wearable device with a processor that analyzes the user's speech from microphone 20 ('analyzing the acoustic signal') to detect a triggering event such as a keyword wake-up phrase ('to detect a trigger event')." Pet. 47 (citing Ex. 1002 ¶ 215).

Patent Owner does not present arguments directed to this limitation. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

f) 1[f]: "opening a communication channel with a remote server if a trigger event is detected;"

Petitioner argues that White discloses or suggests this feature. Pet. 47 (citing Ex. 1002 ¶¶ 216–222). Petitioner asserts that White "discloses that when a user 'triggers local device 14 with a "wake up" command, local device 14 initiates communication with remote system 12.'" *Id.* (citing Ex. 1012, 14:4–10). According to Petitioner, White "also discloses 'establish[ing] a connection' with the remote system 12," which may be a server, "after the local device determines that local processing is insufficient to process the user's 'speech input.'" *Id.* at 47–48 (citing Ex. 1012, 9:58–63, 18:3–6). Additionally, Petitioner asserts that White's local device "includes a 'transceiver 32' which is 'connected to processing component 28 and functions to provide bi-directional communication with remote system 12 over telecommunications network 16.'" *Id.* at 48 (citing Ex. 1012, 13:13–49). Petitioner further contends that one of ordinary skill "would have understood that for a local device to 'initiate communication[]' with the

remote system or establish a connection, the local device opens a communication channel with the remote system," and that "the processor communicates with the transceiver to perform the step of opening the communication channel." *Id.* (citing Ex. 1002 ¶ 221).

"Accordingly," Petitioner argues, "White discloses or suggests that the processing component of the wearable device initiates communication with the remote system 12 or establishes a connection with the remote system 12 ('opening a communication channel with a remote server') if the resident VUI detects a wake-up phrase ('if a trigger event is detected')." Pet. 48 (citing Ex. 1002 ¶ 222).

Patent Owner argues that Petitioner improperly attempts to rewrite limitation 1[f] as "opening a communication channel with a remote server sometimes if a trigger event is detected." Prelim. Resp. 34–35 (citing Ex. 2001 ¶ 69). Patent Owner argues that "[t]he plain meaning of 'if' is 'in the event that,'" and therefore the claim language requires that "when a trigger event is detected, a communication channel must be opened." *Id.* at 35 (citing Ex. 2010, 3; Ex. 2001 ¶ 70). To support this construction, Patent Owner argues that "the '259 patent consistently discloses a system in which the intensive signal processing required to detect sound signatures always occurs off of the mobile device and at a server." *Id.* (citing Ex. 1001, 13:17–27, Fig. 8; Ex. 2001 ¶ 70).

Patent Owner argues that White does not meet this claim limitation because its mobile device 14 "only sometimes opens a communication channel with a remote server in the event an activation event is detected and indeed attempts to avoid opening a communication channel when possible." Prelim. Resp. 36. According to Patent Owner, White's local device first

"processes speech to determine whether the analysis of the speech results in commands and instructions sufficient for the local device to take action," and only if this analysis is insufficient is the data or speech "transmitted to a remote system for analysis." *Id.* Thus, Patent Owner argues, White makes clear that in all cases "local device 14 first attempts to respond and only if unable to do so does it establish a connection with a remote device." *Id.* at 39 (citing Ex. 1012, 13:63–65).

Based on the present record, we determine that Petitioner has made a sufficient showing as to limitation 1[f]. Based on the present record, we do not agree with Patent Owner's apparent construction of the phrase "opening a communication channel with a remote server if a trigger event is detected" to require that ***every*** time the trigger event is detected the mobile device ***must*** open a communication channel with a remote server. Or, in other words, we do not agree that the claim language excludes a system where, when a trigger event is detected, the mobile unit opens a communication channel under some circumstances (such as where additional help is needed from a server) and sometimes does not open a communication channel (if help is not needed from a server). We do not see anything in the claim language that requires that a communication channel must be opened every time there is a trigger event. We also do not see anything in the '259 patent specification that supports Patent Owner's construction. Patent Owner points to column 13, lines 17–27 of the '259 patent, but that merely describes the operation of Figure 8, which is only an "exemplary method" of the invention. On the current record, we do not conclude that the claims are limited to this "exemplary method."

Turning to White's disclosures, White states that "[i]f local device 14 is not able to respond by itself (e.g., it cannot recognize a user's spoken command) or, ***alternatively, if a user triggers local device 14 with a 'wake up' command, local device 14 initiates communication with remote system 12***." Ex. 1012, 14:2–6. We agree with Petitioner that one of ordinary skill would understand this phrase to mean that if a user triggers local device 14 with a "wake up" command (detecting a "trigger event"), the mobile device opens a communication channel with a remote server. Patent Owner argues that this is a "stray comment" taken "out of context," and other portions of White make clear that local device always attempts to respond before establishing a connection with a remote device. Prelim. Resp. 39 (citing Ex. 1012, 13:5–65, 17:54–18:7, Fig. 4). At this stage of the proceeding, however, Petitioner has sufficiently shown that the statement from White upon which it relies on should be taken at face value, and Patent Owner has not pointed to disclosure in the '259 patent that would convince us to disregard it. Moreover, even if Patent Owner were correct on this point, we do not interpret the claim language to require that the mobile device must always open a communication channel when it detects a trigger event, as discussed above.

Consequently, based on the present record we agree that Petitioner has sufficiently shown that White teaches or suggests limitation 1[f] for purposes of institution.

g) 1[g]: "generating metadata;"

Petitioner argues that White in combination with Soufflet discloses or suggests this limitation. Pet. 48–49 (citing Ex. 1002 ¶¶ 223–251). Petitioner asserts that Soufflet "is generally directed to a similar problem as

White, i.e., the problem of being unable to recognize the user's speech input at the local device due to limited resources." *Id.* at 49 (citing Ex. 1002 ¶ 225). Petitioner also argues that one of ordinary skill "would have been motivated to modify White's system and method for a distributed voice user interface using Soufflet's teaching to generate and transmit context data with the user's speech to the remote system." *Id.* at 52 (citing Ex. 1002 ¶ 246). According to Petitioner, "White and Soufflet disclose similar systems directed to a similar problem; that is, the augmenting of a local device's ability to perform speech recognition with the services provided by a remote server," and thus one of ordinary skill "would have readily appreciated how Soufflet's teachings pertaining to generating and transmitting context data would apply to and improve the ability of White's remote system 12 to recognize the user's speech input that the local terminal was unable to process," including "understanding the meaning and purpose" of that speech input. *Id.* (citing Ex. 1013 ¶ 44; Ex. 1002 ¶ 246).

Accordingly, Petitioner argues, one of ordinary skill "would have considered the combination to amount to the use of a known technique (Soufflet's generating/transmitting context information) to a known system (the White distributed VUI) ready for improvement" to "yield predictable results (a distributed VUI with a remote system that has an enhanced ability to process the user's speech input using contextual information about the user's speech input)." Pet. 53 (citing Ex. 1002 ¶ 247). According to Petitioner, one of ordinary skill "would have understood that the White system was ready for improvement" at least because "White discloses that its local device is capable of transmitting both speech data and context data to the remote terminal—i.e., White discloses that each local device includes

a transceiver 32 that transfers 'speech and other data' to the remote system." *Id.* (citing Ex. 1012, 13:16-17; Ex. 1002 ¶ 248). Petitioner further contends that the combination "also amounts to the use of a known technique (Soufflet's generating/transmitting context information) to improve similar devices (White's distributed VUI and Soufflet's distributed VUI) in the same way (to enhance the ability of the remote system to recognize the user's speech)." *Id.* (citing Ex. 1002 ¶ 249).

Additionally, Petitioner argues that one of ordinary skill "would have had a reasonable expectation of success in making" the White-Soufflet combination because "it would have merely required generating and transmitting basic information such as date and time information along with the user's speech input," which "would have been well within" the level of ordinary skill. Pet. 53 (citing Ex. 1002 ¶ 250). "Thus," Petitioner contends, "in the White-Soufflet system, White's local device processing component 28 would generate context information regarding the user's speech input, such as the time and date of the user's speech input, and transmit that information to the remote system 12 along with the user's speech input." *Id.* at 54 (citing Ex. 1002 ¶ 251)

Patent Owner does not present arguments directed to this limitation. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

h) 1[h]: "transmitting the metadata, and the acoustic signal to the server via the communication channel; and"

Petitioner argues that White in combination with Soufflet and Comerford discloses or suggests this limitation. Pet. 54 (citing Ex. 1002 ¶¶ 252–278). Petitioner asserts that "White discloses that after the local

device is activated by a wake-up command, the processing component receives 'speech input' from the user comprising 'audible expressions of commands.'" *Id.* (citing Ex. 1012, 17:38–42). "The resident VUI," according to Petitioner, "then attempts to recognize the user's speech input," but "if the speech recognition processing on the local device is not sufficient, the local device 'transmits data and/or speech input to remote system 12.'" *Id*. (citing Ex. 1012, 17:63–18:8). Petitioner contends that (as discussed above) the White-Soufflet combination discloses transmitting context information ("the metadata") to the remote system, and one of ordinary skill would have understood the White-Soufflet combination to disclose or render obvious transmitting the context information over the same connection that was previously established in limitation 1[f] "to avoid having to establish a second connection." *Id.* at 55 (citing Ex. 1002 ¶ 225).

Petitioner asserts that "White further discloses transmitting encoded speech data and/or extracted parameter data to the remote system," but acknowledges that "White does not explicitly disclose transmitting the user's wake up phrase to the remote system along with the user's 'speech input' (e.g., the user's audible expression of a command, although it does not preclude it, either)." Pet. 55 (citing Ex. 1012, 13:13–38; Ex. 1002 ¶ 257). However, Petitioner argues, one of ordinary skill "would have been motivated to modify the White-Soufflet system in view of Comerford to transmit both the user's wake up phrase and the speech input to the server." *Id.* (citing Ex. 1002 ¶ 257).

As discussed previously, Comerford proposes a two memory buffer arrangement to address the problem of truncation errors in speech recognition systems. *See* §II.H.2, *supra*. Petitioner argues that White "does

not describe the details of the memory architecture pertaining to receipt of the user's wake-up command and speech input," so a person of ordinary skill "looking to implement the White-Soufflet system would have been motivated to consider prior art techniques for doing so," including Comerford's two memory buffer arrangement which "would be well-suited for temporary buffering and analysis of the user's wake-up commands." Pet. 57 (citing Ex. 1002 ¶¶ 265–266). Petitioner also argues that such an approach would have been obvious because it would have allowed the White-Soufflet system to avoid the truncation error problem. *Id.* at 57–58 (citing Ex. 1002 ¶¶ 267, 269).

Thus, Petitioner argues, "in the combined White-Soufflet-Comerford system, both portions of the user's speech that comprise 'the acoustic signal' (i.e., the 'wake-up' phrase and the 'speech input') would be captured in a composite linear buffer and processed by the speech recognition engine on the user's local device," and if necessary, "the processing component would transmit the composite linear buffer to the remote system for further processing over the same connection established" in limitation 1[f]. Pet. 58 (citing Ex. 1002 ¶ 270). Petitioner asserts that one of ordinary skill "would have understood that the combined White-Soufflet-Comerford system would be more robust to the truncation error problem because even if the user did not pause long enough before uttering his/her speech command, the entire speech input signal would be captured and fed into the ASR process." *Id.* at 58–59 (citing Ex. 1002 ¶ 271).

Patent Owner does not present arguments directed to this limitation. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

i) 1[i]: "receiving, from the server, an analysis of the acoustic signal including whether a sound signature has been detected."

Petitioner argues that White in combination with Soufflet and Comerford discloses or suggests this limitation. Pet. 61 (citing Ex. 1002 ¶¶ 279–301). Petitioner asserts that White "discloses that the remote system performs parameter extraction on the user's speech input to produce a 'vector of cepstral coefficients every 10 milliseconds,' and then compares the speech input against one or more grammars or acoustic models." *Id.* (citing Ex. 1012, 15:53–67, 19:6–14). "If there is a match," according to Petitioner, "the remote system generates a vocalized reply or a control signal for controlling the local device," and if not, "the system seeks additional user input from the user, and directs the user to select from a list of commands if needed." *Id.* (citing Ex. 1012, 19:22–31, 19:54–61, 20:20–26). Petitioner contends that White "further discloses that the '[a]coustic model component 73' includes 'reference voice templates which store previous enunciations (or acoustic models) of certain words or phrases by particular users.'" *Id.* (citing Ex. 1012, 16:4–10).

Petitioner argues that one of ordinary skill "would have understood that White's disclosure of producing a 'vector of cepstral coefficients every 10 milliseconds' to be the same as generating a 'sound signature' for the speech input" and that "White's 'acoustic models' are consistent with the '259 patent's description of 'sound signature models.'" Pet. 61–62 (citing Ex. 1002 ¶¶ 292–293; Ex. 1001, 13:43–47). Therefore, according to Petitioner, one of ordinary skill would have understood that White discloses

or suggests comparing parameters of the input speech (e.g., the vector(s) of cepstral coefficients) to the acoustic models for the purpose of determining whether they matched the sound signature for particular words or phrases." *Id.* at 62 (citing Ex. 1002 ¶ 293).

Petitioner also argues that Soufflet discloses having the local server send a user's unrecognized expression for further processing, and having the remote server generate and transmit correcting data back to the local terminal so that the local terminal can, for example, account for new words, slang, or accents. Pet. 62–63. Petitioner asserts that one of ordinary skill would have been motivated to modify the White-Soufflet-Comerford system to incorporate these teachings as an effective way to update or modify the keywords recognizable by the local device. *Id.* at 64 (citing Ex. 1002 ¶ 299; Ex. 1012, 12:55–13:12).

"Accordingly," Petitioner contends, "the White-Soufflet-Comerford system discloses or suggests a processor of a wearable device receiving from the remote system ('receiving, from the server') a reply including a control signal (if the remote system found a match), a request for additional input or a list of recognizable commands (if the remote system did not find a match)," and/or "correcting data including information about the words or phrases identified in the user's speech input (any of which constitutes 'an analysis of the acoustic signal including whether a sound signature has been detected')." Pet. 64–65 (citing Ex. 1002 ¶ 301).

Patent Owner does not present arguments directed to this limitation. *See* Prelim. Resp. 25–39.

We determine that, on the record before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

j) Summary for Claim 1

For the foregoing reasons, Petitioner's cited evidence and reasoning demonstrates a reasonable likelihood that Petitioner would prevail in its contentions regarding claim 1.

5. Claims 5, 12, 15, and 16

Petitioner contends that claims 5, 12, 15, and 16 are unpatentable over White in view of Soufflet and Comerford. Pet. 65–73. Patent Owner relies on its arguments concerning claim 1 for these claims. *See* Prelim. Resp. 34–39. Based on the evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood that claims 5, 12, 15, and 16 are unpatentable over White in view of Soufflet and Comerford.

III. CONCLUSION

After considering the evidence and arguments presented in the current record, we determine that Petitioner has demonstrated a reasonable likelihood of success in proving that at least one of the challenged claims of the '259 patent is unpatentable. Patent Owner has not persuaded us to exercise our discretion to deny institution of trial. We therefore institute trial on all challenged claims and grounds raised in the Petition.

At this stage of the proceeding, we have not made a final determination as to the patentability of any challenged claim or as to the construction of any claim term. Any final determination will be based on the record developed during trial. We place Patent Owner on express notice that any argument not asserted in a timely-filed Response to the Petition, or in another manner permitted during trial, shall be deemed waived, even if that argument was presented in the Preliminary Response.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–6, 11, 12, 15, and 16 of the ’259 patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the ’259 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

For PETITIONER:

Ali R. Sharifahmadian
Jeffrey A. Miller
David A. Caine
ARNOLD & PORTER KAYE SCHOLER LLP
ali.sharifahmadian@arnoldporter.com
jeffrey.miller@apks.com
david.caine@arnoldporter.com

For PATENT OWNER:

Jacob A. Snodgrass
Bradford A. Cangro
Jeremy D. Peterson
PV Law LLP
jacob.snodgrass@pvuslaw.com
bradford.cangro@pvuslaw.com
jeremy.peterson@pvuslaw.com