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Paper 29
Date: June 14, 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.

IPR2022-00234
Patent 9,124,982 B2

Before GEORGE R. HOSKINS, NATHAN A. ENGELS, and
RUSSELL E. CASS, *Administrative Patent Judges*.

HOSKINS, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, "Petitioner") filed a Petition (Paper 3, "Pet.") pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of U.S. Patent No. 9,124,982 B2 ("the '982 patent"), claims 1–6, 10, 11, 14, 15, 17–20, 24, and 25. We instituted the petitioned review (Paper 12, "Institution Decision" or "Inst. Dec.").

Staton Techiya, LLC ("Patent Owner") filed a Patent Owner Response (Paper 17, "PO Resp.") to oppose the Petition. Petitioner filed a Reply (Paper 20, "Pet. Reply") to the Patent Owner Response. Patent Owner filed a Sur-reply (Paper 21, "Sur-reply") to the Reply. An oral hearing was held, for which the transcript was entered into the record (Paper 28, "Tr.").

We have jurisdiction under 35 U.S.C. § 6(b)(4) and § 318(a). This Decision is a final written decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of claims 1–6, 10, 11, 14, 15, 17–20, 24, and 25 of the '982 patent. We determine Petitioner has shown by a preponderance of the evidence that claims 1–6, 14, 15, 17–20, 24, and 25 are unpatentable, but has not shown claims 10 and 11 are unpatentable.

II. BACKGROUND

A. Real Parties-in-Interest and Related Proceedings

Petitioner identifies itself (i.e., Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.) as the sole real party-in-interest for Petitioner. *See* Pet. 1, 71; Paper 8, 1; Paper 27, 1. Patent Owner identifies itself (i.e., Staton Techiya, LLC) and Synergy IP Corporation as the real parties-in-interest for Patent Owner. *See* Paper 6, 1.

The parties identify one district court litigation involving the '982 patent: *Staton Techiya, LLC et al. v. Samsung Elecs. Co., Ltd. et al.*, No. 2:21-cv-00413 (E.D. Tex.). *See* Pet. 71; Paper 6, 1; Paper 7, 1; Paper 27, 1.

The parties also identify several IPR and reexamination proceedings, considering patents other than the '982 patent, as related matters. *See* Pet. 71 (citing Ex. 1032); Paper 7, 1; Paper 8, 1–2; Paper 27, 1–3.

B. The '982 Patent

The '982 patent is directed to an always-on recording system. *See* Ex. 1001, code (54). Figures 1A and 1B, reproduced below, illustrate such a system embodied as an earpiece mounted within a user's ear:

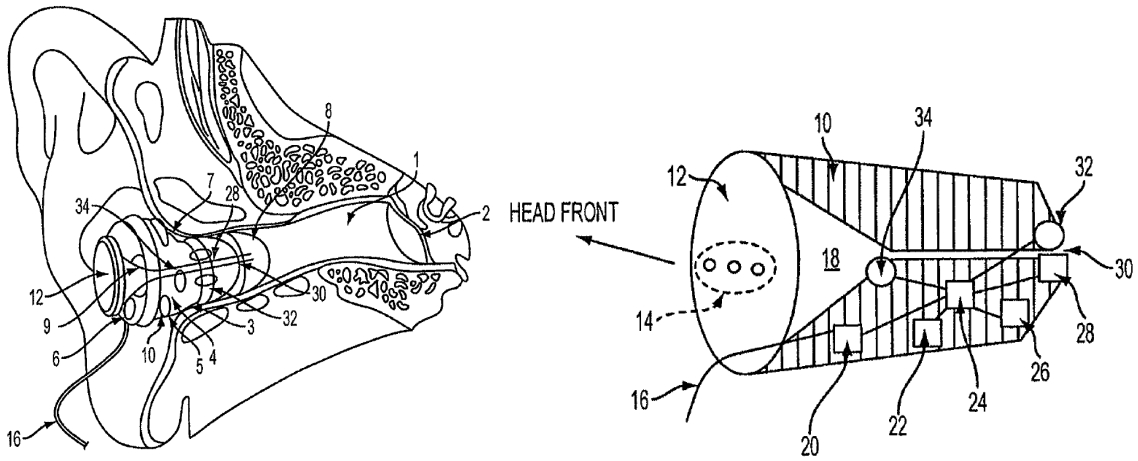


FIG. 1A FIG. 1B

Figures 1A and 1B of the '982 Patent.

Figure 1A depicts earpiece 8 mounted within ear canal 1 of a user's ear, and Figure 1B also illustrates earpiece 8. *See id.* at 2:25–29, 7:10–12, 7:18–21. The earpiece includes processing unit 24 connected to ambient sound microphone 34 to record sound in front chamber 18, and ear canal

microphone 32 to record sound from the eardrum 2 side of the earpiece. *See id.* at 7:13–18, 7:26–35, 7:67–8:7.

Processing unit 24 "is always recording [these] audio signals to a circular data buffer (such as the non-volatile RAM 22), so when the permanent recording is activated . . . the contents of this buffer (which may be a history of the last 10 minutes—or any time duration determined by the user or determined automatically) is also recorded." *Id.* at 9:23–30, 11:13–22. This transfer of sound data from RAM 22 to ROM 26 for more permanent storage may be activated manually by a command from the user of earpiece 8, or automatically by processing unit 24 monitoring the audio signals recorded into RAM 22. *See id.* at 5:7–12, 9:25–27, 10:62–11:12.

Communication circuitry 20 sends sound data recorded by processor 24 in ROM 26 to other external devices, such as a computing device or a mobile phone. *See id.* at 7:56–63, 8:52–9:6.

The always-on recording system of the '982 patent is "not limited to earpieces," and "some functionality can be implemented on other systems with speakers and/or microphones" such as "mobile phones." *Id.* at 3:3–8.

C. The Claims of the '982 Patent

Claim 1 is the sole independent claim of the '982 patent, and we reproduce it here:

> 1. An Always-On Recording System (AORS) comprising:
>
> a monitoring assembly mounted on a mobile phone, the monitoring assembly including an ambient sound microphone (ASM) to monitor an ambient acoustic field proximate to the mobile phone, the ASM producing an ASM signal responsive to the ambient acoustic field;

> a data storage device configured to act as a circular buffer for continually storing the ASM signal;
>
> a further data storage device coupled to the data storage device; and
>
> a record-activation system including software configured to activate the further data storage device to record a content of the data storage device.

Ex. 1001, 14:47–59.

D. Effective Filing Date of the '982 Patent Claims

Petitioner contends the challenged claims of the '982 patent are entitled to an effective filing date of no earlier than September 9, 2013. *See* Pet. 6–8. Patent Owner contends the challenged claims are entitled to an effective filing date of April 9, 2007. *See* PO Resp. 1, 3; Sur-reply 18–20. We need not resolve this dispute, for the following reasons.

First, the first-inventor-to-file provisions of the Leahy-Smith America Invents Act[1] ("the AIA") apply to any patent issuing from an application that contains or contained at any time a claim to a claimed invention that has an effective filing date on or after March 16, 2013. *See* AIA § 3(n)(1). Thus, these AIA provisions apply if Petitioner's date is correct, but do not apply if Patent Owner's date is correct. However, this change in the law does not affect the outcome of this Decision. As one example, Patent Owner does not dispute that any of the references cited by Petitioner as prior art to the '982 patent are in fact prior art under 35 U.S.C. § 102, under pre-AIA law or post-AIA law. *See* Tr. 60:11–19 (Patent Owner's counsel stating: "All the prior [art] asserted, all the prior art discussed is before the earliest priority

[1] Pub. L. No. 112-29, 125 Stat. 284 (2011).

date that the ['982] patent is claiming so I see no need to address [the priority date]"). Indeed, Patent Owner's witness Daniel Anagnos was "advised" that Petitioner's ten principal references (listed in the next section below) are each "prior art to the '982 patent" by virtue of having a filing or publication date prior to the effective filing date of the '982 patent. Ex. 2006 ¶¶ 35–44. As another example, the AIA's changes to 35 U.S.C. § 103 do not affect our consideration of whether Petitioner has demonstrated obviousness by a preponderance of the evidence, based on the arguments and facts presented in this case.

Second, neither party suggests, and we discern no evidence to suggest, that the state of the art or the level of ordinary skill in the art changed materially between April 2007 and September 2013, to affect the obviousness analysis under 35 U.S.C. § 103. *See, e.g.*, Tr. 31:26–33:7, 60:11–61:12

Therefore, we assume (without deciding) that the challenged claims all have an effective filing date of April 9, 2007.

E. Asserted Prior Art

Petitioner relies principally on the following ten prior art references. *See* Pet. 1–3.

Name	**Reference**	**Filing Date**	**Exhibit No.**
Yuen	US 5,903,868	Feb. 13, 1996	1010
Langhart	US 2002/0118798 A1	Feb. 27, 2001	1012
Furst	US 2002/0106091 A1	Sept. 28, 2001	1015
Le	US 2003/0161097 A1	Feb. 28, 2002	1008
Stuckman	US 2004/0109668 A1	Dec. 5, 2002	1014
Mayer	US 2004/0042103 A1	June 2, 2003	1009
Lagassey	US 2006/0092043 A1	Nov. 3, 2005	1017
Sjursen	US 7,756,285 B2	Jan. 30, 2006	1011

Name	Reference	Filing Date	Exhibit No.
Kurki	US 9,123,343 B2	Apr. 27, 2006	1013
Couper	US 9,135,797 B2	Dec. 28, 2006	1016

F. Asserted Grounds

Petitioner relies on the following eight grounds of unpatentability for the challenged claims. *See* Pet. 3.

Ground	Claim(s) Challenged	35 U.S.C. §	References
1A	1, 3, 5, 6, 10	103	Le, Mayer
1B	4	103	Le, Mayer, Yuen
1C	11	103	Le, Mayer, Sjursen
1D	14, 15	103	Le, Mayer, Langhart
1E	17–20	103	Le, Mayer, Kurki
1F	24	103	Le, Mayer, Stuckman
1G	25	103	Le, Mayer, Furst
2	1, 2	103	Couper, Lagassey

G. Testimonial Evidence

Petitioner relies on the testimony of Les Atlas, Ph.D., as an expert witness (Exhibits 1002, 1003, and 2007). Patent Owner relies on the testimony of Daniel Anagnos as an expert witness (Exhibits 1041[2], 2002, and 2006).

III. CONSIDERATION OF PETITIONER'S GROUNDS

A. Law of Obviousness

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that

[2] Exhibit 1041 is a transcript of Mr. Anagnos's deposition testimony, captioned as pertaining to IPR2022-00282. However, the testimony pertains to the present proceeding, IPR2022-00234. *See* Tr. 31:5–25, 70:14–26.

the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness, if made available in the record, which is not the case here. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Petitioner contends a person having ordinary skill in the art pertaining to the '982 patent "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. 14; Ex. 1002 ¶¶ 18–20. Patent Owner "applies the level of ordinary skill in the art that is proposed" in the Petition. PO Resp. 16; Ex. 2006 ¶¶ 75–76.

We conclude Petitioner's formulation of ordinary skill is consistent with the level of skill reflected in the '982 patent and the prior art of record, and it is not disputed by Patent Owner. We, therefore, apply Petitioner's formulation in our analysis below.

C. Claim Construction

We interpret the '982 patent claims "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). This "includ[es]

construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." *Id.*

Petitioner asserts "no express constructions of the claims are necessary" in this proceeding, and "the claims should be given their plain and ordinary meaning." Pet. 14–15; Ex. 1002 ¶ 93. Patent Owner agrees. *See* PO Resp. 16–17; Ex. 2006 ¶ 77.

Upon review of the arguments and evidence presented, we construe the meaning of several terms in the dependent claims, which we defer to later sections of this Decision. *See infra* Sections III.D.6(a) (claim 10, "embed"), III.F.2 (claim 11, "diaphragm"), III.H.2 (claim 17, "audio forensics analysis"). No further explicit construction of any claim term is needed to resolve the patentability issues presented here. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (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)).

D. Ground 1A — Obviousness over Le and Mayer

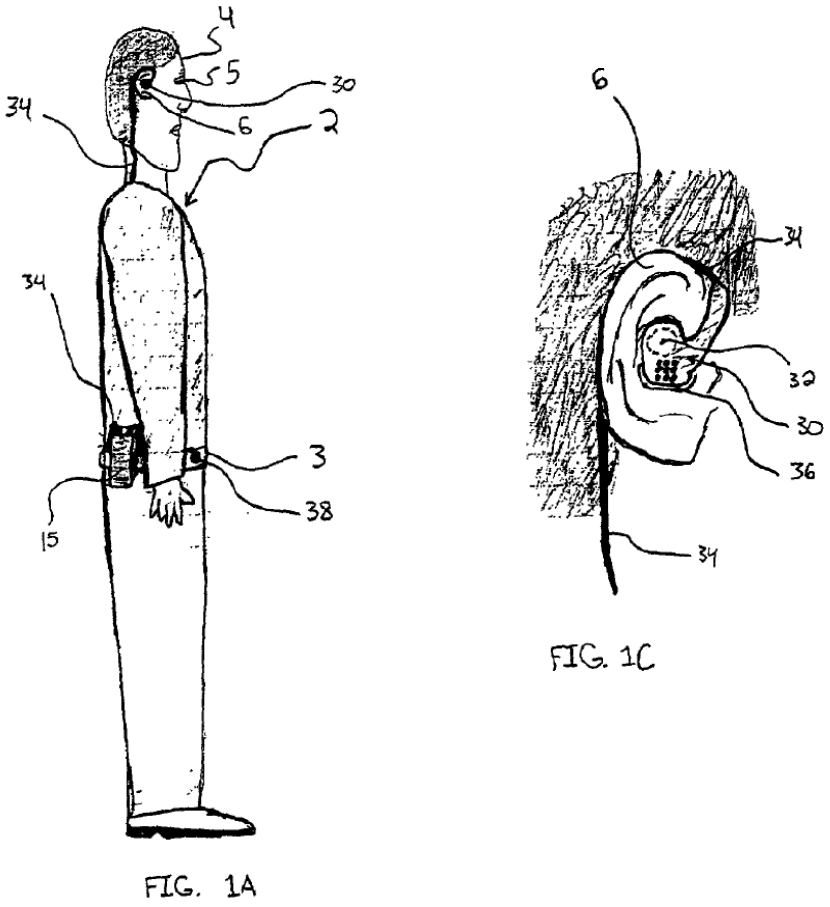
In Ground 1A, Petitioner argues claims 1, 3, 5, 6, and 10 of the '982 patent are unpatentable as having been obvious over Le and Mayer. *See* Pet. 3, 8–11, 15–19, 23–34; Ex. 1002 ¶¶ 59–75, 103–122, 140–214. Patent Owner opposes. *See* PO Resp. 4–12, 17–34; Ex. 2006 ¶¶ 45–64, 79–103.

We have reviewed the record, and we conclude Petitioner's contentions are supported by a preponderance of the evidence as to claims 1,

3, 5, and 6, but not claim 10. We begin our analysis with summaries of Le and Mayer, then we address Petitioner's contentions and Patent Owner's opposition.

1. Le

Le discloses a wearable computer system that records audio signals from the user's surroundings, such as the user's conversations with other people. *See* Ex. 1008, code (57), ¶ 12. Figures 1A and 1C are reproduced below:



Figures 1A and 1C of Le.

Figure 1A depicts a profile view of user 2 wearing a hands-free, voice-operated computer system 10, and Figure 1C is a closer view of the portion of the system worn on the user's ear 6. *See id.* ¶¶ 15, 17, 20, 22.

The system includes computer unit 15 connected to personal microphone 36 and environmental microphone 38. *See id.* ¶¶ 20, 24. Computer unit 15 and environmental microphone 38 are both attached to the user's belt 3, and personal microphone 36 is housed in earpiece 30 on the user's ear 6. *See id.* ¶ 20.

Computer unit 15 includes "a continuously scrolling audio buffer to store audio information received by" microphone 38, and "continuously records ambient audio, and saves it for some predetermined period of time, such as 30 seconds or one minute." *Id.* ¶ 28. "This allows the user to store audio clips just before, or after, the user issues a predetermined voice command" to store the clips. *Id.* ¶¶ 28, 37. The buffer may be "a part of memory 18" within computer unit 15 (*see id.* ¶ 28, Fig. 2), and the audio clips selected for more permanent storage may also be saved into memory 18 (*id.* ¶ 37).

Computer unit 15 includes data port 28 to upload saved audio data to a remote computer (not shown). *Id.* at Fig. 2, ¶¶ 21, 30.

"In another implementation, a cellular telephone is used and worn on a belt clip or kept in the user's pocket" and "[t]his cellular telephone may be integrated with the wearable computer unit (which may be a PDA, for example) to provide communications between the user and a remote user, or a remote computer." *Id.* ¶ 9; *see also id.* ¶ 42 (contemplating "using the housing of a cellular phone to enclose the computer unit 15"); *id.* ¶¶ 41–42 (disclosing that computer unit 15 may use data port 28 to receive audio messages via the cellular telephone).

According to Le, computer system 10 "is more natural in appearance" than prior wearable computer systems, "and facilitates natural interactions

with the system and the user's surroundings." *Id.* ¶¶ 3, 5. Thus, the components of system 10 "blend in with the natural appearance of the user 2" to be "minimally obtrusive to the movements and actions of the user 2." *Id.* ¶ 31. For example, "having an earpiece in one's ear is becoming a normal appearance . . . with cellular telephones . . . to converse on the telephone in a hands-free manner." *Id.* ¶ 33.

2. Mayer

Mayer discloses a system for retroactive recording. *See* Ex. 1009, code (54). In some embodiments, the system is used to record songs on the radio, or programs on TV. *See id.* at code (57), ¶ 2.

"Another possible variation is to use similar principles for example with wrist watches or cellular phones or ordinary phones." *Id.* ¶ 16. In these embodiments, "the watch or phone preferably contains within it at least one microphone and at least one preferably digital temporal buffer," such as a "circular buffer[] . . . for constant automatic recording," so that "the user can record retroactively for example conversations." *Id.* The microphone(s) contained within the cellular phone are "preferably . . . one or more non-directional microphones so that all directions can be recorded without problems." *Id.* Advantageously, "a watch or a cellular phone are very common electronic devices that users carry anywhere . . . [s]o they can be always available and also they can make the retroactive recording in an un-suspicious way, preferably without any indication to other people that recording is taking place." *Id.*

3. Claim 1

Petitioner provides arguments and evidence in support of contending claim 1 is unpatentable as having been obvious over Le and Mayer. *See* Pet. 8–11, 15–19, 23–31; Ex. 1002 ¶¶ 59–75, 103–122, 140–193. Patent Owner opposes. *See* PO Resp. 4–12, 17–30; Ex. 2006 ¶¶ 45–64, 79–90. We address these arguments on a limitation-by-limitation basis.

a) "1. An Always-On Recording System (AORS) comprising:"

Petitioner argues: "To the extent the preamble is limiting, Le discloses or suggests this feature." Pet. 23 (citing Ex. 1008, code (57), ¶¶ 12, 28; Ex. 1001, 2:8–10, 5:59–62, 6:14–18, 6:54–56); Ex. 1002 ¶¶ 140–144. Patent Owner does not dispute this contention, and we find it is supported by a preponderance of evidence in the record. For example, Le's computer unit 15 "include[s] a continuously scrolling audio buffer to store audio information received by" environmental microphone 38, "and saves it for some predetermined period of time, such as 30 seconds or one minute" to allow the user to store audio clips from "just before" issuing a command. Ex. 1008, Fig. 1A, ¶ 28; *see also id.* ¶ 12 ("One mode of operation is to passively record data of certain events that the user may recall at a later time.").

b) "a monitoring assembly mounted on a mobile phone, the monitoring assembly including an ambient sound microphone (ASM) to monitor an ambient acoustic field proximate to the mobile phone, the ASM producing an ASM signal responsive to the ambient acoustic field"

Petitioner argues Le and Mayer combine to disclose or suggest the monitoring assembly recited in claim 1. *See* Pet. 15–19, 23; Ex. 1002 ¶¶ 103–122, 145. Patent Owner disagrees. *See* PO Resp. 4–12, 17–30;

Ex. 2006 ¶¶ 45–64, 79–90. For the following reasons, we conclude Petitioner's argument is supported by a preponderance of the evidence.

(i) Clarity of Combination of Le and Mayer, and Motivation to Combine

Petitioner asserts "Le teaches implementing the computer unit 15 as a cellular telephone" that is mobile because it is worn on the user's body, and connecting environmental microphone 38 to computer unit 15. Pet. 15, 23 (citing Ex. 1008, Fig. 1A, ¶¶ 9, 20, 26, 30, 33, 42); Ex. 1002 ¶¶ 107, 146–147, 151–152. Le's environmental microphone 38, according to Petitioner, is an ambient sound microphone to monitor an ambient acoustic field proximate to computer unit (mobile phone) 15, to produce a signal responsive to the ambient acoustic field. Pet. 23–24 (citing Ex. 1008 ¶ 27); Ex. 1002 ¶¶ 147–148 (citing Ex. 1008 ¶¶ 20, 27, 42).

Petitioner asserts "Mayer discloses a cellular phone embodiment for recording conversations where *the cellular phone includes within it 'one or more non-directional microphones'* for 'constant automatic recording of sound in the environment'" such as conversations. Pet. 16, 24 (emphasis added) (quoting Ex. 1009 ¶ 16); Ex. 1002 ¶¶ 109, 149–150.

Petitioner asserts a person of ordinary skill in the art would have been motivated to modify Le's wearable audio recording system, in light of Mayer, by replacing Le's environmental microphone 38 with one or more non-directional microphones mounted on computer unit (mobile phone) 15. *See* Pet. 16–19, 24–25; *see also id.* at 29 ("[I]n the Le-Mayer system, Le's environmental microphone would be replaced by Mayer's one or more microphones within the cellphone[.]"); Ex. 1002 ¶¶ 103–122, 153–154. According to Petitioner, this would have been done to further Le's stated

goal of blending its wearable audio recording system in with the user's natural appearance to be minimally obtrusive, "by reducing the number of components that the user would need to wear and/or attach to his/her person." Pet. 15–17 (citing Ex. 1008 ¶¶ 5, 31, 33); Ex. 1002 ¶¶ 104–108, 110–113, 119–122. Petitioner further asserts "miniature non-directional microphones were well-known in the art," including such microphones used in a cellphone to record the user's conversations, so the proposed modification is no more than the use of a known technique to improve a similar device in the same way with predictable results. Pet. 17–19 (citing Ex. 1008 ¶ 9; Ex. 1009 ¶ 16); Ex. 1002 ¶¶ 113–122 (further citing Exs. 1016, 1019, and 1028). And finally, according to Petitioner, using Mayer's *non-directional* microphones would have been advantageous in Le "to ensure 'all directions can be recorded without problems.'" Pet. 17 (quoting Ex. 1009 ¶ 16); Ex. 1002 ¶¶ 112, 117.

Patent Owner argues Petitioner's combination of Le and Mayer "is not clearly defined." PO Resp. 17; Sur-reply 2. Patent Owner asserts Petitioner "propose[s] replacing the environmental microphone 38 of Le with the multi-directional microphone suggested by Mayer" and "replacing Le's computer unit 15 with a cell phone, and then mounting the multi-directional microphone within the cell phone rather than to the user's body." PO Resp. 19 (citing Pet. 17–19). Patent Owner nonetheless argues Petitioner's case for obviousness is deficient because it "do[es] not indicate whether other components from each prior art reference would be needed or used" or

"address how one of ordinary skill in the art would make such a system operate properly." *Id.*[3]

According to Patent Owner, "[t]he lack of basic information on how to form the asserted combination was highlighted during" Dr. Atlas's deposition testimony, when he "had trouble specifically identifying the nature and location of the components that would be used in a working system." *Id.* at 17, 20 (citing Ex. 2007, 32:24–57:23). As one example, Patent Owner asserts Dr. Atlas "struggle[d] to define the source and location of the cellular phone in the proposed combination." *Id.* at 20–21 (citing Ex. 2007, 36:17–40:23). As another example, Patent Owner argues Dr. Atlas "seemed uncertain whether the cellular phone he proposes for the combination is found in Le or in Mayer, or perhaps both." *Id.* at 21 (citing Ex. 2007, 47:7–52:4, 53:19–54:3). As a further example, Patent Owner contends Dr. Atlas struggled to answer whether there is a computer unit in the Le-Mayer combination, or how Le's computer unit would be combined with a cellular phone including software modifications, or where the computer unit could be located. *See id.* at 21–23, 25 (citing Ex. 2007, 54:24–55:20, 55:24–56:8, 57:8–19, 59:2–10). Finally, according to Patent Owner, Dr. Atlas was unable to describe the minimum hardware and software specifications that would be required to combine Le and Mayer in the fashion proposed by Petitioner, including memory size, battery size, and

[3] Patent Owner cites Mr. Anagnos's declaration (Exhibit 2006) at paragraph 95 here. However, that testimony is not on point. The only pertinent testimony in Mr. Anagnos's declaration is paragraph 79, which is a conclusory summary of the argument in the Patent Owner Response. His remaining testimony concerning claim 1 (paragraphs 80–90) concerns other arguments raised by Patent Owner, discussed below.

processor speed and power. *See id.* at 23–25 (citing Ex. 2007, 60:4–61:24, 63:9–17, 64:15–65:6, 65:18–67:4). Patent Owner concludes: "If Petitioner['s] expert could not clearly identify the components used in a proposed combination or the technical requirements of those components, then the combination would not have been obvious to one of ordinary skill[]." *Id.* at 25–26.

Petitioner replies that "the Petition and Dr. Atlas' declaration sufficiently describe the combination" of Le and Mayer with respect to claim 1. Pet. Reply 1. In particular: "[I]n view of Mayer's disclosure, a [person of ordinary skill in the art] would have been motivated to replace Le's belt-clipped environmental microphone with one or more non-directional microphones within Le's cellular telephone to pick up sounds from the environment." *Id.* at 2, 3–4 (citing Pet. 15–19, 23–24; Ex. 1002 ¶¶ 103–122, 151–152; Inst. Dec. 24–34). Petitioner argues it need not "describe what the combination *is not*; that is, 'whether ***other*** components from each prior art reference would be needed or used,'" or "describe the details for making the combined system 'operate properly.'" *Id.* at 2–3 (quoting PO Resp. 19). Petitioner asserts obviousness does not require "explicitly specify[ing] every detail of a physically combined, operative device." *Id.* at 4 (citing *Apple, Inc. v. GUI Glob. Products, Ltd., D/B/A GWEE*, IPR2021-00470, Paper 38 (PTAB Aug. 11, 2022)).

Petitioner further asserts Patent Owner's criticism of Dr. Atlas's testimony is unfounded. *See id.* at 3. Petitioner argues the deposition questions posed by Patent Owner's counsel instead are worthy of criticism, as "vague and unmoored to" Dr. Atlas's report by seeking recollection of proposed combinations 'off the top of [his] head,'" despite that he was being

deposed about three different IPR proceedings at the same time. *Id.* at 3 (quoting Ex. 2007, 150:22).

Patent Owner replies "the law requires Petitioner[] to define an operative system based on its prior art combination" in which "[t]he assembled components . . . work together to achieve the desired purpose," which Petitioner has failed to do. Sur-reply 3–4 (citing Pet. 17–19; Ex. 1002 ¶¶ 120–22). Patent Owner accuses Petitioner of relying on improper hindsight bias, rather than an articulated motivation to combine Le and Mayer, to argue for obviousness. *See id.* (citations omitted); *id.* at 5–6. Patent Owner maintains Dr. Atlas "did not know if cellular telephones had sufficient memory capacity in 2007 to allow the combination to operate" and "did not know whether processors with sufficient power to implement the combination existed at that time." *Id.* at 5 (citing Ex. 2007, 64:15–65:6, 67:7–68:19).

We conclude Petitioner's combination of Le and Mayer is clearly defined in sufficient detail to establish obviousness, and establishes a sufficient motivation for the combination to avoid hindsight bias. As to sufficient detail, "the amount of explanation needed will vary from case to case, depending on the complexity of the matter and the issues raised in the record." *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 991–92 & 993–94 (Fed. Cir. 2017); *InTouch Techs., Inc. v. VGo Comms., Inc.*, 751 F.3d 1327, 1351–52 (Fed. Cir. 2014). In some cases, a persuasive showing of obviousness requires an explanation of "*how* the combination of the two references was supposed to work," as "a prerequisite to adequately explaining and supporting a conclusion that a relevant skilled artisan would have been motivated to make the combination." *Personal Web*, 848 F.3d

at 994. The amount of explanation needed "necessarily depends on context" such as the complexity of technology and prior art explanations at issue. *Id.*

In this case, Petitioner's explanation is sufficient. Petitioner argues Le discloses "implementing the computer unit 15 as a cellular telephone." Pet. 15, 23–24. That is, in the combination, Le's computer unit (mobile phone) 15 retains the processing power, software, memory, and battery resources that Le ascribes to unit 15 as being sufficient to record audio data from microphones 36 and 38, and to implement voice commands from the user. *See, e.g.*, Ex. 1008 ¶ 9 (stating a "cellular telephone may be integrated with the wearable computer unit"), ¶ 42 (stating one embodiment "include[s] using the housing of a cellular phone to enclose the computer unit 15"); *id.* ¶¶ 20–24 (describing functionality of computer unit 15).

We have reviewed the deposition testimony from Dr. Atlas cited by Patent Owner. He was pressed concerning finer implementation details of achieving an operative device that are not tethered to any particular limitation of claim 1. *See* Ex. 2007, 32:24–57:23, 58:15–67:4. That is, claim 1 pertinently does not specify any more detail than "a monitoring assembly mounted on a mobile phone" and "a record-activation system including software to activate" a recording. Ex. 1001, 14:47–59. Claim 1 does not specify any particular hardware configuration that might distinguish Le's computer unit (mobile phone) 15 from the claimed invention, any particular mounting configurations of the monitoring assembly on the mobile phone, any particular memory size or structure, or any particular battery size. We conclude, on the record presented, that such implementation details are all within the level of ordinary skill in the art as is suggested by Le, and would not have deterred Petitioner's proposed

modification of Le in light of Mayer by using Le's computer unit (mobile phone) 15.

Petitioner specifically posits replacing Le's environmental microphone 38 with Mayer's non-directional microphone(s) mounted on Le's computer unit (mobile phone) 15. *See* Pet. 16–19, 24–25, 29. Patent Owner does not identify, and from the evidence presented we do not discern, any material difference between Le's environmental microphone 38 and Mayer's non-directional microphone(s) that would have deterred a person of ordinary skill in the art from doing this. Indeed, Mayer states its non-directional microphone(s) can be implemented with "wrist watches or cellular phones," thereby indicating such devices can have the requisite processing power, software, memory, and battery resources for "constant automatic recording of sound in the environment" including voice activation. Ex. 1009 ¶ 16. We conclude, on the record presented, that combining Le's computer unit (mobile phone) 15 with Mayer's non-directional microphone(s) would have been within the level of ordinary skill in the art as is suggested by Le and Mayer, and would not have deterred Petitioner's proposed modification.

As to sufficient motivation for the proposed modification, Petitioner asserts a person of ordinary skill in the art would have been motivated to replace Le's environmental microphone 38 with one or more microphones mounted on computer unit (mobile phone) 15, in order to reduce the number of visible components in the system and thereby further Le's goal of providing an unobtrusive wearable computer system. *See* Pet. 16–19, 24– 25, 29. This motivation is sufficiently articulated and supported by the evidence to avoid hindsight bias. *See, e.g.*, Ex. 1008 ¶¶ 3, 5, 31, 33.

Thus, we conclude Petitioner's combination of Le and Mayer is clearly defined in sufficient detail to establish obviousness, and establishes a sufficient motivation for the combination to avoid hindsight bias.

(ii) Whether Petitioner's Combination of Le and Mayer Renders Le Inoperable for its Intended Purpose

Patent Owner argues Petitioner's proposed combination of Le and Mayer is improper because it would render Le inoperable for its intended purpose. *See* PO Resp. 26–30; Ex. 2006 ¶¶ 80–90. For the following reasons, we disagree, and we conclude Petitioner has satisfied its burden to establish by a preponderance of the evidence that a person of ordinary skill in the art would have been motivated to replace Le's environmental microphone 38 with one or more non-directional microphones mounted on Le's computer unit (mobile phone) 15.

Patent Owner asserts Petitioner's proposed modification "renders inoperable Le's ability to distinguish the voice of its user (to receive voice commands) from another speaker (to record the user's conversations)." PO Resp. 27; Ex. 2006 ¶ 80. Mr. Anagnos's supporting testimony relies on Le's description that "**the personal microphone 36 and the environmental microphone 38 are used in collaboration** to assure that voice commands are input . . . only from the user 2." Ex. 2006 ¶¶ 81–82 (quoting Ex. 1008 ¶ 24, with Mr. Anagnos's emphasis added); PO Resp. 27–28. In particular, according to Mr. Anagnos, "[r]eplacing [Le's] environmental microphone 38 with a microphone mounted on a cellular phone would negate this functionality unless the phone was mounted on the belt in a fixed position" which "is not typically the case with cellular phones." Ex. 2006 ¶¶ 83–84 (citing Ex. 1008 ¶ 24); PO Resp. 28.

Mr. Anagnos explains: "This is because a single non-directional (omni-directional) microphone . . . cannot provide directional information" as required to "determine whether a user or another person is speaking." Ex. 2006 ¶ 85; PO Resp. 28–29. According to Mr. Anagnos, Le's personal microphone 36 is positioned closer to the user's mouth than Le's environmental microphone 38 because "[t]he sound pressure level differences can then be reliably employed for differentiation of the speaker's voice," which "is likely a major factor of the 'collaboration' between" Le's two microphones 36 and 38. Ex. 2006 ¶ 86; PO Resp. 29. Mr. Anagnos concludes that if Le's environmental microphone were to be housed in a cell phone per Petitioner's modification, "then the effectiveness of the user voice function of Le would vary depending upon how far away the phone is from the user's ears and mouth and the direction the phone was pointing at." Ex. 2006 ¶ 88; PO Resp. 29. Mr. Anagnos concludes that in a scenario where the user has placed the cell phone near the user's ear to engage in a phone conversation, "Mayer's nondirectional microphone . . . would not be able to collaborate effectively with Le's personal microphone 36 to determine which speaker is speaking, thereby rendering Le's ability to recognize the user's voice commands and to pick up another speaker's voice in a recorded conversation inoperable." Ex. 2006 ¶ 88; PO Resp. 29.

Further according to Mr. Anagnos, the foregoing "expected reduction in effectiveness and loss of function" from replacing Le's belt-mounted environmental microphone 38 with Mayer's cell-phone-mounted microphone(s) "would not have been offset by" the reduction in obtrusiveness thereby obtained. Ex. 2006 ¶ 89; PO Resp. 30. Instead, to reduce obtrusiveness without impairing functionality, Mr. Anagnos testifies

a person of ordinary skill in the art would have "replaced the wired connection between the environmental microphone 38 and computer unit 15 with a wireless connection as Le suggests." Ex. 2006 ¶ 89 (citing Ex. 1008 ¶ 42); PO Resp. 30.

Petitioner replies that the Le-Mayer combination is operable. *See* Pet. Reply 6–9. Petitioner asserts Mr. Anagnos mischaracterizes Le's disclosure that microphones 36 and 38 "may be used 'in collaboration" as "creat[ing] the false impression that the 'collaboration' requires an operation or comparison of the two microphones to 'determine whether the user is talking.'" *Id.* at 6, 7 (quoting Ex. 1008 ¶ 24). In Petitioner's view, Le's disclosure "says nothing more than that the two microphones are used together, or at the same time, so that voice commands can be input while environmental sounds can also be input." *Id.* at 7. Petitioner dismisses Mr. Anagnos's testimony as "*ipse dixit* speculation" contradicted by Le's disclosure. *Id.* (citing Ex. 1008 ¶ 24).

Petitioner also argues that, even if Mr. Anagnos's understanding of the collaboration of Le's two microphones is correct, he wrongly concludes "that the user of Le's device would need to bring the phone up to his or her mouth." *Id.* at 6–7. Petitioner cites Le's disclosures that "its device [is] a 'hands-free' device which 'may be worn on the belt.'" *Id.* at 7–8 (citing Ex. 1008 ¶¶ 2–4, 6, 33).

Petitioner further argues "the Le-Mayer combination remains obvious even if Le may be less effective in some circumstances, such as if the user ever brings the device close to his or her mouth." *Id.* at 9 (citing *In re Kahn*, 441 F.3d 977, 990 (Fed. Cir. 2006); *Raytheon Co. v. Sony Corp.*, 727 F. App'x 662, 667 (Fed. Cir. 2018)). Petitioner contends Mr. Anagnos's

testimony "that the benefits of the Le-Mayer combination would be outweighed by the 'expected reduction in effectiveness' of Le's device" is nothing more than an "*ipse dixit* statement" and so "is entitled to no weight." *Id.* (citing *TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1361–63 (Fed. Cir. 2019)). Indeed, according to Petitioner, "[n]either [Patent Owner] nor Mr. Anagnos dispute that the proposed combination would have advanced Le's objective to have a device that unobtrusively blends in with the user's natural appearance." *Id.* at 8 (citing Pet. 16). Mr. Anagnos's alternative approach to achieve that goal "is beside the point," in Petitioner's view, because he "does not dispute that the proposed combination would have been ***more*** unobtrusive and blend in ***more*** with the user's natural appearance." *Id.*

Patent Owner replies that, in the *Kahn* and *Raytheon* decisions cited by Petitioner, "the proposed prior art combinations merely thwart one of the primary art's many purposes," whereas in the present case "Le's ability to record the user's interactions with their surrounding is its only purpose." Sur-reply 6–8 (citing *Kahn*, 441 F.3d at 990; *Raytheon*, 727 F. App'x at 667; Ex. 1006, code (57), ¶ 21).

Further according to Patent Owner, "Le intends to record speaker interactions during a 'natural interaction' — a naturally-flowing conversation" which requires Le's personal microphone 36 *and* Mayer's non-directional environmental microphone(s) to be simultaneously recording the parties to the conversation. Sur-reply 8–9 (citing Ex. 1006 ¶¶ 5, 21). In Patent Owner's view, Le operates by using the environmental microphone(s) to record ambient sounds that are then filtered out of the signal from the

personal microphone, so that the filtered signal represents the user's commands and speech. *See id.* at 9.

Patent Owner asserts such filtering is not possible using Mayer's cell-phone-mounted non-directional microphones as Le's environmental microphone(s), "if the phone is held near the user's face or if the phone is mounted to the waist of the user and the user speaks loudly" because then the environmental microphone(s) "would detect all sounds, including the user's voice." *Id.* at 9–10. Patent Owner acknowledges that the user could keep Le's computer unit (mobile phone) 15 attached to the user's waist during use, but Patent Owner nonetheless maintains that mobile phones are often held near the user's mouth. *See id.* Patent Owner argues this "is likely why Le keeps the environmental microphone separate from the cellphone housing and in a known position (mounted to the belt)." *Id.* at 10. Patent Owner concludes this alleged "inability to distinguish between the user's voice and another speaker's voice" that results from Petitioner's proposed modification would render Le inoperable, not simply less effective as Petitioner would have it. *Id.* at 10–11.

We conclude Petitioner's combination of Le and Mayer would not have rendered Le inoperable for its intended purpose. In particular, Mr. Anagnos's testimony on this point is not supported persuasively by Le's disclosure, or other evidence of record. Le pertinently states that personal microphone 36 and environmental microphone 38 both input audio signals to computer unit 15, and "the audio filter associated with the personal microphone 36 filters the environmental noise" to discern the user's voice commands, and the microphones 36 and 38 "are used in collaboration to assure that voice commands are input to the computer unit 15 only from the

user 2 while the audio signals from the user's surroundings may also be properly input to the computer unit 15." *Id.*

Based on this simple description of "collaboration" between Le's two microphones, Mr. Anagnos concludes Le requires maintaining a minimum distance between the two microphones, which is less than the distance between the user's head and the user's waist, and more than the distance between the user's mouth and the user's ear. *See* Ex. 2006 ¶¶ 80–90. However, Mr. Anagnos does not cite any disclosures in Le that might suggest maintaining such a minimum distance is required, or any other objective evidence to justify his opinion. *See id.* Indeed, he couches his opinion in a speculative adverb, referring to microphone separation being "*likely* a major factor" in Le's operation. *Id.* ¶ 86 (emphasis added).

Thus, Mr. Anagnos's testimony on behalf of Patent Owner's argument at best provides only weak evidence that a person of ordinary skill in the art *might* have known that in one specific scenario, the combined Le-Mayer system *might* have difficulty discerning voice commands from its user. That scenario is when Le's computer unit (mobile phone) 15 is held close to the user's head, because in that scenario the environmental microphone(s) on unit 15 are too close to personal microphone 36 on earpiece 30. *See, e.g.*, Ex. 1008, Fig. 1, ¶ 20. Even in that scenario, Mr. Anagnos acknowledges a person of ordinary skill in the art would have known of "alternative solutions for accurate voice differentiation" such as interactive training of the system or the use of key words, although he adds the caveat that such solutions were not "prevalent in 2007." Ex. 2006 ¶ 87. Indeed, Le itself contemplates such system training. *See* Ex. 1008 ¶ 38.

Moreover, Mr. Anagnos's testimony still leaves several scenarios when unit 15 is held far enough away from the user's head that the combined Le-Mayer system will not have any difficulties. One such scenario is illustrated in Le's Figures 1A–1C, where Le's computer unit (mobile phone) 15 is attached to the user's belt, which is Le's described normal operation. *See* Ex. 1008, Fig. 1, ¶¶ 20, 22. Indeed, because Le already provides personal microphone 36 and speaker 32 on earpiece 36, there does not appear to be any need for the user to hold Le's computer unit (mobile phone) 15 close to the user's head in order for the user to engage in mobile phone conversations. *See id.*

In these circumstances, we determine that the possibility that the combined Le-Mayer system might have difficulty discerning voice commands from its user when Le's computer unit (mobile phone) 15 is held close to the user's head would not have deterred a person of ordinary skill in the art from making the combination, in order to reduce the number of visible components in the system and thereby further Le's goal of providing an unobtrusive wearable computer system. *See supra* Section III.D.3(b)(i). A person of ordinary skill in the art would have appreciated that a given course of action (replacing Le's environmental microphone 38 with Mayer's non-directional microphone(s) mounted on Le's unit 15) often has simultaneous advantages (reduced components and obtrusiveness) and disadvantages (potential difficulty discerning the user's voice commands when unit 15 is held close to the user's head), but this does not necessarily obviate motivation to combine. *See In re Urbanski*, 809 F.3d 1237, 1243–44 (Fed. Cir. 2016); *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006).

Thus, we conclude, weighing the evidence as a whole, that a person of ordinary skill in the art would have been motivated to combine Le and Mayer in the fashion proposed by Petitioner.

(iii) Reasonable Expectation of Success in Combining Le and Mayer

Patent Owner argues "it is not possible to know if an operable system was possible" by combining Le and Mayer in the fashion proposed by Petitioner. PO Resp. 23. For the following reasons, we disagree, and we conclude Petitioner has satisfied its burden to establish a reasonable expectation of success in the proposed combination of Le and Mayer.

Patent Owner asserts that "[w]ithout knowing what was required" to implement Petitioner's combination of Le and Mayer, as discussed above in Section III.D.3(b)(i), Petitioner cannot establish a reasonable expectation of success in the asserted combination. PO Resp. 23; *id.* at 25–26. Patent Owner argues Dr. Atlas was unable to testify whether cellular phones in 2007 had the requisite software capabilities, memory size, battery size, and processor speed and power, to perform the functionality ascribed to Le's computer unit 15. *See* PO Resp. 23–25 (citing Ex. 2007, 59:2–10, 60:4–61:24, 63:9–17, 64:15–65:6, 65:18–67:4). Patent Owner concludes "Dr. Atlas's opinion that one of ordinary skill in the art 'could have easily implemented the proposed combination,' Ex. 2007 at 66:25–67:4, is unsupported." PO Resp. 25–26.

Petitioner replies that "implementation details such as battery, memory, and processor capacity were well-within the skill of a [person of ordinary skill in the art]." Pet. Reply 1, 5 (citing Pet. 17–18; Ex. 1002 ¶¶ 113–118). Further according to Petitioner, Le and Mayer are presumed to

be enabling as to such implementation details. *Id.* at 5 (citing *In re Antor Media Corp.*, 689 F.3d 1282, 1288 (Fed. Cir. 2012); *Apple Inc. v. Corephotonics, Ltd.*, 861 F. App'x 443, 449–50 (Fed. Cir. 2021)). As an example, Petitioner points out that Mayer "discloses a cellular phone with 'one or more non-directional microphones' within it for recording conversations." *Id.*

Petitioner also argues that the '982 patent itself takes for granted the implementation details raised by Patent Owner, because it does not discuss such details, and instead "expressly states that 'processes, techniques, apparatus, and materials' were available to a [person of ordinary skill in the art] to enable the invention." *Id.* at 1, 6 (quoting Ex. 1001, 2:61–3:2). Petitioner concludes "[t]his is an admission that a [person of ordinary skill in the art] would have been able to implement the claimed combination." *Id.* at 6 (citing *Google LLC, et al. v. Cywee Grp. Ltd.*, IPR2018-01258, Paper 86, at 38–39 (PTAB Jan. 9, 2020); *In re Epstein*, 32 F.3d 1559, 1568 (Fed. Cir. 1994)).

Patent Owner replies that "the '982 patent in fact contains far more disclosure than Le or Mayer" as to the implementation details at issue here. Sur-reply 6. Patent Owner cites Figures 2A–2B and 3A–3E of the '982 patent as providing "detailed block diagrams of the components needed and their functional interconnection and operation." *Id.* Patent Owner concludes those disclosures permit a person of ordinary skill in the art to construct a working device, but such disclosures are lacking in Le and Mayer. *See id.*

We conclude a preponderance of the evidence establishes a person of ordinary skill in the art would have had a reasonable expectation of success

in combining Le and Mayer as proposed by Petitioner. Le and Mayer both indicate that a small, hand-held device such as Le's computer unit (mobile phone) 15 or Mayer's cellular phone can contain sufficient processing power and other resources to perform the audio signal recording and processing functions described in those references, and discussed at length above. *See* Ex. 1008, Fig. 1A, ¶¶ 20–21; Ex. 1009 ¶ 16. We presume these disclosures were enabled in the timeframe that Le and Mayer were filed. *See, e.g.*, *Antor Media*, 689 F.3d at 1287–89. Patent Owner does not proffer any evidence to suggest that these disclosures might not have been enabling.

Petitioner proposes the obviousness of replacing Le's environmental microphone 38 with one or more of Mayer's non-directional microphones mounted on Le's computer unit (mobile phone) 15. *See* Pet. 16–19, 24–25. Dr. Atlas testifies that a person of ordinary skill in the art would have had a reasonable expectation of success in doing so. *See* Ex. 1002 ¶¶ 103–122, 154. In particular, Dr. Atlas summarizes pertinent disclosures of Le and Mayer. *See id.* ¶¶ 104–109. Then he discusses how "[b]y 2007" (i.e., Patent Owner's proffered effective filing date as opposed to Petitioner's proffered date in 2013), "miniature microphones were well-known in the art" and there were "many prior art examples of small devices, including mobile devices, that included ambient sound microphones that could be used to pick up sounds in the environment, including people to whom the user was speaking." *Id.* ¶ 113. In support, he cites and discusses three references with pre-2007 filing dates. *See id.* ¶¶ 114–116 (citing Exs. 1016, 1019, and 1028). We are persuaded by this testimony.

By contrast, Mr. Anagnos simply states it is "unclear if the combined components would operate successfully as intended," without citing any

supporting evidence. Ex. 2006 ¶ 79. His conclusion instead is premised on an alleged lack of clarity in Petitioner's proffered combination, which we have rejected in Section III.D.3(b)(i) above. *See* Ex. 2006 ¶ 79.

Patent Owner specifically asserts that during Dr. Atlas's deposition, he "did not know if cellular telephones had sufficient memory capacity in 2007 to allow the combination to operate" and "did not know whether processors with sufficient power to implement the combination existed at that time." Sur-reply 5 (citing Ex. 2007, 64:15–65:6, 67:7–68:19). However, as discussed above, Dr. Atlas's declaration persuasively cites three examples of pre-2007 references disclosing small devices, including mobile devices, that had ambient sound microphones to pick up sounds in the environment. *See* Ex. 1002 ¶¶ 109, 113–116. We are persuaded by this declaration testimony to conclude that a person of ordinary skill in the art would have had a reasonable expectation of success in 2007 of replacing Le's environmental microphone 38 with one or more of Mayer's non-directional microphones mounted on Le's unit 15. Patent Owner does not cite any contemporaneous evidence that might suggest otherwise.

Thus, we conclude a person of ordinary skill in the art would have had a reasonable expectation of success in Petitioner's proposed combination of Le and Mayer.

c) "a data storage device configured to act as a circular buffer for continually storing the ASM signal"

Petitioner argues "Le in combination with Mayer discloses or suggests" the data storage device limitation of claim 1. Pet. 25; Ex. 1002 ¶ 155. In particular, according to Petitioner, Le uses memory 18 as a circular buffer for continually storing ambient sounds detected by

environmental microphone 38—and, therefore, similarly storing ambient sounds detected by Mayer's non-directional microphones when mounted on Le's computer unit (mobile phone) 15. *See* Pet. 25–26, 29 (citing Ex. 1008 ¶¶ 10, 12, 27–28, 37, 39); Ex. 1002 ¶¶ 156–157, 160–162, 168, 171, 177–178. Patent Owner does not dispute these contentions, and we find they are supported by a preponderance of evidence in the record, as cited by Petitioner.

d) "a further data storage device coupled to the data storage device"

Petitioner argues "Le in combination with Mayer discloses or suggests" the further data storage device limitation of claim 1. Pet. 29–30; Ex. 1002 ¶ 180. In particular, according to Petitioner, a person of ordinary skill in the art "would have understood Le to disclose or suggest implementing the scrolling buffer in a separate memory from memory 18." Pet. 27–28, 29–30 (citing Ex. 1008 ¶¶ 28, 36–37; Ex. 1022, 10:12–24); Ex. 1002 ¶¶ 170, 172–175, 180–185. Petitioner asserts a person of ordinary skill in the art additionally "would have recognized the advantages of using . . . separate non-volatile memory devices for the scrolling buffer and the memory for permanent storage," such as providing flexibility in the types of devices used to store data permanently. Pet. 28; Ex. 1002 ¶¶ 172, 175. Patent Owner does not dispute these contentions, and we find they are supported by a preponderance of evidence in the record, as cited by Petitioner.

e) "a record-activation system including software configured to activate the further data storage device to record a content of the data storage device"

Petitioner argues "Le in combination with Mayer discloses or suggests" the record-activation system limitation of claim 1. Pet. 30; Ex. 1002 ¶ 186. In particular, according to Petitioner, Le discloses software that determines whether spoken words constitute a predetermined natural voice command, and responds to any such determined commands. Pet. 30 (citing Ex. 1008 ¶¶ 11, 36); Ex. 1002 ¶¶ 188–189. Petitioner asserts these commands may "trigger storage of content that is in the continuously scrolling buffer to the memory 18." Pet. 30–31 (citing Ex. 1008 ¶¶ 10, 37); Ex. 1002 ¶¶ 190–192. Patent Owner does not dispute these contentions, and we find they are supported by a preponderance of evidence in the record, as cited by Petitioner.

f) Conclusion Regarding Claim 1

We conclude Petitioner has established by a preponderance of the evidence that claim 1 is unpatentable as having been obvious over Le and Mayer.

4. Claim 3

Claim 3 recites: "The system according to claim 1, where the ambient sound microphone includes a plurality of ambient sound microphones." Ex. 1001, 14:65–67.

Petitioner contends this limitation is satisfied by the combination of Le and Mayer, because Mayer provides for "one *or more* non-directional

microphones" to pick up ambient sounds from the environment. Pet. 31–32 (emphasis added); Ex. 1002 ¶¶ 194–197.

Patent Owner does not argue for patentability of claim 3 separately from its parent claim 1. *See, e.g.*, PO Resp. 17–34 (arguing dependent claim 10, but not dependent claim 3, separately from claim 1). Patent Owner's Preliminary Response argument that "neither Le nor Mayer suggest how signals from multiple ambient sound microphones would be processed, stored, and used in the Le system" (Paper 9, 26–27) was not carried forward in the Patent Owner Response, and therefore has been waived. *See* Inst. Dec. 35–36; Paper 13, 10 ("Patent Owner is cautioned that any arguments for patentability not raised in the response may be deemed waived.").

We conclude Petitioner has established by a preponderance of the evidence that claim 3 is unpatentable as having been obvious over Le and Mayer, for the reasons provided above in connection with the parent claim 1, and based further on Petitioner's unopposed argument directed to the limitation added by claim 3, which we adopt as our own.

5. Claims 5 and 6

Claim 5 recites: "The system according to claim 1, where the system is further configured to receive one or more of an audio content signal from the mobile phone or at least one further audio signal from an other device." Ex. 1001, 15:8–11. Claim 6 recites: "The system according to claim 5, where the other device includes at least one of an earphone device worn by a user of the mobile phone, a further earphone device worn by a different user, a media player or a computing device." *Id.* at 15:12–15.

Petitioner contends these limitations are satisfied by the combination of Le and Mayer, because Le's computer unit (mobile phone) 15 can send and receive audio signals to and from other cellular phones or remote computers. *See* Pet. 32–33 (citing Ex. 1008 ¶¶ 30, 41); Ex. 1002 ¶¶ 198–207.

Patent Owner does not argue for patentability of claim 5 or claim 6 separately from their parent claim 1. *See, e.g.*, PO Resp. 17–34 (arguing dependent claim 10, but not dependent claims 5 or 6, separately from claim 1). Patent Owner's Preliminary Response argument that "Le does not suggest that computer unit 15 functions as a cell phone" (Paper 9, 27–28) was not carried forward in the Patent Owner Response, and therefore has been waived. *See* Inst. Dec. 36–37; Paper 13, 10.

We conclude Petitioner has established by a preponderance of the evidence that claims 5 and 6 are unpatentable as having been obvious over Le and Mayer, for the reasons provided above in connection with the parent claim 1, and based further on Petitioner's unopposed argument directed to the limitations added by claims 5 and 6, which we adopt as our own.

6. Claim 10

Claim 10 recites: "The system according to claim 1, the system further comprising: a time-stamp audio index system configured to embed a time-coded index into the content transmitted to the further data storage device." Ex. 1001, 15:35–39.

Petitioner contends this limitation is satisfied by the combination of Le and Mayer, because Le "discloses that when recording audio into the memory 18, the system also stores the time and date." Pet. 33–34. Patent

Owner argues in opposition that Petitioner's evidence fails to establish Le "**embed[s]** a time-coded index into" recorded content, per claim 10. PO Resp. 30–31.

We have reviewed the record, and we conclude Petitioner's contentions are not supported by a preponderance of the evidence. We first consider the meaning of the claim term "embed," then we turn to the applicable disclosures of Le and Mayer.

a) Claim Construction — "embed"

Claim 10 includes "a time-stamp audio index system configured to embed a time-coded index into the content." Ex. 1001, 15:35–39.

Patent Owner argues: "An embedded time-code index requires adding to, and updating, an existing data file." PO Resp. 30–31 (section title); Ex. 2006 ¶¶ 91–100. Patent Owner relies on an alleged "plain meaning" of the claim terms "index" and "embed," which Patent Owner asserts "indicate a system that **inserts** index entries **into** the recorded data files." *Id.* at 31, 32–33 (citing Ex. 2008, 1); Ex. 2006 ¶¶ 93, 100. Patent Owner adds that the '982 patent specification "is consistent with this definition." PO Resp. 31 (citing Ex. 1001, 5:27–28, 11:59–62); Ex. 2006 ¶ 93. According to Patent Owner, such embedding of a time-code index into recorded content provides several benefits, such as: "accurate referencing and retrieving of associated data"; tamper resistance; ease of frequent updating; audio-film synchronization; and audio mixing, mastering, and production. *See* PO Resp. 31–32 (citing Ex. 2008, 1; Ex. 1001, 6:57–61); Ex. 2006 ¶¶ 94–99. Patent Owner concludes that although Le may record a time stamp, "that does not necessarily add to, and certainly does not update, an existing data

file" and hence is not an embedded time index per claim 10. PO Resp. 31, 32–33; Ex. 2006 ¶¶ 92, 98, 100.

Petitioner replies that the plain and ordinary meaning of claim 10 "merely requires taking a time-stamp with an audio recording . . . to facilitate later recall and retrieval," such as is disclosed by Le. Pet. Reply 10 (citing Pet. 33–34; Ex. 1002 ¶¶ 208–214); Pet. 33–34 (stating that Le "discloses that when recording audio into the memory 18, the system also stores the time and date") (citing Ex. 1008 ¶¶ 12, 21, 39). Petitioner asserts a person of ordinary skill in the art would have understood "that the time and date information saved with the audio content is a time-coded index because Le discloses that the time and date information can be used to retrieve the information that is stored in the memory." Pet. 34 (citing Ex. 1008 ¶ 21); Ex. 1002 ¶ 212.

Petitioner adds that "[t]his is consistent with how the '982 patent describes this feature." Pet. 33 (citing Ex. 1001, 5:25–28, 9:55–58); Ex. 1002 ¶ 211. Petitioner asserts the '982 patent specification "equates a 'time-stamp' '***embedded*** within the audio stream' with a 'time stamp ***taken with*** . . . the audio recording.'" Pet. Reply 10 (quoting Ex. 1001, 5:25–31). In particular, according to Petitioner: "Because of the parallelism in the two sentences, a [person of ordinary skill in the art] would reasonably infer that a time stamp that is 'embedded within' an 'audio stream' encompasses a time stamp that is 'taken with' an 'audio recording.'" *Id.*

Petitioner argues Patent Owner's claim construction is "overly narrow" by requiring "a 'system that inserts index entries into the recorded data files', that 'cannot easily be tampered with.'" *Id.* (quoting PO Resp. 31–32). Petitioner dismisses Exhibit 2008 as "an extrinsic publication

directed to 'embedding indexing' for electronic text files" which Patent Owner "never explains why . . . is relevant to" claim 10. *Id.* at 10–11. Petitioner asserts Mr. Anagnos's testimony in support of Patent Owner's claim construction is unsupported, and is directed to unclaimed subject matter. *See id.* at 11 (citing PO Resp. 32; Ex. 2006 ¶¶ 97–98).

Petitioner further disagrees with Patent Owner's position differentiating between a time stamp (such as is disclosed by Le) and the embedded time-coded index of claim 10. *See id.* Petitioner asserts Patent Owner's position is refuted by claim 10 and the '982 patent specification, because they "demonstrate that the two are related, if not interchangeable, concepts." *Id.* (citing Ex. 1001, 5:27–30, 11:59–62). Petitioner provides a graphic to illustrate Petitioner's understanding of the different claim construction positions taken by the parties. *See id.* at 11–12. According to Petitioner, "[t]he claims place no limitation on the 'content' as being a particular file(s), or the timing, manner, or location of the embedding," so "taking a timestamp with each audio recording, as disclosed by Le, is 'embedding a time-coded index' into the 'content transmitted' to the further data storage device." *Id.* at 12.

Patent Owner replies that Petitioner's argument "focus[es] on whether a 'time-stamp' is analogous to a 'time-coded index,'" but "the real distinction . . . is how the time is stored — via embedding into the stored content, as claim 10 plainly requires, or via a separate file, as Le discloses." Sur-reply 11 (citing PO Resp. 31–35).

We agree with Patent Owner's position that the claim term "embed" requires that the time coded-index is inserted into the recorded content. The language of the claim correspondingly recites "a time-stamp audio index

system configured to *embed* a time-coded index *into* the content." Ex. 1001, 15:37–38 (emphasis added). This verbiage precludes Petitioner's broad claim construction whereby the claim would be met simply by storing, along with but separately from the recorded content, the time when the content was recorded.

We disagree with Petitioner's position that claim 10 does not limit "the content" into which the time-coded index is embedded. Claim 10 states this is "the content transmitted to the further data storage device." Ex. 1001, 15:38–39. This is a clear reference back to the parent claim 1, specifying a data storage device that stores an ambient sound microphone signal, and a further data storage device that "record[s] a content of the data storage device." *Id.* at 14:47–59. In this context, a person of ordinary skill in the art would understand that "the content" in claim 10 refers to the ambient sound microphone signal stored in the data storage device and then transmitted to the further data storage device. Indeed, the Petition itself refers to how Le and Mayer combine to disclose or suggest "the features of claim 10," because "the Le-Mayer system discloses or suggests a further data storage device (e.g., memory 18) *into which the content of the continuously scrolling buffer is recorded*." Pet. 33 (emphasis added).

We also disagree with Petitioner's reading of the '982 patent specification. It pertinently states, in two sentences, and with our emphases added:

> When the Transient Event Detector subsystem in the present invention detects a transient with the ASMs, archival recording is activated and *a time-stamp is saved separately or embedded within the audio data stream. The time stamp taken with or separately to the audio recording* may be used for an

> audio forensic examination of the user's sound exposure history profile.

Ex. 1001, 5:25–31. We conclude this disclosure *differentiates between* saving the time-stamp separately from the audio data stream on one hand, and embedding the time-stamp within the audio data stream on the other hand. It does not *equate* those two disparate concepts as Petitioner urges. Further, claim 10 clearly is limited to the latter concept, and excludes the former concept.

The Federal Circuit has stated that "[t]he disjunctive 'or' plainly designates that a series describes alternatives," except that "the 'use of two terms as alternatives' functions as a redefinition of a term if that redefinition is 'so clear that it equates to an explicit one.'" *SkinMedica, Inc. v. Histogen Inc.*, 727 F.3d 1187, 1199–200 (Fed. Cir. 2013) (citing *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1368 (Fed. Cir. 2012)). Thus, although "use of two terms as alternatives could amount to an implicit redefinition of the terms" as being the same, this requires that "a person of ordinary skill in the art would have to read the specification and conclude that the applicant has clearly disavowed claim scope or has acted as its own lexicographer." *Thorner*, 669 F.3d at 1368. "Simply referring to two terms as alternatives . . . is not sufficient to redefine a claim term." *Id.* In this case, we conclude that the '982 patent disclosure quoted above uses "or" to describe a series of alternatives, rather than redefining the members of the series as being the same.

Petitioner also relies on the '982 patent's disclosure that: "The buffer may also record non-audio data, such as a time-stamp generated by time stamp unit 91 that may be updated on a sample-by-sample or intermittent

basis." Ex. 1001, 9:55–58; *see* Pet. 33. However, regardless of what may constitute a "time-stamp" as a general matter, the claim limitation at issue here specifically requires embedding a time-coded index into recorded content. The '982 patent's discussion of time-stamps has little bearing on that issue.

Thus, we conclude claim 10 requires that the time coded-index is inserted into the recorded content. Claim 10 does not include storing, separately from the recorded content, the time when the content was recorded.

b) Application to Le and Mayer

Petitioner relies on Le at paragraphs 12, 21, and 39, and not on Mayer, as disclosing embedding a time-coded index into recorded content. *See* Pet. 33–34; Pet. Reply 12. Paragraph 12 pertinently describes how Le's system "passively record[s] data of certain events that the user may recall at a later time" and "record[s] sound, location, time, and date information of this event." Ex. 1008 ¶ 12. Paragraphs 21 and 39 pertinently describe how Le's system "record[s] and store[s] an audio clip surrounding the event" as well as "other contextual information about the user's introduction to a new person, such as location, time, and date" to be recalled later. *Id.* ¶¶ 21, 39. Further: "A conventional computer clock and calendar of the computer unit 15 may be used to record the time and date of the introduction of the new person." *Id.* ¶ 39.

Patent Owner argues "Le, at best, discloses a time stamp stored in a separate file," which does not satisfy claim 10's requirement of embedding a

time-coded index into recorded content. PO Resp. 32–34; Sur-reply 11; Ex. 2006 ¶¶ 92, 100–102.

We agree with Patent Owner. In particular, as discussed in Section III.D.6(a) above, claim 10 requires that a time-coded index is inserted into the recorded content. Le discloses only that its system passively records sound, and stores contextual information such as the time that the sound was recorded, to be recalled later. *See* Ex. 1008 ¶¶ 12, 21, 39.

Thus, we conclude Petitioner has not established by a preponderance of the evidence that claim 10 is unpatentable as having been obvious over Le and Mayer.

E. Ground 1B — Obviousness over Le, Mayer, and Yuen

In Ground 1B, Petitioner argues claim 4 of the '982 patent is unpatentable as having been obvious over Le, Mayer, and Yuen. *See* Pet. 3, 34–38; Ex. 1002 ¶¶ 215–230. Patent Owner does not argue for patentability of claim 4 separately from its parent claim 1. *See* PO Resp. 34. We have reviewed the record, and we conclude Petitioner's contentions are supported by a preponderance of the evidence.

Claim 4 recites: "The system according to claim 1, the system further comprising: a signal processing system configured to at least one of multiplex output signals from the circular buffer or encode the output signals to reduce a data rate before transmission of the output signals to the further data storage device." Ex. 1001, 15:1–7.

Petitioner focuses on the "encode" option of claim 4, and argues Yuen correspondingly discloses a retroactive audio recorder including compressor 26, which compresses recorded audio signals to be stored in

first-in-first-out shift memory 50. *See* Pet. 34–35 (citing Ex. 1010, Fig. 3, 1:8–12, 1:43–52, 3:58–66, 5:38–42); Ex. 1002 ¶¶ 215–222. Petitioner asserts a person of ordinary skill in the art would have been motivated to modify the Le-Mayer system to apply Yuen's data compression teachings, "to increase storage capacity for a fixed memory size." Pet. 36–37; Ex. 1002 ¶¶ 223–225. Petitioner recognizes that Yuen's data compression occurs prior to storing the audio data in FIFO memory 50, whereas claim 4 requires encoding audio data "before transmission of" data from a continuously scrolling buffer to a separate memory. *See* Pet. 37 (citing Ex. 1010, Fig. 3); Ex. 1002 ¶ 226. Petitioner nonetheless maintains a person of ordinary skill in the art "would have understood that it would have been just as beneficial to encode the data" at either point of the data flow process, and cites Mayer as disclosing that data compression may be performed "only when the user decides to save an event" to conserve CPU power. Pet. 37–38 (quoting Ex. 1009 ¶ 7, and citing Ex. 1010, 1:27–29); Ex. 1002 ¶¶ 227–229.

Patent Owner does not argue for patentability of claim 4 separately from its parent claim 1. *See* PO Resp. 34. Patent Owner's Preliminary Response argument against Petitioner's combination of Le, Mayer, and Yuen (*see* Paper 9, 29–32) was not carried forward in the Patent Owner Response, and therefore has been waived. *See* Inst. Dec. 38–40; Paper 13, 10.

We conclude Petitioner has established by a preponderance of the evidence that claim 4 is unpatentable as having been obvious over Le, Mayer, and Yuen, for the reasons provided above in connection with the parent claim 1, and based further on Petitioner's unopposed argument directed to the limitation added by claim 4, which we adopt as our own.

F. Ground 1C — Obviousness over Le, Mayer, and Sjursen

In Ground 1C, Petitioner argues claim 11 of the '982 patent is unpatentable as having been obvious over Le, Mayer, and Sjursen. *See* Pet. 3, 38–42; Ex. 1002 ¶¶ 231–253. Patent Owner opposes. *See* PO Resp. 34–40; Ex. 2006 ¶¶ 66, 105–116.

Claim 11 recites: "The system according to claim 1, the system further comprising: a diaphragm to cover the ASM." Ex. 1001, 15:40–42.

We have reviewed the record, and we conclude Petitioner's contentions are not supported by a preponderance of the evidence. We begin our analysis with a brief summary of Sjursen, then we consider the meaning of the term "diaphragm" in claim 11, and finally we turn to the applicable disclosures of Le, Mayer, and Sjursen.

1. Sjursen

Sjursen discloses a hearing aid with a tuned microphone cavity. *See* Ex. 1011, code (54). Figure 1 is reproduced below:

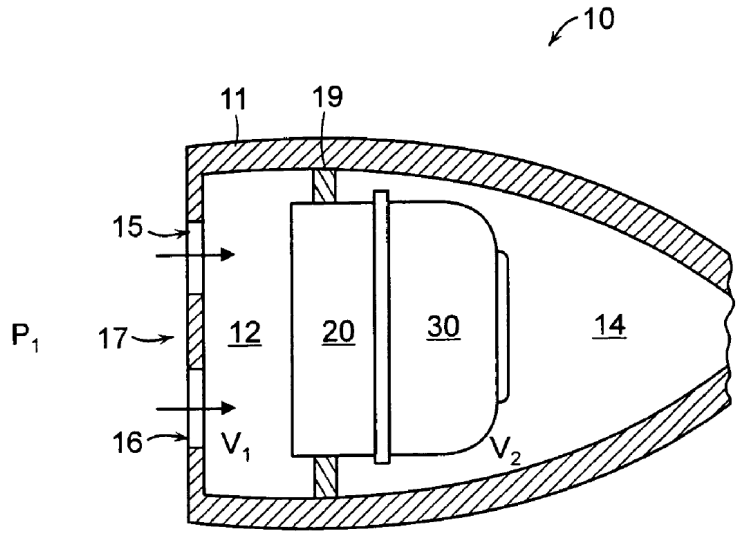


FIG. 1

Figure 1 of Sjursen.

Figure 1 depicts a cross-sectional side view of hearing aid 10 with tuned resonant cavity 12, microphone 20, and battery 30. *See id.* at 4:36–37, 4:58–62. Shell 11 contains the hearing aid components, and "includes a face plate 17" with "a pair of openings 15, 16 that allow air and sound into the tuned resonant cavity 12." *Id.* at 4:59–65. "The resonant cavity 12 is tuned by selecting one or more parameters of the cavity, including the number, shapes and sizes of the openings 15, 16." *Id.* at 4:65–5:3. "By adjusting these parameters, the cavity 12 can effectively 'tune' the incident sound wave signal, P_1, to provide a desired frequency response characteristic" of microphone 20. *Id.* at 5:4–8. This tuning can be designed to simplify the required sound signal processing circuitry, and thereby reduce the overall complexity and cost of producing hearing aids. *See id.* at 1:66–2:3, 2:59–3:3.

2. Claim Construction — "diaphragm"

Claim 11 includes "a diaphragm to cover the ASM." Ex. 1001, 15:42.

Petitioner argues a person of ordinary skill in the art "would have understood that 'diaphragm' as used in claim 11 refers to a type of structure exemplified by 'diaphragm 12' shown in" Figures 1A and 1B of the '982 patent. Pet. 38–39. Those Figures are reproduced here, as annotated by Petitioner:

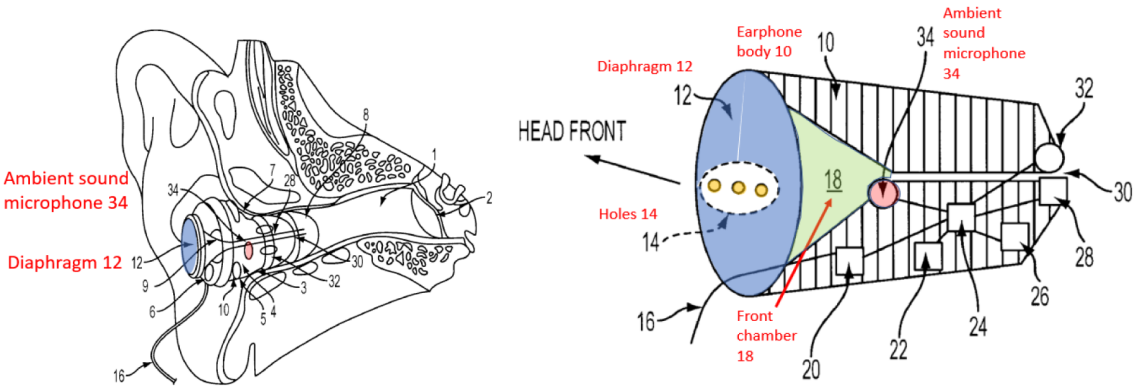


FIG. 1A FIG. 1B

Figures 1A and 1B of the '982 Patent (Annotated at Pet. 39).

Figures 1A and 1B both depict earpiece 8, including diaphragm 12 (annotated in blue by Petitioner) and ambient sound microphone 34 (annotated in red by Petitioner). *See* Pet. 38–39; Ex. 1001, 2:25–29, 7:10–15, 7:26–28, 7:35.

Dr. Atlas testifies on behalf of Petitioner that "the '982 patent uses the term 'diaphragm' in different ways and not always in a manner that is consistent with how a person having ordinary skill in the art would have understood the term." Ex. 1002 ¶¶ 232–235 (citing Ex. 1001, 3:3–13, 7:10–56). He agrees with Petitioner's position that the term "diaphragm" in claim 11 "refers to a type of structure exemplified by" diaphragm 12 of the '982 patent specification. *Id.* ¶ 235. Then he adds that this diaphragm "is not the same thing as what would have been conventionally understood in the art as a 'diaphragm' (i.e., transducer) of a microphone." *Id.*

Patent Owner argues the plain and ordinary meaning of the term "'diaphragm' is a '**thin, flexible sheet** that can be moved,'" as set forth in the *McGraw-Hill Dictionary of Scientific and Technical Terms*. PO Resp. 35 (quoting Ex. 2009, 3); Ex. 2006 ¶ 108. Patent Owner argues such movement may function to generate sound waves by the diaphragm being

driven when used with a loudspeaker, or by the diaphragm reacting to impinging sound waves when used with a microphone. PO Resp. 35 (citing Ex. 2009, 3); Ex. 2006 ¶¶ 108–109. In particular, according to Patent Owner, a person of ordinary skill in the art would have distinguished between a *diaphragm* (as recited in claim 11) which is flexible, and a *faceplate* (as disclosed by Sjursen) which is rigid. *See* PO Resp. 34–35 ("An impinging sound wave will deform a diaphragm, transmitting more energy to the underlying transducer as compared to a rigid faceplate."); Ex. 2006 ¶¶ 105–109.

Patent Owner contends the '982 patent specification is consistent with the foregoing plain and ordinary meaning of the term "diaphragm." *See* PO Resp. 34–35 (citing Ex. 1001, Figs. 1A–1B, 7:10–56); Ex. 2006 ¶¶ 106, 109. For example, Patent Owner asserts the '982 patent specification at times "refers to a microphone as a 'diaphragm transducer,'" and at other times uses the term diaphragm "separately for sound modification." *See* PO Resp. 35 & n.2 (citing Ex. 1001, 3:8–13, 4:32–42, 7:34–44, 8:29–34, 12:3–27; Ex. 2009, 5); Ex. 2006 ¶ 109.

Patent Owner further asserts: "A 'faceplate,' in contrast [to a 'diaphragm'], is a 'protective plate used to cover holes in machines or other devices,'" as set forth in the *McGraw-Hill Dictionary of Scientific and Technical Terms*, and is "**usually plastic or metal**" to serve its "**protective**" function. PO Resp. 36 (quoting Ex. 2009, 4, and Ex. 2010, 1); Ex. 2006 ¶ 110. Patent Owner therefore asserts a faceplate differs from a diaphragm in that a diaphragm is thin and flexible, which is inconsistent with the protective function of a faceplate. PO Resp. 36; Ex. 2006 ¶ 111. For example, according to Patent Owner, the '982 patent specification

"contemplates protective measures for" its diaphragm 12, such as "[t]he holes on the diaphragm may be 'covered by a different material than the diaphragm material,' for example a grill." PO Resp. 36 (citing Ex. 1001, 12:4–9); Ex. 2006 ¶ 111.

Petitioner replies that "Sjursen's face plate 17 is analogous to 'diaphragm 12'" of the '982 patent specification. Pet. Reply 12–13. Petitioner therefore maintains Sjursen's face plate is a diaphragm, as we found preliminarily in the Institution Decision. *Id.* at 13 (citing Inst. Dec. 41–42 ("Sjursen's Figure 1 similarly illustrates a diaphragm (i.e. face plate 17)[.]")).

Petitioner argues this interpretation is consistent with the intrinsic record, namely, the prosecution history of U.S. Patent No. 10,635,382 ("the '382 patent"), which is a continuation of the '982 patent. *See id.* at 13–16. Petitioner asserts that, during that prosecution, "the examiner explained that Killion's[4] 'top plate' 'reads on the instant applications [sic] definition of diaphragm,'" which the applicant did not dispute. *Id.* at 14–15 (citing Ex. 1035, 80, 89, 98–99; Ex. 1039, Figs. 3A–3C, ¶ 46). Petitioner additionally relies on the examiner's Notice of Allowance for the '382 patent, as finding Yoshida[5] and Banter[6] also disclose a "diaphragm," which the applicant did not dispute. *See id.* at 15–16 (citing Ex. 1035, 14–18). Petitioner suggests Patent Owner's claim construction limiting "diaphragm" to a thin, flexible sheet is inconsistent with the pertinent disclosures of Killion, Yoshida, and Banter that were found to correspond to

[4] Exhibit 1039 (U.S. Patent App. Pub. No. 2003/0198359 A1).
[5] Exhibit 1038 (U.S. Patent No. 5,740,262).
[6] Exhibit 1037 (U.S. Patent App. Pub. No. 2005/0077102 A1).

a diaphragm. *See id.* at 14–16. Petitioner points out that Mr. Anagnos did not consider the prosecution history of the '382 patent, or the disclosures of Killion, Yoshida, or Banter, as part of his testimony concerning the meaning of "diaphragm." *See* Pet. Reply 14, 16 n.1 (citing Ex. 1041, 32:10–33:19).

Petitioner additionally argues Patent Owner's claim construction and Mr. Anagnos's testimony in support in this proceeding "deviate[] from their characterization of [Moen[7]] in concurrently pending IPR2022-00242," concerning U.S. Patent No. 8,111,839. Pet. Reply 16–17 (citing Ex. 1040 ¶ 165; Ex. 1036, Fig. 4, 4:51–57, 5:15–19). Specifically, Petitioner asserts Mr. Anagnos there explained that Moen's grill 26 is a diaphragm with holes, despite that Moen does not describe grill 26 as being flexible. *See id.*

Petitioner contends Patent Owner's claim construction is not persuasive, because it relies on extrinsic evidence that is inconsistent with the intrinsic evidence from the prosecution history of the '382 patent to reach "an overly narrow" result. Pet. Reply 13–16 (citations omitted). Petitioner also asserts Patent Owner's dictionary definition of "diaphragm" is irrelevant to claim 11, "because it applies to the meaning of 'diaphragm' as 'in a microphone' or 'in a loudspeaker,'" whereas the diaphragm of claim 11 "is plainly neither of those because [it] is to 'cover' the microphone." *Id.* at 17 (citing Pet. 38–41, Ex. 1002 ¶¶ 231–235).

Patent Owner responds that "if the '982 patent intended protection from all microphone coverings" as Petitioner would have it, "then claim 11 would have recited a 'cover to the ASM' instead" of a "diaphragm." Sur-reply 11–12. Patent Owner argues Petitioner's reliance on the

[7] Exhibit 1036 (U.S. Patent No. 3,876,843).

prosecution history of the '382 patent falls short, because "the applicant's position in the prosecution history remains consistent with Patent Owner's assertion that 'diaphragm,' as asserted in claim 11, does not mean *any* microphone cover." Sur-reply 1 (emphasis added), 11–12. In support, Patent Owner asserts the applicant did not admit that Killion's top plate 80 is a "diaphragm," and instead argued that "Killion does have a diaphragm 21, but it is not the top plate 80 as indicated by the Petitioner and it does not cover microphones 20 and 30 in Killion." *See id.* at 12 (citing Ex. 1035, 204; Ex. 1039, Fig. 4A, ¶ 48). Patent Owner also argues "Petitioner['s] assertion that the applicant failed to dispute the Examiner's reference to Yoshida and Banter as disclosing a diaphragm . . . is misplaced because those references first appeared in the Notice of Allowance, to which Patent Owner had no reason to respon[d]." *Id.* at 13 (citing Ex. 1035, 14–18). Patent Owner further argues Petitioner misconstrues Mr. Anagnos's testimony as stating that he did not consider Killion, Yoshida, Banter, or Moen. *Id.* at 13–14.

We conclude a "diaphragm" as recited in claim 11 is a thin, flexible sheet that can be moved by sound waves, as in a microphone, or can produce sound waves when moved, as in a loudspeaker. "Claim terms are generally given their plain and ordinary meanings to one of skill in the art when read in the context of the specification and prosecution history." *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc)). "There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee

disavows the full scope of the claim term either in the specification or during prosecution." *Id.* (quoting *Thorner*, 669 F.3d at 1365).

The plain and ordinary meaning of the term "diaphragm" in claim 11 is a thin, flexible sheet that can be moved by sound waves, as in a microphone, or can produce sound waves when moved, as in a loudspeaker, as provided in the *McGraw-Hill Dictionary of Scientific and Technical Terms*. Ex. 2009, 3 (defining "diaphragm" as "[a] thin, flexible sheet that can be moved by sound waves, as in a microphone, or can produce sound waves when moved, as in a loudspeaker"). Petitioner's attempt to dismiss this plain and ordinary meaning as not applicable here because claim 11 states that the diaphragm "cover[s]" a microphone is unavailing. We conclude a diaphragm may cover a microphone, but that does not mean that every structure that covers a microphone is a diaphragm. The claim language does not equate the terms "diaphragm" and "cover."

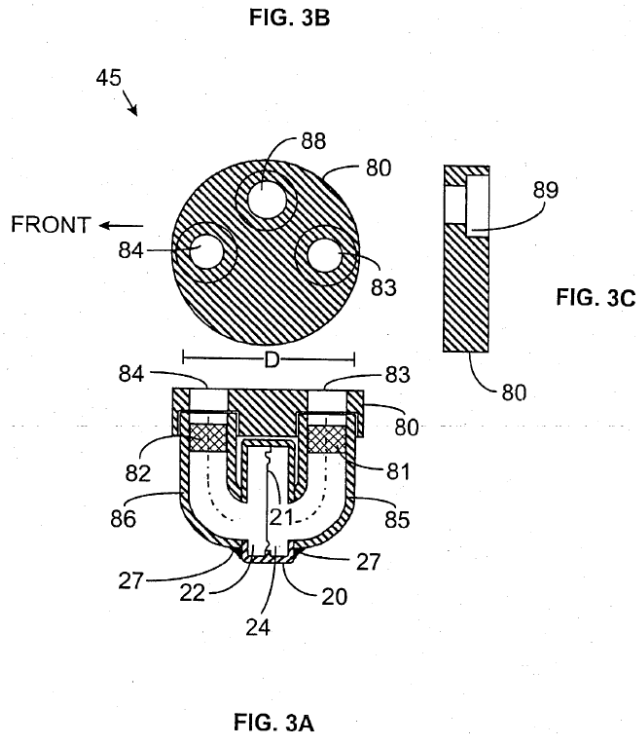
Mr. Anagnos testifies that the plain and ordinary meaning of "diaphragm" is a thin, flexible sheet that can be moved. *See* Ex. 2006 ¶¶ 107–108. Dr. Atlas does not disagree. *See* Ex. 1002 ¶¶ 231–235. Dr. Atlas pertinently states only that "a person having ordinary skill in the art would have used [the term 'diaphragm'] to refer to the transducer of a microphone." *Id.* ¶ 232; *see also id.* ¶ 235 (stating that a "diaphragm" would "have been conventionally understood in the art" as a "transducer" of a microphone). However, he does not provide any further structural or functional detail concerning what a microphone transducer is. *See id.*; *see also* Ex. 2009, 5 (defining "transducer" as "[a]ny device or element which converts an input signal into an output signal of a different form").

Turning to the '982 patent specification, we conclude the patentee did not depart from the plain and ordinary meaning of "diaphragm" as a thin, flexible sheet that can be moved. "To act as its own lexicographer, a patentee must clearly set forth a definition of the disputed claim term other than its plain and ordinary meaning." *Hill-Rom*, 755 F.3d at 1371 (quoting *Thorner*, 669 F.3d at 1365). The portions of the '982 patent specification cited by the parties are consistent with the plain and ordinary meaning of "diaphragm" as a thin, flexible sheet, and do not suggest that a "diaphragm" may instead have a rigid structure. *See* Ex. 1001, Figs. 1A–1B (illustrating diaphragm 12); *id.* at 2:25–29, 3:3–13, 4:32–42, 7:10–56, 8:29–34, 12:3–27 (describing diaphragms).

For example, the '982 patent provides that "various receivers and microphones can be used" including "diaphragm transducers." *See id.* at 3:3–13. The '982 patent further indicates that a "diaphragm" may function to modify sound in a number of ways. *See id.* at 4:31–37. In one example, "the diaphragm is *tuned to resonate* in such a way as to compensate for spectral sensitivity of the ASM," which is consistent with the diaphragm being a thin, flexible sheet that can be moved. Ex. 1001, 4:37–39 (emphasis added), 12:9–16. In another example, "the diaphragm undertakes beam-forming using holes located at particular locations in the diaphragm," which is consistent with the diaphragm being a thin, flexible sheet having holes. *Id.* at 4:39–43 (emphasis added), 12:3–9. Further, the diaphragm "may be acoustically tuned so as to *absorb certain frequencies more than others* [to] compensate for non-linear sensitivity of the ASM 34," which again is consistent with the diaphragm being a thin, flexible sheet that can be moved. *Id.* at 7:35–41 (emphasis added).

Dr. Atlas concludes "[a] person having ordinary skill in the art would have understood that 'diaphragm 12' [of the '982 patent] is not the same thing as what would have been conventionally understood in the art as a 'diaphragm' (i.e., transducer) of a microphone." Ex. 1002 ¶ 235. However, he does not describe exactly what structure(s) he believes define what a diaphragm is, per the '982 patent specification. *See id.* ¶¶ 231–235. In particular, he does not opine that the '982 patent does anything to suggest that a rigid structure might be a diaphragm, despite the plain and ordinary meaning of a diaphragm as a thin, flexible sheet that can be moved. *See id.*

Moreover, we discern little in the prosecution history of the '982 patent's continuation '382 patent to suggest that we should depart from the plain and ordinary meaning of the term "diaphragm" here. Most important in this regard is Killion, and its Figures 3A–3C which are reproduced below:



Figures 3A–3C of Killion.

As described in Killion, these Figures illustrate subassembly 45 of a microphone capsule, including "top plate 80 with sound tubes 85 and 86 coupling sound inlets 83, 84, to the front chamber 22" which includes "diaphragm 21." Ex. 1039 ¶ 46.

The Examiner of the '382 patent found "Killion teaches a top plate of microphone capsule, which reads on the instant application['s] definition of a diaphragm." Ex. 1035, 98–99. However, we disagree with Petitioner's position that the applicant did not dispute this finding. The applicant instead amended the then-pending claim (which differs from the challenged claims in various respects) to recite *two* diaphragms, and argued "Killion only discloses the use of a single diaphragm [i.e., diaphragm 21] and does not disclose a second diaphragm [e.g., top plate 80] positioned across from a first diaphragm." *Id.* at 85–86 (claim 28), 89. Thus, although the Examiner did state that Killion's top plate 80 is a diaphragm as recited in the '382 patent claims, the applicant did not accede to that statement. This is a scant basis to depart from the plain and ordinary meaning of "diaphragm" as a thin, flexible sheet that can be moved, so that it might include a rigid structure such as Killion's top plate 80 or Sjursen's face plate 17. In particular, the specific issue we face here is whether the claimed "diaphragm" can be a rigid structure, but the applicant did not argue that a "diaphragm" can be rigid during the prosecution history.

The Examiner of the '382 patent also found Yoshida discloses "an acoustic resistance provided by a nonwoven fabric in front of a microphone" which "appears to teach a diaphragm (e.g., the nonwoven fabric) to cover a microphone." *Id.* at 14–15. The Examiner found Banter "discloses a protective acoustic cover assembly comprising a metal foil with

perforations" which provides an "acoustic reactance . . . related to the movement/vibration of the material used for the acoustic cover," which is a diaphragm. *Id.* at 15–16. It is undisputed that the applicant did not object to these findings. However, these findings are consistent with the plain and ordinary meaning of "diaphragm" as a thin, flexible sheet that can be moved, so they do not contravene that meaning.

Finally, we acknowledge Mr. Anagnos's testimony in IPR2022-00242 that "Moen says that manipulating the size and location of holes in *its diaphragm*, as well as the size of the cavity formed between *the diaphragm* and the microphone, acts to cause a phase shift or delay in the sound entering the microphone." Ex. 1040 ¶¶ 18, 165 (emphasis added) (citing Moen, "4:65–57"). The referenced holes are found in Moen's "grill or screen 26" which appears to be a rigid structure. *See* Ex. 1036, Figs. 3–4, 4:49–5:21. Nonetheless, this is a scant basis to depart from the plain and ordinary meaning of "diaphragm" as a thin, flexible sheet, so that it might include a rigid structure such as Moen's grill 26 or Sjursen's face plate 17. In particular, the specific issue we face here is whether a diaphragm might be a rigid structure, but that issue was not addressed in Mr. Anagnos's declaration testimony in IPR2022-00242 cited by Petitioner. *See* Ex. 1040 ¶ 165; Pet. Reply 16–17.

We need not delve into whether or how the respective plain and ordinary meanings of the terms "diaphragm" and "faceplate" might or might not differ. As discussed in Section III.F.3 below, there is no evidence to indicate that Sjursen's face plate 17 is a thin, flexible sheet that can be moved, per the plain and ordinary meaning of "diaphragm." That is sufficient to resolve the patentability disputes presented here in Patent

Owner's favor, regardless of whether in some circumstances a "diaphragm" might also be a "faceplate."

We also need not address whether or how a "diaphragm" might or might not also be a "windscreen." *See, e.g.*, PO Resp. 38–39; Pet. Reply 17 n.2. Sjursen does not describe its face plate 17 as a windscreen either structurally or functionally, so whether in some circumstances a "diaphragm" might also be a "windscreen" has no relevancy to our present Decision.

Thus, we conclude the "diaphragm" of claim 11 is a thin, flexible sheet that can be moved by sound waves, as in a microphone, or can produce sound waves when moved, as in a loudspeaker.

3. Application to Le, Mayer, and Sjursen

Petitioner relies on Sjursen's face plate 17 as disclosing a diaphragm to cover a microphone, per claim 11, and does not rely on Le or Mayer in this regard. *See* Pet. 40–41; Ex. 1002 ¶¶ 236–243, 247.

Patent Owner objects that Sjursen's face plate 17 is not a "diaphragm" as recited in claim 11, so incorporating it into the Le-Mayer recording system would not result in the claimed invention. *See* PO Resp. 12–13, 36–37, 40. We agree. As discussed in Section III.F.2 above, a diaphragm is a thin, flexible sheet that can be moved. There is nothing in the disclosures of Sjursen cited by Petitioner to suggest that its face plate 17 is flexible or can be moved. *See* Pet. 40–41 (citing Ex. 1011, Fig. 1, 1:45–2:3, 2:59–67, 4:59–5:8, 5:37–49, 6:11–29); Pet. Reply 13–18 (opposing Patent Owner's claim construction, and not arguing that face plate 17 might be a thin, flexible sheet). Instead, Sjursen refers to face plate 17 as being part of

shell 11, and as including openings 15 and 16 that allow air and sound into cavity 12, which suggests face plate 17 is rigid. *See* Ex. 1011, Fig. 1, 4:58–5:1, 5:42–49.

We conclude Petitioner has not established by a preponderance of the evidence that claim 11 is unpatentable as having been obvious over Le, Mayer, and Sjursen.

G. Ground 1D — Obviousness over Le, Mayer, and Langhart

In Ground 1D, Petitioner argues claims 14 and 15 of the '982 patent are unpatentable as having been obvious over Le, Mayer, and Langhart. *See* Pet. 3, 43–48; Ex. 1002 ¶¶ 254–276. Patent Owner opposes. *See* PO Resp. 40–43; Ex. 2006 ¶¶ 67, 117–124.

Claim 14 recites: "The system according to claim 1, the system further comprising: a Recording Status Alert System (RSAS) configured to provide an indication when the further data storage device records the content of the data storage device." Ex. 1001, 15:49–53. Claim 15 depends from claim 14. *See id.* at 15:54–16:6.

We have reviewed the record, and we conclude Petitioner's contentions are supported by a preponderance of the evidence. We begin our analysis with a brief summary of Langhart, then we turn to the parties' contentions.

1. Langhart

Langhart discloses a system for recording telephone conversations. *See* Ex. 1012, codes (54) and (57). "If one of the parties requests that the conversation be recorded, then the non-recording parties (i.e., the one or more parties not requesting that the conversation be recorded) are notified

that the conversation is being recorded." *Id.* at code (57). Langhart's system may be implemented to permit mobile phone users to record a conversation while simultaneously engaging in other activities. *See id.* at Fig. 1, ¶¶ 2, 19. In one embodiment, "upon one of the parties requesting that the conversation be recorded, the non-recording party is automatically notified that the conversation is being recorded." *Id.* ¶ 22. This may be accomplished by providing an intermittent background tone, for example. *See id.*

Langhart indicates that its notifications are particularly useful "if the applicable law at the location of the non-recording parties mandates" notifying conversation participants that the conversation is being recorded. *Id.* at code (57), ¶ 5. Thus, Langhart's processor is coupled to a location status database, which the processor uses to determine if the applicable law at the location of the non-recording party includes such a mandate. *See id.* ¶ 22. If there is such a mandate, then Langhart's system provides the requisite notification. *See id.* If there is no such mandate, "then depending on a preference, the non-recording party may not receive any notification prior to recording the conversation." *Id.*

2. Claim 14

Petitioner contends Langhart discloses a recording status alert system, which indicates when a conversation is being recorded, via an audible indication. *See* Pet. 43–44 (citing Ex. 1012, code (57), ¶¶ 2–3, 5, 19, 22, 45); Ex. 1002 ¶¶ 256–259. According to Petitioner, a person of ordinary skill in the art would have been motivated to incorporate Langhart's notification system into the Le-Mayer recording system in order to:

(1) comply with social norms and applicable laws; and (2) confirm that the user's voice command to start recording has been received and implemented by the system. *See* Pet. 44–46; Pet. Reply 18, 22; Ex. 1002 ¶¶ 260–266. For example, although Petitioner recognizes that "Le expresses a desire to avoid being 'disruptive to a conversation that the user is having with someone at the same time,'" Petitioner nonetheless contends this would not have dissuaded the proposed modification so that the Le-Mayer system "could be operated in a manner that would not violate applicable laws." Pet. 45 (quoting Ex. 1008 ¶ 4); Ex. 1002 ¶ 263.

Patent Owner objects that a person of ordinary skill in the art would not have combined Le, Mayer, and Langhart as proposed by Petitioner. *See* PO Resp. 40–41, 42. Patent Owner contends Petitioner fails to provide a sufficient rationale for looking to telephone system art such as Langhart's recording system, when considering Le's recording system in which the "primary goal is recording events occurring near the user in real time—not recording telephone calls." *Id.* at 42; Ex. 2006 ¶ 121. Patent Owner also asserts "Le states that one of its goals is to be as unobtrusive and unnoticeable as possible," and providing Langhart's recordation notifications "would not be consistent with" Le's goal, thereby leading "away from including the Langhart system into the Le-Mayer system." PO Resp. 42; Sur-reply 15–16; Ex. 2006 ¶ 121.

Petitioner replies by characterizing Patent Owner's argument as being that Langhart is non-analogous art to the '982 patent. *See* Pet. Reply 21–22. We disagree with this characterization. We understand Patent Owner's argument instead to focus on the similarities and differences between Le and Langhart, as they pertain to Petitioner's asserted motivation to combine. *See*

PO Resp. 41–42 (comparing Le and Langhart); *Sanofi-Aventis Deutschland GmbH v. Mylan Pharms. Inc.*, 66 F.4th 1373, 1377 (Fed. Cir. 2023) ("In evaluating whether a reference is analogous, we have consistently held that a patent challenger must compare the reference to the challenged patent.").

Nonetheless, we determine a person of ordinary skill in the art would have been motivated to combine the Le-Mayer recording system and the Langhart recording system in the fashion proposed by Petitioner, despite that the former is an always-on recording system to record conversations in the user's immediate environment, and the latter records telephone conversations. All three references are directed to recording the user's conversations with other individuals, including in the specific context of a cellular phone, which is a sufficient similarity to avoid hindsight bias in Petitioner's combination. *See* Ex. 1008, code (57), ¶¶ 9, 21; Ex. 1009 ¶ 16; Ex. 1012, code (57), ¶¶ 2, 19. Mr. Anagnos's contrary testimony does not sufficiently address these similarities among the references to persuade us otherwise. *See* Ex. 2006 ¶¶ 119, 121.

We are persuaded by Dr. Atlas's testimony that a person of ordinary skill in the art would have been motivated to include Langhart's audible notifications that a recording has been initiated during conversation, in order to comply with social norms and applicable laws, and to confirm that the user's command to start recording has been received and implemented by the system. *See* Ex. 1002 ¶¶ 258–262 (citing Ex. 1012, ¶¶ 5, 22, 45). In particular, Dr. Atlas expressly recognizes that "Le expresses a desire to avoid being 'disruptive to a conversation that the user is having with someone at the same time.'" *Id.* ¶ 263 (quoting Ex. 1008 ¶ 4). He nonetheless testifies, and we agree, that this would not have dissuaded the

proposed modification, given the benefits achieved. *See id.* A person of ordinary skill in the art would have appreciated that a given course of action (providing Langhart's audible recording notifications) often has simultaneous advantages (e.g., compliance with social norms and the law, and confirmation of user commands) and disadvantages (intruding to some extent into the conversation), but this does not necessarily obviate a motivation to combine. *See Urbanski*, 809 F.3d at 1243–44; *Medichem*, 437 F.3d at 1165.

Patent Owner also objects that, even if the references were combined as proposed by Petitioner, the combination would not have led to the invention of claim 14. *See* PO Resp. 41–42. According to Patent Owner, "at best Langhart discusses a telephonic system that may or may not send an audio warning notification based upon local law when a telephone conversation is being recorded," and "Langhart does not *always* send a notification even when a telephone call is recorded." *Id.* at 41 (emphasis added); Ex. 2006 ¶ 119. Patent Owner asserts claim 14 by contrast "provides an indication '*when* the further data storage records' the content of the data storage device," rather than providing a notification only "sometimes" as in Langhart. PO Resp. 41 (emphasis added) ("The system of claim 14 operates any time the recording is occurring . . . ."); Ex. 2006 ¶ 120.

Petitioner replies that Patent Owner's construction that "'when' means 'each time'" is unsupported apart from "an *ipse dixit* statement from Mr. Anagnos." Pet. Reply 18. Petitioner contends the '982 patent specification "uses permissive language" that contradicts Patent Owner's construction, which is also unsupported by case law. *Id.* at 19 (citing

Ex. 1001, 10:37–51). Petitioner further contends the decision in *Info-Hold, Inc. v. Muzak LLC*, 783 F.3d 1365, 1373 (Fed. Cir. 2015), represents a typical dispute over "whether 'when' imposes a causal or temporal limitation," and asserts Patent Owner "does not dispute that under either a causal or temporal interpretation, the Le-Mayer-Langhart combination meets" claim 14. Pet. Reply 19.

Petitioner argues moreover that, even if Patent Owner's claim construction is adopted, Langhart still discloses providing an indication when recording is activated. *See* Pet. Reply 20. In particular, according to Petitioner, claim 14 is an apparatus claim described in functional terms, so it "can be rendered obvious where the prior art discloses or suggests a structure that performs the recited function, even if the disclosed structure has non-infringing modes of operation." *Id.* at 20–21 & n.3 (citations omitted). Petitioner concludes: "[W]here, as here, the Le-Mayer-Langhart combination discloses or suggests sending an indication 'each time' as long as it is in a location that would require it, the Le-Mayer-Langhart combination discloses the claimed structure, even if under some operating conditions (e.g., depending on location), it is not used." *Id.* at 21.

Patent Owner responds that Petitioner's reliance on the '982 patent specification is unavailing, because it "does not say that generating the notification signal is merely permissive," and in any event "[i]t is improper to rely on examples from the specification to broaden a claim beyond its ordinary meaning." *See* Sur-reply 14–15 (citing Ex. 1001, 10:45–46). Patent Owner asserts the *Info-Hold* decision cited by Petitioner "held that 'when' in that context meant a temporal limitation," and "[t]he term has the same meaning here—a notification is being given when the data is being

recorded to the further data storage device." *Id.* at 15 (citing *Info-Hold*, 783 F.3d at 1373–74). Patent Owner maintains claim 14 requires notification "whenever information from the temporary memory is being recorded into the additional memory," as opposed to "at certain time[s], and not at other times." *Id.*

We conclude that, even applying Patent Owner's construction of claim 14 as requiring notification *whenever* a recording is initiated, Langhart discloses such a system. In particular, Langhart provides that in one embodiment, "*upon one of the parties requesting that the conversation be recorded*, the non-recording party is *automatically* notified that the conversation is being recorded." Ex. 1012 ¶ 22 (emphasis added). Because that embodiment satisfies Patent Owner's narrow claim construction, we need not decide whether claim 14 encompasses Langhart's other embodiments, such as providing notification if the law of the jurisdiction where the non-recording party is located requires notification, but not providing notification if such law does not require notification.

We conclude Petitioner has established by a preponderance of the evidence that claim 14 is unpatentable as having been obvious over Le, Mayer, and Langhart.

3. Claim 15

Claim 15 depends from claim 14 to add that the system generates an audio signal when recording is activated, and generates a further audio signal when recording is stopped. *See* Ex. 1001, 15:54–16:6.

Petitioner contends this limitation is satisfied by the combination of Le, Mayer, and Langhart, based on Petitioner's analysis of claim 14

discussed above, and additionally because "Langhart discloses providing an audible indication, e.g., a 'beep' that the conversation is no longer being recorded." Pet. 46–48 (citing Ex. 1012 ¶ 45); Ex. 1002 ¶¶ 267–276. Petitioner contends a person of ordinary skill in the art "would have recognized the advantage of incorporating such an 'end of recording' notification into the Le-[Mayer]-Langhart system because both the user of the system and the person to whom he or she is speaking can receive confirmation that the conversation is no longer being recorded." Pet. 47; Ex. 1002 ¶ 273. According to Petitioner, this "confirmation could reassure the user and counterparty, for example, that there will not be a permanent recording of certain portions of the conversation." Pet. 47; Ex. 1002 ¶ 273. Petitioner thus concludes a person of ordinary skill in the art would have been motivated to combine Le, Mayer, and Langhart in the fashion recited in claim 15. *See* Pet. 47–48; Ex. 1002 ¶¶ 274–276.

Patent Owner's opposition largely repeats arguments we have already considered above in the context of parent claim 14. *See* PO Resp. 42–43; Sur-reply 14–16; Ex. 2006 ¶¶ 122–124. In the sole sentence directed to claim 15 separately from claim 14, Patent Owner adds that "[n]or does the prior art teach a system for generating an audio signal each time such recording is started or stopped." PO Resp. 43; Ex. 2006 ¶ 124.

We conclude a preponderance of the evidence supports Petitioner's contentions as to claim 15. In particular, Langhart provides: "Other embodiments of the present invention may send some indication, such as a 'beep,' to the requesting party when the non-requesting party's conversation is no longer being recorded." Ex. 1012 ¶ 12. We find that this corresponds to generating a further audio signal when recording is stopped, per claim 15,

despite Patent Owner's conclusory opposition otherwise. We further determine a person ordinary skill in the art would have been motivated to implement this feature in the combined system of Le, Mayer, and Langhart, for the reasons proffered by Petitioner and summarized above.

We conclude Petitioner has established by a preponderance of the evidence that claim 15 is unpatentable as having been obvious over Le, Mayer, and Langhart.

H. Ground 1E — Obviousness over Le, Mayer, and Kurki

In Ground 1E, Petitioner argues claims 17–20 of the '982 patent are unpatentable as having been obvious over Le, Mayer, and Kurki. *See* Pet. 3, 48–57; Ex. 1002 ¶¶ 277–321. Patent Owner opposes. *See* PO Resp. 43–46; Ex. 2006 ¶¶ 68–69, 125–132.

Claim 17 recites: "The system according to claim 1, the system further comprising: a remote audio forensics analysis system configured to analyze either the content of the circular buffer or data stored on the further data storage device." Ex. 1001, 16:16–20. Claims 18–20 depend from claim 17. *See id.* at 16:21–33.

We have reviewed the record, and we conclude Petitioner's contentions are supported by a preponderance of the evidence. We begin our analysis with a brief summary of Kurki, then we consider the meaning of the term "audio forensics analysis" in claim 17, and finally we turn to the applicable disclosures of Le, Mayer, and Kurki.

1. Kurki

Kurki discloses a device for "interactive speech to text conversion and language translation services." Ex. 1013, 1:6–11. A mobile device such as a

personal digital assistant records speech with a microphone, then uses a wireless network such as a cellular network to send the recording to a server, to perform the speech-to-text conversion and translation. *See id.* at 1:23–29, 1:42–46, 1:50–58, 5:20–26, 6:54–65, 7:14–28, 11:14–18, 12:38–67. The mobile device and the server may each perform part of the overall processing required to complete the speech-to-text conversion and translation. *See id.* at 5:20–26, 7:14–20, 11:14–18, 12:38–58, 13:1–24.

2. Claim Construction — "audio forensics analysis"

Claim 17 includes "a remote *audio forensics analysis* system." Ex. 1001, 16:18 (emphasis added).

Petitioner argues a person of ordinary skill in the art would have understood Kurki's speech-to-text conversion and translation are "consistent with how the '982 patent describes the 'forensics analysis system.'" Pet. 51–52 (citing Ex. 1001, 13:33–52); Ex. 1002 ¶ 296. For example, Petitioner asserts, "the '982 patent explains that a 'remote forensics analysis system includes all, either or a combination of the following functionality; . . . a language translation system to translate text from one language to another; [and] a text-to-speech translation system to translate text into speech for transmission back to the AORS user." *Id.* (quoting Ex. 1001, 13:33–52).

Patent Owner argues Petitioner relies "on a false definition of 'analysis,'" because "[t]he term 'analyze/analysis,' when used in the hearing protection industry, is the calculation of noise dosage a person receives, not

speech-to-text conversion." PO Resp. 43–44 (citing Ex. 2013[8], 3); Ex. 2006 ¶¶ 125–126. Patent Owner then discusses various ways in which calculation of noise dosage differs from speech-to-text conversion. *See* PO Resp. 44–45; Ex. 2006 ¶¶ 127–129.

Petitioner maintains in reply that Patent Owner's "narrow construction of 'analyze/analysis'" is unsupported and inconsistent with the intrinsic evidence concerning the '982 patent. Pet. Reply 22–23. Petitioner asserts the '982 patent "specification uses 'forensic analysis' interchangeably with 'forensic examination,'" which "suggests that 'analysis' and 'examination' should have the same meaning." *Id.* at 23 (citing Ex. 1001, 5:28–31, 13:29–32). Petitioner argues this is consistent with the plain meaning of the term "analysis" — "[e]xamination for the purpose of understanding." *Id.* at 23 (quoting Ex. 1042, 4).

Petitioner criticizes Patent Owner's construction as "add[ing] multiple limitations that lack support in the specification," which does not refer to "noise dosage" or discuss the factors that are analyzed to calculate a noise dosage. *Id.* Petitioner also argues Patent Owner's construction departs from the prosecution history of the '382 patent. *Id.* at 24 (citing Ex. 1035, 160). Petitioner moreover argues Mr. Anagnos's testimony is conclusory, and Patent Owner's reliance on Exhibit 2013 is unexplained. *See id.*

Patent Owner responds that Petitioner's claim construction relies "on specific terms in the '982 patent taken out of context," and that a complete reading of the '982 patent specification shows the terms "analysis" and

[8] Patent Owner's citation to Exhibit 1012 here is a typographical error, meant to refer to Exhibit 2013. *See* Pet. Reply 24; Sur-reply 16–17 (not stating otherwise).

"examination" are not the same. Sur-reply 2, 16. In particular, Patent Owner asserts the claim term "remote audio forensic analysis system" "appears in one single paragraph in the specification of the '982 patent," in which "the word 'analysis' appears 4 more times, but the word 'examination' does not appear even once." *Id.* at 16 (citing Ex. 1001, 13:29–58). By contrast, according to Patent Owner, the term "examination" "appears in an entirely different paragraph.'" *Id.* (citing Ex. 1001, 5:24–30). Patent Owner also argues the '382 patent prosecution history cited by Petitioner is not relevant to claim 17 of the '982 patent. *Id.* at 17 (citing Ex. 1035, 478 (¶ 44), 489 (¶ 64)).

We conclude Petitioner's understanding of the term "audio forensics analysis" in claim 17 as including speech-to-text conversion and translation has ample support in the '982 patent specification. The '982 patent specification correspondingly states that its "remote audio forensics system includes all, either or a combination of the following functionality" including "a speech-to-text analysis system on the remote server" and "a language translation system to translate text from one language to another." Ex. 1001, 13:29–58. Given the specificity of this disclosure, and its clear correspondence to the system recited in claim 17, we need not delve into the '382 patent prosecution history as disputed between the parties to support applying Petitioner's claim construction here.

Patent Owner's attempt to narrow the meaning of the broad claim term "audio forensics analysis," by contrast, has no objective support in the record. We have reviewed the '982 patent disclosures cited by Patent Owner. *See* Ex. 1001, 5:25–31, 13:29–58. We find nothing therein to

support construing the term "audio forensics analysis" to be limited to a noise dosage calculation. *See id.*

Patent Owner's reliance on Exhibit 2013 fares no better. Patent Owner identifies Exhibit 2013 as: "US Department of Labor, Occupational Safety and Health Administration, Appendix A to § 1910.95 — Noise Exposure Computation." PO Resp. iv. Patent Owner argues, and Mr. Anagnos testifies, that page 3 supports Patent Owner's claim construction, but they do not explain how. *See* PO Resp. 43–44; Ex. 2006 ¶¶ 125–126. We have reviewed page 3, and we find nothing therein to support construing the term "audio forensics analysis" to be limited to a noise dosage calculation. *See* Ex. 2013, 3. Although page 3 does discuss noise dosage, it does nothing to indicate that noise dosage is equivalent to the broad claim term "audio forensics analysis" at issue here. *See id.*

Thus, we conclude the "audio forensics analysis" of claim 17 includes speech-to-text conversion and translation.

3. Claim 17

Petitioner contends Kurki discloses a system for recording conversations in which mobile electronic devices communicate with a remote server, to perform speech-to-text conversion and to translate the speech. *See* Pet. 49–51 (citing Ex. 1013, Figs. 2–4, 1:10–11, 1:16–17, 1:42–49, 1:51–58, 5:20–22, 5:43–45, 5:51–54, 6:54–60, 7:14–16, 7:20–26, 11:14–18, 12:39–67, 13:1–23); Ex. 1002 ¶¶ 280–295. Petitioner asserts a person of ordinary skill in the art would have been motivated to incorporate Kurki's teachings of a remote speech-to-text conversion and translation system into the Le-Mayer system, in order to "predictably interact with

people that speak a different language" and "improve the ability of a user of the Le-Mayer system to quickly recall or retrieve previously recorded conversations by storing them in text format." Pet. 52–53 (citing Ex. 1008 ¶ 38); Ex. 1002 ¶¶ 279, 294–295, 297–302.

Patent Owner's opposition is premised solely on Kurki not disclosing "a calculation of noise dosage or any other similar concepts," per Patent Owner's construction of the "audio forensics analysis" term in claim 17. PO Resp. 45; *see also id.* at 43–46 (the entirety of the Patent Owner Response's argument addressing claim 17). We have rejected that claim construction, and concluded the "audio forensics analysis system" in claim 17 includes speech-to-text conversion and translation, for reasons provided in Section III.H.2 above.

Applying that claim construction, we find a preponderance of the evidence supports Petitioner's contention that Kurki discloses a remote audio forensics analysis system, because Kurki's remote server performs speech-to-text conversion and translation. *See* Ex. 1013, 1:6–11, 5:20–26, 6:54–65, 7:14–28, 11:14–18, 12:38–58, 13:1–24. We further determine a person ordinary skill in the art would have been motivated to implement such a remote audio forensics system in the combined system of Le, Mayer, and Kurki, for the reasons proffered by Petitioner and summarized above.

We conclude Petitioner has established by a preponderance of the evidence that claim 17 is unpatentable as having been obvious over Le, Mayer, and Kurki.

4. Claims 18–20

Claims 18–20 all depend from claim 17, and add further details concerning the remote audio forensics analysis system of claim 17, as well as a remote server to perform some of the analysis. *See* Ex. 1001, 16:21–33.

Petitioner contends the combined disclosures of Le and Kurki reflect these details, and a person of ordinary skill in the art would have been motivated to include these details in the combined Le-Mayer-Kurki system, for the same reasons discussed above concerning parent claim 17. *See* Pet. 53–57; Ex. 1002 ¶¶ 303–321.

Patent Owner does not argue for patentability of claims 18–20 separately from their parent claim 17. *See* PO Resp. 46.

We conclude Petitioner has established by a preponderance of the evidence that claims 18–20 are unpatentable as having been obvious over Le, Mayer, and Kurki, for the reasons provided above in connection with the parent claim 17, and based further on Petitioner's unopposed argument directed to the limitations added by claims 18–20, which we adopt as our own.

I. Ground 1F — Obviousness over Le, Mayer, and Stuckman

In Ground 1F, Petitioner argues claim 24 of the '982 patent is unpatentable as having been obvious over Le, Mayer, and Stuckman. *See* Pet. 3, 57–59; Ex. 1002 ¶¶ 322–333. Patent Owner does not argue for patentability of claim 24 separately from its parent claim 1. *See* PO Resp. 46. We have reviewed the record, and we conclude Petitioner's contentions are supported by a preponderance of the evidence.

Claim 24 recites: "The system according to claim 1, [the] system further comprising: a low-memory warning system configured to provide an indication when a remaining memory level of the further data storage device is less than a predetermined amount." Ex. 1001, 16:48–52.

Petitioner contends Stuckman correspondingly discloses a digital video recorder (DVR) with a memory manager that determines whether a low memory condition exists based on a comparison to a predetermined memory amount and, if such a low memory condition does exist, then outputs an alert message to the user. *See* Pet. 57–58 (citing Ex. 1014, code (57), ¶ 62; Ex. 1001, 5:32–36); Ex. 1002 ¶¶ 324–327. Petitioner contends a person of ordinary skill in the art would have been motivated by this teaching in Stuckman to modify the Le-Mayer system to include a low memory warning system, to allow the user to manage low memory resources by deleting recordings to free up memory to make room for additional recordings. *See* Pet. 58–59 (citing Ex. 1014 ¶ 63); Ex. 1002 ¶¶ 328–333.

Patent Owner does not argue for patentability of claim 24 separately from its parent claim 1. *See* PO Resp. 46. Patent Owner's Preliminary Response arguments that Stuckman is non-analogous art to the '982 patent, and that there is an insufficient motivation to combine (*see* Paper 9, 14, 43–44) were not carried forward in the Patent Owner Response, and therefore have been waived. *See* Inst. Dec. 46–47; Paper 13, 10.

We conclude Petitioner has established by a preponderance of the evidence that claim 24 is unpatentable as having been obvious over Le, Mayer, and Stuckman, for the reasons provided above in connection with the parent claim 1, and based further on Petitioner's unopposed argument directed to the limitation added by claim 24, which we adopt as our own.

J. Ground 1G — Obviousness over Le, Mayer, and Furst

In Ground 1G, Petitioner argues claim 25 of the '982 patent is unpatentable as having been obvious over Le, Mayer, and Furst. *See* Pet. 3, 60–62; Ex. 1002 ¶¶ 334–347. Patent Owner does not argue for patentability of claim 25 separately from its parent claim 1. *See* PO Resp. 46. We have reviewed the record, and we conclude Petitioner's contentions are supported by a preponderance of the evidence.

Claim 25 recites: "The system according to claim 1, the system further comprising: a signal processing circuit configured to at least one of amplify the ASM signal or equalize a frequency sensitivity of the ASM signal." Ex. 1001, 16:53–57.

Petitioner contends neither Le nor Mayer discloses "the details for implementing" a microphone mounted on a mobile phone to record environmental sounds, so a person of ordinary skill in the art seeking to implement the Le-Mayer system would have been motivated to look for ways to implement such a microphone, and found a solution in Furst. Pet. 60; Ex. 1002 ¶¶ 338–339. In particular, according to Petitioner, Furst discloses microphone assembly 3 for mobile phone 2, in which the assembly includes pre-amplifier 10 and A/D converter 12 integrated on an integrated circuit chip, thereby beneficially saving space, reducing cost, and minimizing exposure of analog signals to electromagnetic interference. *See* Pet. 60–61 (citing Ex. 1015, code (57), Fig. 1, ¶¶ 15, 53); Ex. 1002 ¶¶ 340–343 (also citing Ex. 1015 ¶¶ 2, 6, 52). Petitioner asserts a person of ordinary skill in the art would have been motivated to incorporate Furst's teachings related to microphone assembly 3 into the Le-Mayer system, to achieve those benefits. *See* Pet. 61–62; Ex. 1002 ¶¶ 344–347.

Patent Owner does not argue for patentability of claim 25 separately from its parent claim 1. *See* PO Resp. 46. Patent Owner's Preliminary Response argument that there is an insufficient motivation to combine (*see* Paper 9, 45–47) was not carried forward in the Patent Owner Response, and therefore has been waived. *See* Inst. Dec. 48–49; Paper 13, 10.

We conclude Petitioner has established by a preponderance of the evidence that claim 25 is unpatentable as having been obvious over Le, Mayer, and Furst, for the reasons provided above in connection with the parent claim 1, and based further on Petitioner's unopposed argument directed to the limitation added by claim 25, which we adopt as our own.

K. Ground 2 — Obviousness over Couper and Lagassey

In Ground 2, Petitioner argues claims 1 and 2 of the '982 patent are unpatentable as having been obvious over Couper and Lagassey. *See* Pet. 3, 11–14, 19–22, 63–69; Ex. 1002 ¶¶ 76–92, 123–139, 348–383. Patent Owner opposes. *See* PO Resp. 15–16, 46–50; Ex. 2006 ¶¶ 72–74, 135–145.

We have reviewed the record, and we conclude Petitioner's contentions are supported by a preponderance of the evidence. We begin our analysis with summaries of Couper and Lagassey, then we address Petitioner's contentions and Patent Owner's opposition.

1. Couper Disclosure

Couper discloses a method of identifying incidents using a plurality of distributed mobile devices that detect sound. *See* Ex. 1016, codes (54) and (57). Figure 1 is reproduced below:

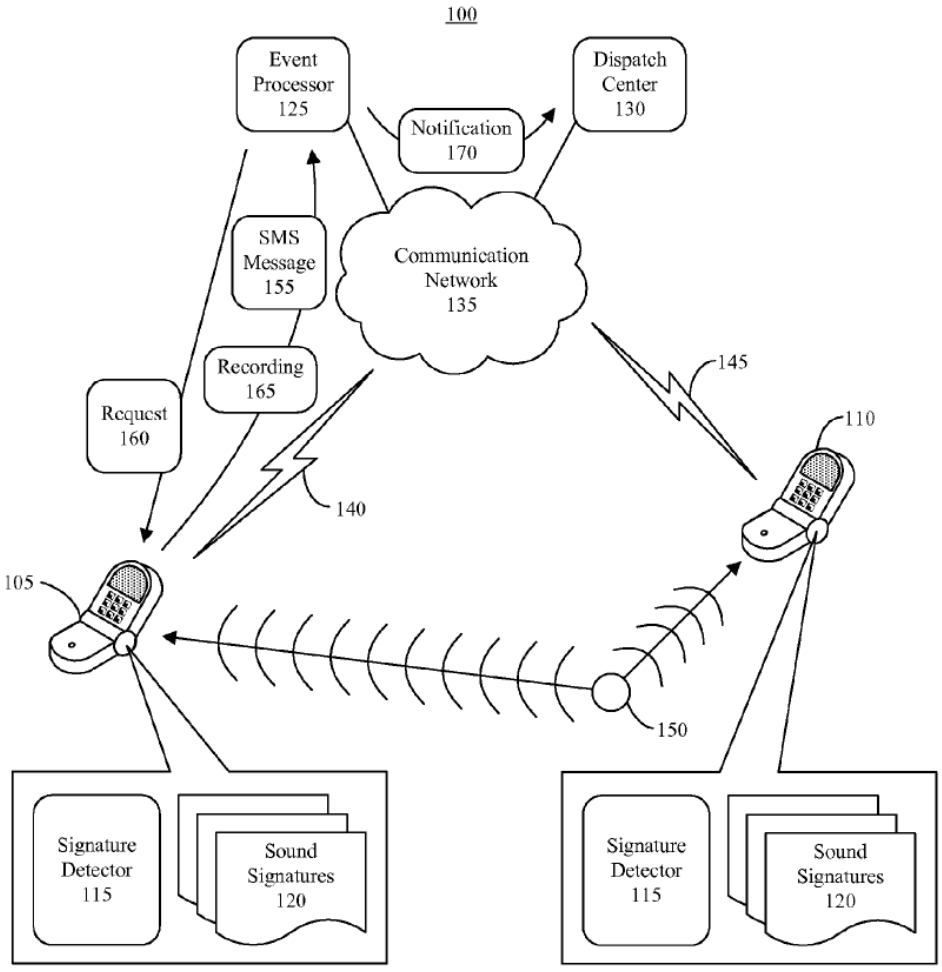


FIG. 1

Figure 1 of Couper.

Figure 1 depicts system 100 including a plurality of mobile devices 105, 110 (such as mobile phones) linked via communication network 135 (such as the Internet) to event processor 125. *See id.* at 4:8–18, 4:30–34. Each phone 105, 110 includes its own signature detector 115, and stores sound signatures 120. *See id.* at 4:43–44.

"[S]ignature detector 115 can compare audio that is received by the internal microphone of the mobile device 105 with the 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, calls for help, etc." *Id.* at 4:60–5:1. Signature detector 115 can cause its mobile phone "to keep the microphone active so that sounds are *continually* monitored, recorded, and compared with the stored sound signatures 120." *Id.* at 5:19–25 (emphasis added), 6:16–19, 8:6–14. Upon detecting a selected sound, a mobile phone sends a communication to event processor 125, which evaluates communications from one or more mobile phones "to determine or validate whether an incident associated with the detected sounds has occurred" and to "take further action." *Id.* at 3:62–4:7, 5:58–6:5, 6:51–66.

According to Couper, its distributed mobile phone system 100 improves upon previously known "[f]ixed-location audio sensors . . . distributed through a geographical area," which "can be costly to deploy." *See id.* at 1:4–47.

2. Lagassey Disclosure

Lagassey discloses an automobile accident detection and recordation system. *See* Ex. 1017, code (54), ¶ 2. Figure 1 is reproduced below:

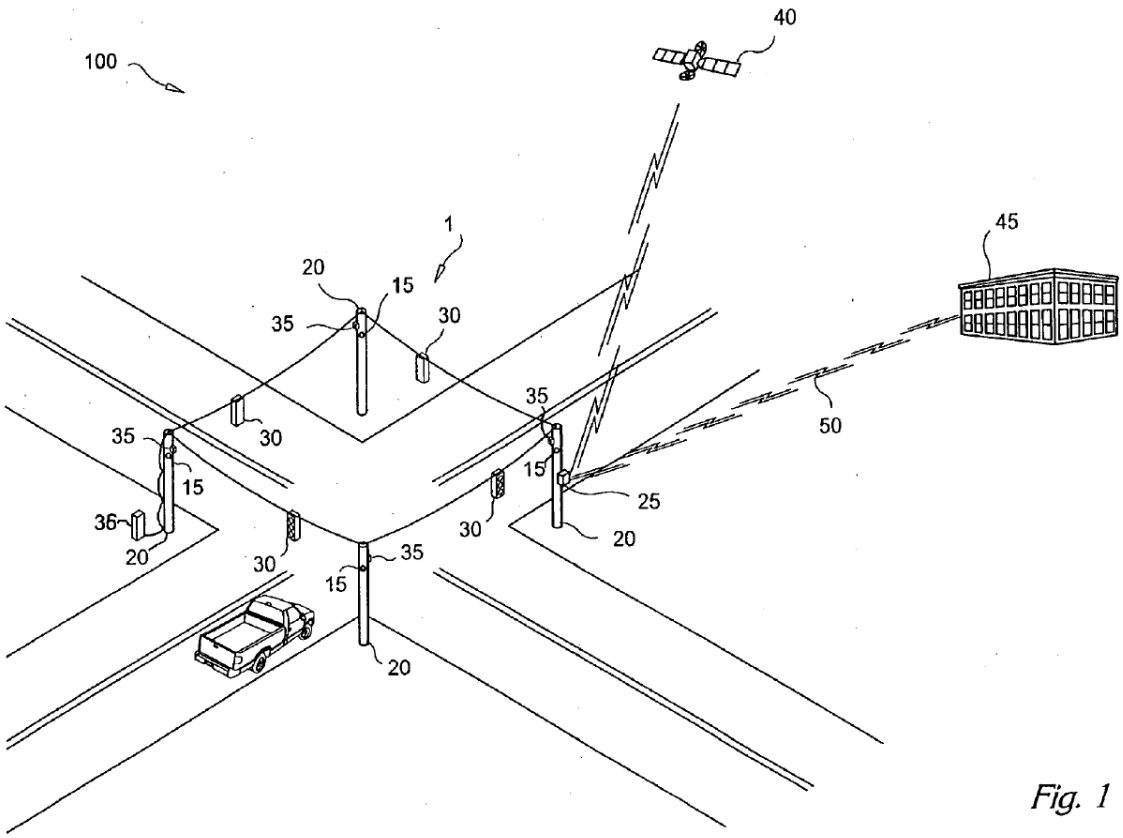


Figure 1 of Lagassey.

Figure 1 depicts system 100 comprising listening devices 15 (preferably microphones) and video cameras 35 placed on utility poles 20 proximate traffic scene 1. *Id.* ¶¶ 130, 137. System 100 also includes control unit 25 placed on one pole 20, to receive acoustic signals from microphones 15 and video signals from cameras 35. *Id.* ¶¶ 53–54, 131, 137.

Control unit 25 processes the acoustic signals to determine if they "meet predetermined threshold levels or signature patterns that indicate an accident is about to occur . . . or is in the process of occurring . . . ." *Id.* ¶ 54. Control unit 25 "uses RAM or other data storage means as a buffer, and continually stores in the buffer all audio signals and video images of the desired location in a loop or circular buffer that retains data for a specified period of time, overwriting audio and video that exceeds the specified period

of time." *Id.* "When a qualifying sound is detected," the audio and video data may be "transferred from the circular buffer to a persistent storage device . . . to capture the events leading up to an accident." *Id.* ¶ 55. Control center 25 transmits its collected data to remote monitoring center 45 for further assessment. *Id.* ¶¶ 53, 62, 153.

3. Claims 1 and 2

Claim 1 is set forth above in Section II.C. Claim 2 recites: "The system according to claim 1, where the record-activation system is configured to activate the further data storage device responsive to detection of at least one of a speech sound, a non-speech sound or a transient sound in the content of the data storage device." Ex. 1001, 14:60–64.

a) Comparison of Claims 1 and 2 with Couper

Petitioner compares claims 1 and 2 with Couper, and contends Couper's system 100 discloses each and every limitation of the claims except for the *separate memories* of claim 1 to store microphone signals. *See* Pet. 11–13, 63–69; Ex. 1002 ¶¶ 76–82, 348–383. Patent Owner does not dispute this contention, and we find it is supported by a preponderance of evidence in the record, for the following reasons.

We find Couper's system 100 is an always-on recording system. *See* Ex. 1016, 5:19–25 (signature detector 115 in each mobile phone 105, 110 can cause the phone "to keep the microphone active so that sounds are *continually* monitored [and] recorded" (emphasis added)), 6:16–19, 8:6–14, 11:1–5. Couper's mobile phones 105, 110 each contain a monitoring assembly including an ambient sound microphone to monitor an ambient acoustic filed proximate to the mobile phone and produce a responsive

signal. *See id.* at 4:60–62 ("[S]ignature detector 115 can compare audio that is received by the internal microphone of the mobile device 105 with the sound signatures 120."). Couper's mobile phones 105, 110 monitor these ambient sounds to detect incidents such as gunshots, explosions, sirens, alarms, breaking glass, auto accidents, yelling or screaming, or calls for help. *See id.* at 4:62–5:1. These incidents include a speech sound (yelling or screaming or calls for help), a non-speech sound (alarms), and a transient sound (gunshots or explosions), as contemplated in claim 2.

Couper's mobile phones 105, 110 also each include a memory "to continually record audio . . . [in] a continuous loop." *Id.* at 4:34–35, 5:1–4, 8:4–13. They further include a record-activation system including software. *See id.* at 4:60–5:1 (signature detector 115 compares recorded microphone audio with sound signatures 120), 8:9–13 ("[I]f a detected sound matches a sound signature 120, the signature detector 115 can prevent that audio from being recorded over until the mobile device either provides the audio to the event processor 125 or determines that the audio is not needed by the event processor 125.").

b) Motivation to Combine Couper and Lagassey

Petitioner argues a person of ordinary skill in the art would have been motivated to modify Couper's mobile phones 105, 110 to include the *separate memories* of claim 1 to store microphone signals. *See* Pet. 19–22, 64–69; Ex. 1002 ¶¶ 123–139, 358–383. According to Petitioner, "Couper does not focus on the implementation details relating to the use of memory devices for the 'continuous loop' recording" discussed in Couper. Pet. 19– 20 (citing Ex. 1016, 4:30–59, 8:9–11); Ex. 1002 ¶ 128. Petitioner

asserts this lack of focus would have caused a person of ordinary skill in the art "to look for additional information regarding how to implement Couper's functionality," leading to Lagassey. Pet. 20; Ex. 1002 ¶ 129.

Petitioner asserts Lagassey's distributed control units 25, like Couper's distributed mobile phones 105 and 110, monitor ambient sounds in the environment with microphones to detect and record vehicle accidents. *See* Pet. 20, 63 (citing Ex. 1016, 4:64–5:1; Ex. 1017 ¶ 175); Ex. 1002 ¶¶ 126, 130, 133. Petitioner contends Lagassey provides details for implementing the continuous loop recording of Couper, which include storing the continuous loop of audio data in *a circular buffer memory*, and transferring the contents of the circular buffer memory to *a separate persistent memory* upon the detection of a vehicle accident. *See* Pet. 20–21 (citing Ex. 1017 ¶¶ 53–55, 67, 151, 175, 193); Ex. 1002 ¶¶ 130–134. Petitioner concludes a person of ordinary skill in the art would have been motivated to include these implementation details from Lagassey into the system of Couper. *See* Pet. 20–22; Ex. 1002 ¶¶ 135–139.

Patent Owner argues Petitioner's case for obviousness relies on improper hindsight. *See* PO Resp. 46–47; Ex. 2006 ¶ 135. Patent Owner asserts Petitioner's proposed combination "would negate the benefits of reduced cost and complexity that Couper cites as a feature of his invention" utilizing mobile phones 105 and 110, rather than fixed-location sensors such as Lagassey's microphones 15 and cameras 35. *See* PO Resp. 47–48, 49 (citing Ex. 1016, 1:25–30, 1:34–46; Ex. 1017 ¶ 55); Ex. 2006 ¶¶ 136–138; Ex. 1016, 1:4–47 (Couper states its distributed mobile phone system 100 improves upon previously known "[f]ixed-location audio sensors . . . distributed through a geographical area" which "can be costly to deploy").

Patent Owner also asserts Couper's mobile devices do not include the "further data storage device" of claim 1, because "[t]here is no need for" such a device and "Couper's system is operationally complete without such a device." PO Resp. 48; Ex. 2006 ¶¶ 139–140. In particular, according to Patent Owner, "Couper discloses that the mobile devices contain a memory which is used to store the signature sounds of interest," and "[l]ocal memory in the mobile device is essentially used for decision-making, not for archiving sound that is subsequently stored long-term elsewhere." PO Resp. 48–49 (citing Ex. 1016, 8:4–14); Ex. 2006 ¶ 141. Patent Owner suggests that the separate memory feature of Lagassey, which Petitioner seeks to incorporate into Couper's mobile devices, is part of the complexity and increased cost that Couper states its system avoids because all that Couper's mobile devices need to do is record sounds of interest and send them to event processor 125. *See* PO Resp. 49–50 (citing Ex. 1016, 8:4–14); Sur-reply 16–17; Ex. 2006 ¶¶ 142–145.

Petitioner replies that Patent Owner "never explains why it believes implementing Lagassey's circular buffer and persistent storage mechanism into Couper would have allegedly 'negat[ed] the benefits of reduced cost and complexity that Couper' was trying to achieve." Pet. Reply 25 (quoting PO Resp. 47). Petitioner also asserts Patent Owner "does not explain where Couper discloses how its continuous recording function is implemented in memory," so Petitioner's stated motivations for seeking out Lagassey are supported by a preponderance of the evidence. *Id.* at 25–26 (citing PO Resp. 48; Ex. 1016, 8:9–12).

We conclude that, although Couper disparages systems like Lagassey's that use fixed microphones as being difficult, complex, and

costly to deploy, this has no bearing on Petitioner's case for obviousness. *See, e.g.*, Inst Dec. 55–56 (reaching the same conclusion). In particular, Petitioner proposes the obviousness of modifying Couper's mobile phones 105, 110 to include the separate memory architecture of Lagassey's control centers 25, not of replacing Couper's mobile phones 105, 110 with Lagassey's fixed-location microphones 15 and cameras 35. Couper does not teach away from Petitioner's modification.

We also are not persuaded by Patent Owner's attempt to correlate Couper's disparagement of prior art systems specifically to the *separate memory* structure of Lagassey that Petitioner seeks to incorporate into Couper. This alleged correlation is not supported by the pertinent descriptions in Couper. Couper instead refers to "the installation of specialized audio sensors and networking equipment throughout a geographic area" as the factor leading to the disparagement, not Lagassey's separate memory structure. Ex. 1016, 1:23–30.

Mr. Anagnos's testimony in support of Patent Owner's attempted correlation is too conclusory and lacking in explanation and or citation in evidentiary support to persuade us otherwise. *See* Ex. 2006 ¶¶ 138–145. In particular, he does not sufficiently explain why he believes the *separate memory* structure of Lagassey is part of what Couper disparages. *See id.*

Thus, we conclude, weighing the evidence as a whole, that a person of ordinary skill in the art would have been motivated to combine Couper and Lagassey in the fashion proposed by Petitioner, for the reasons provided by Petitioner and summarized above.

c) Conclusion Regarding Claims 1 and 2

We conclude Petitioner has established by a preponderance of the evidence that claims 1 and 2 are unpatentable as having been obvious over Couper and Lagassey.

IV. SUMMARY OF CONCLUSIONS

In summary, we determine a preponderance of the evidence establishes claims 1–6, 14, 15, 17–20, 24, and 25 of the '982 patent are unpatentable, but not that claims 10 and 11 of the '982 patent are unpatentable, as shown in the following table:[9]

Claim(s)	35 U.S.C. §	References	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 3, 5, 6, 10	103	Le, Mayer	1, 3, 5, 6	10
4	103	Le, Mayer, Yuen	4	
11	103	Le, Mayer, Sjursen		11
14, 15	103	Le, Mayer, Langhart	14, 15	
17–20	103	Le, Mayer, Kurki	17–20	
24	103	Le, Mayer, Stuckman	24	

[9] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

25	103	Le, Mayer, Furst	25	
1, 2	103	Couper, Lagassey	1, 2	
Overall Outcome			**1–6, 14, 15, 17–20, 24, 25**	**10, 11**

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–6, 14, 15, 17–20, 24, and 25 of the '982 patent have been proven by a preponderance of the evidence to be unpatentable;

FURTHER ORDERED that claims 10 and 11 of the '982 patent have not been proven by a preponderance of the evidence to be unpatentable; and

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

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