

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS,
AMERICA, INC., HARMAN INTERNATIONAL INDUSTRIES, INC.

Petitioners

v.

STATON TECHIYA, LLC,

Patent Owner

Case IPR2024-00559

U.S. Patent No. 11,610,587

Petition for *Inter Partes* Review of

U.S. Patent No. 11,610,587

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PETITIONERS' EXHIBIT LIST

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1001	U.S. Patent 11,610,587 (“’587Pat.”)
1002	Declaration of Christopher Schmandt (“ <i>Schmandt</i> ”)
1003	Curriculum Vitae of Christopher Schmandt
1004	File History of U.S. Patent 11,610,587
1005	U.S. Provisional Application 61/098,914
1006	U.S. Application 17/203,731
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1009	EP1519625A2 (“ <i>Victorian</i> ”)
1010	U.S. Publication 2007/0281744A1 (“ <i>Andreasson</i> ”)
1011	U.S. Publication 2008/0162133 (“ <i>Couper</i> ”)
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1013	U.S. Patent 5,930,751 (“ <i>Cohrs</i> ”)
1014	U.S. Publication 2003/0161097A1 (“ <i>Le</i> ”)
1015	U.S. Patent 8,209,181 (“ <i>Heckerman</i> ”)
1016	U.S. Publication 2006/0223547A1 (“ <i>Chin</i> ”)
1017	U.S. Patent 7,861,008 (“ <i>Batson</i> ”)
1018	U.S. Patent 8,180,078 (“ <i>Zellner</i> ”)
1019	U.S. Publication 2002/0116541A1 (“ <i>Parker</i> ”)
1020	U.S. Patent 6,163,338 (“ <i>Johnson</i> ”)

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1021	U.S. Publication 2003/0138118A1 (“ <i>Stahl</i> ”)
1022	U.S. Publication 2006/0116175A1 (“ <i>Chu</i> ”)
1023	U.S. Publication US2007/0043563A1 (“ <i>Comerford</i> ”)
1024	Excerpt from MICHAEL H. COHEN, VOICE USER INTERFACE DESIGN (2004) (“ <i>Cohen</i> ”)
1025	Excerpt from ANDREW S. TANENBAUM, STRUCTURED COMPUTER ORGANIZATION (2006) (“ <i>Tanenbaum</i> ”)
1026	Excerpt from COMPUTER DICTIONARY (2d ed. 1994) (“ <i>Computer Dictionary</i> ”)
1027	U.S. Patent 8,111,839 (“ <i>Goldstein ’839</i> ”)
1028	U.S. Patent 10,365,883 (“ <i>Goldstein ’883</i> ”)
1029	U.S. Patent 10,848,827 (“ <i>Sengupta</i> ”)
1030	U.S. Publication 2016/0019024A1 (“ <i>Suzuki</i> ”)
1031	Summary of all applications in the ’587 patent’s family
1032	Exhibit A-01 to Plaintiffs’ Disclosure of Asserted Claims and Infringement Contentions in <i>Staton Techiya, LLC et al. v. Samsung Electronics Co., Ltd. et al.</i> , 2:23-cv-00319 (E.D. Tex. October 11, 2023)
1033	Order Granting Proposed Docket Control Order in <i>Staton Techiya, LLC et al. v. Samsung Electronics Co., Ltd. et al.</i> , 2:23-cv-00319 (E.D. Tex. December 17, 2023)
1034	Federal Court Management Statistics for District Court of Delaware (Dec. 2023)
1035	Letter from Nikhil Krishnan to Thomas J Friel, Jr., dated Feb. 9, 2024

LISTING OF CHALLENGED CLAIMS

Claim 1	
1.pre	A system comprising:
1.1	a user interface; and
1.2	an audio device comprising:
1.3	a microphone configured to measure ambient sound and generate a microphone signal;
1.4	a speaker configured to emit an audio signal;
1.5	a memory configured to store instructions;
1.6	an audio buffer configured to store at least a portion of the microphone signal;
1.7	a data buffer;
1.8	a processor operatively coupled to the memory, the processor operatively coupled to the audio buffer, the processor operatively coupled to the data buffer, wherein the processor is configured to execute the instructions to perform operations comprising:
1.9	receiving the microphone signal;
1.10	sending a portion of the microphone signal to the audio buffer;
1.11	analyzing the audio buffer for detecting a sonic signature;
1.12	notifying a user when the sonic signature is detected;
1.13	sending a modified microphone signal to the data buffer replacing or adding to previous data stored in the data buffer; and
1.14	sending a portion of the data stored in the data buffer, spanning a time period, to the speaker in response to a user request, wherein the user request is one of the sonic signature that is a voice command or a manual input from the user interface.
Claim 2	
2	The system according to claim 1, wherein the sonic signature is a voice command, and where the voice command is to replay audio.

Claim 3	
3	The system according to claim 1, wherein the time period is less than 30 minutes.
Claim 4	
4	The system according to claim 1, wherein the time period is less than 15 minutes.
Claim 5	
5	The system according to claim 1, wherein the audio device is wirelessly connected to an earpiece.
Claim 6	
6.pre	The system according to claim 5, wherein the earpiece includes:
6.1	an ambient sound microphone; and
6.2	an ear canal receiver.
Claim 7	
7	The system according to claim 6, wherein the earpiece further includes: an ear canal microphone.
Claim 8	
8	The system according to claim 7, wherein the operation of notifying the user sends a notification signal to the ear canal receiver.
Claim 9	
9	The system according to claim 5 wherein the earpiece further includes: a sealing section.
Claim 10	
10	The system according to claim 1, wherein the sonic signature detected is one of a siren or an alarm.
Claim 11	
11	The system according to claim 10 wherein the user interface is a button.

Claim 12	
12	The system according to claim 1, wherein the time period is less than 1 minute.

I. INTRODUCTION

Samsung Electronics Co., Ltd., Samsung Electronics America, Inc. (together “Samsung”), and Harman International Industries, Inc. (“Harman”) (collectively, “Petitioners”) request inter partes review (“IPR”) of claims 1-12 (“Challenged Claims”) of U.S. Patent No. 11,610,587 (“the ’587 patent”).

II. GROUNDS FOR STANDING

Petitioners certify that the ’587 patent is available for IPR and that Petitioners are not barred or estopped from requesting IPR to challenge the claims on the grounds herein.

III. STATEMENT OF PRECISE RELIEF REQUESTED FOR EACH CLAIM CHALLENGED

Petitioners respectfully request review and cancellation under 35 U.S.C. §311 of the Challenged Claims in view of:¹

Ground	Claims	Basis
1A	1, 3, 4, 12	§103: <i>Fiedler and Broussard</i>
1B	5-9	§103: <i>Fiedler, Broussard, and Victorian</i>
1C	8	§103: <i>Fiedler, Broussard, Victorian, and Andreasson</i>
1D	10, 11	§103: <i>Fiedler, Broussard, and Couper</i>
2	1, 2	§103: <i>Fiedler, Broussard, and Bulthuis</i>

¹ Petitioners do not concede that any Challenged Claims satisfy other requirements for patentability that cannot be raised in IPR.

As shown below, each reference pre-dates the earliest possible priority date to which the Challenged Claims may be entitled (September 22, 2008).²

Reference	Date	Pre-AIA Art At Least Under
U.S. 6,804,638 (“Fiedler”)	10/12/2004 (issued)	§102(b)
U.S. 2006/0195322 (“Broussard”)	08/31/2006 (published)	§102(b)
EP1519625A2 (“Victorian”)	03/30/2005 (published)	§102(b)
U.S. 2007/0281744A1 (“Andreasson”)	11/03/2006 (filed) 12/6/2007 (published)	§102(a), §102(e)
U.S. 2003/0032447 (“Bulthuis”)	02/13/2003 (published)	§102(b)
U.S. 2008/0162133 (“Couper”)	12/28/2006 (filed) 07/03/2008 (published)	§102(a), §102(e)

IV. OVERVIEW OF THE ’587 PATENT

A. The Specification

The ’587 patent relates to “methods of managing sound.” ’587*Pat.*, 1:21-23. It discloses “personalized sound applications for modifying a user’s acoustic environment” and the devices, such as earpieces, that can use them. *Id.*, 1:43-45, 17:48-52. One such application is called “Always On-Recording™.” *Id.*, 7:19-20. The Always On-Recording application records “the most current audio information for user recall.” *Id.*, 7:20-22. “The recording is stored in a buffer that will allow the

² Petitioners do not concede that the claims of the ’587 patent are entitled to a September 22, 2008 priority date.

user to immediately access the audio information.” *Id.*, 7:22-24. For example, if the user receives information such as a phone number or driving directions, “the user can immediately listen again to the buffer contents thereby repeating the phone number or driving directions.” *Id.*, 7:29-36.

The claims also include an audio buffer for detecting a sonic signature. *Id.*, 9:11-19. In particular, the ’587 patent discloses a separate application, “Hear & Tell,” in which a received sound is compared against a stored sonic signature. *Id.* If there is a match, detected audio can be passed to the user. *Id.*, 9:21-27.

B. Prosecution History

The ’587 patent issued from U.S. Application No. 17/736,180, filed on May 4, 2022. ’587*Pat.*, Cover. The Office did not issue any rejections during prosecution. The Office mailed a Notice of Allowance on December 15, 2022. EX1004, 38. In a January 25, 2023 Amendment after Notice of Allowance, the applicant amended the preamble to claim 1 so that it no longer required an “An Always On Recording system.” *Id.*, 25. In the remarks accompanying the amendment, the applicant explained that the amendment was intended to reflect “the intended non restrictive nature of the preamble in addition to correction for antecedent issues” and “[n]o change in scope is intended.” *Id.*, 24. The Office entered the amendment without comment, and the ’587 patent issued on March 21, 2023. *Id.*, 1, 20.

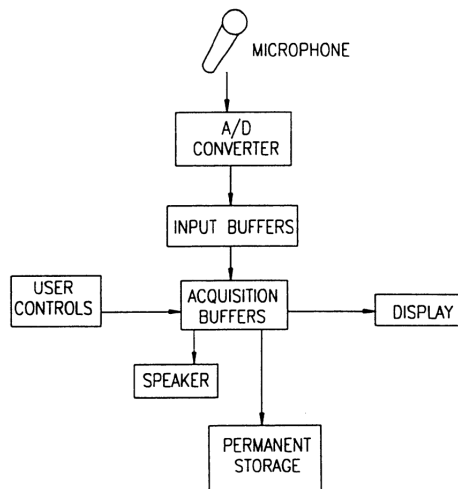
V. OVERVIEW OF THE PRIOR ART

The prior art references analyzed in the grounds below are analogous to the '587 patent because they are within the same field of endeavor of the '587 patent and reasonably pertinent to one or more problems addressed by the '587 patent. For example, *Fiedler*, *Broussard*, and the other secondary references all generally relate to methods of managing sound, such as recording sound and/or playing sound. Moreover, like the “Always-on Recording” application disclosed in the '587 patent, *Fiedler*, *Broussard*, *Couper*, and *Bulthuis* are similarly directed to audio recording devices. And like the earpiece for use with the various applications disclosed in the '587 patent, *Victorian* and *Andreasson* are directed to earpieces and related methods for communicating with portable devices. *Schmandt* ¶49.

A. *Fiedler*

Fiedler is titled “Device and Method for Selective Recall and Preservation of Events Prior to Decision to Record the Events.” *Fiedler*, Cover. According to *Fiedler*, a common drawback of known event-activated recording systems that implement, for example, “voice-activated recording of speech” or “sound activated recording of sound,” is that “they do not record the often-significant events leading up to the event that triggers the recording process.” *Id.*, 1:49-57. *Fiedler* aims to overcome that drawback by “providing an acquisition buffer (of a rewritable recording medium) in which current events are continuously recorded.” *Id.*, 1:63-65.

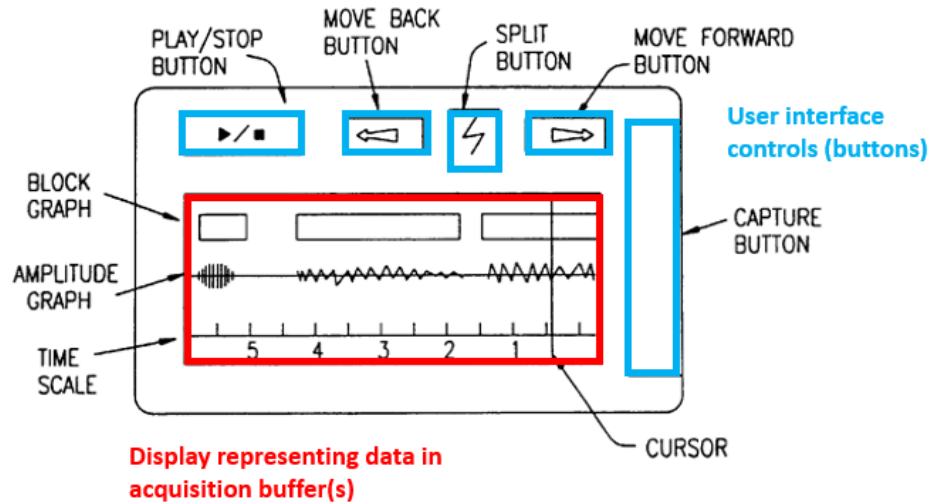
With reference to Figure 1, *Fiedler* discloses “a microphone feeding a continuous signal to an analog-to-digital converter, which in turn passes a train of digital sample values to a set of input buffers.” *Id.*, 3:66-4:3. From the input buffers, “the sample train is continuously supplied to a circular set of acquisition buffers.” *Id.*, 4:3-4.



Fiedler, FIG. 1

“The contents of the acquisition buffers are shown on a periodically updated display, and parts of the contents of the acquisition buffers may, by means of user controls, be played back through an output transducer such as a speaker or selected for preservation in permanent storage.” *Id.*, 4:4-9. More particularly, as shown in Figure 3, “[t]he user is provided with a display representing audio data currently in the acquisition buffers, as well as controls to allow the user to recall (play back) data and to mark data for capture or permanent storage.” *Id.*, 7:54-58. The display and

user controls “may be embodied in a hand-held device or in a computer program.”
Id., 3:49-51.



Fiedler, FIG. 3 (annotated)

With respect to “[e]vent-activated recording,” *Fiedler* discloses that “[o]n detection of a suitable triggering event, a predetermined portion of the current contents of the acquisition buffer (which may be the buffer’s entire contents, or may correspond to a time interval that a user may specify) is transferred to the (permanent) recording medium normally used for event-activated recording.” *Id.*, 6:33-41. This has the effect of not only capturing the triggering event, but also “permanently preserving the events leading up to the triggering event.” *Id.* “Alternatively, the portion of the acquisition buffer contents leading up to the triggering event may be transferred to a second acquisition buffer, which will be used in place of the original acquisition buffer for all purposes discussed below,”

including for “the presentation of data to the user for selection for recall and/or preservation.” *Id.*, 6:42-47.

B. Secondary References³

Fiedler discloses that its system is implemented using a “general-purpose computer,” a “personal computer,” an “interrupt-driven computer of known type,” or a “dedicated device other than a general-purpose computer.” *Fiedler*, 3:11-21; 9:54-58. *Broussard* discloses how to implement a computer in devices that record audio, such as *Fiedler*. For example, *Broussard* discloses “a memory assistance device 12” with “a microphone 14 for receiving audio input.” *Broussard*, ¶[0012]. *Broussard* discloses that its system is implemented with a “**processor 34**” coupled by a “**data bus 38**” to “**memory 40** for storing the operating system 42 extended audio segments 46 and segment names 44.” *Id.* ¶[0015].

³ As laid out below, Petitioners’ obviousness grounds do not involve the bodily incorporation of components from one reference into another, but instead are directed to the application of the teachings of one reference to another.

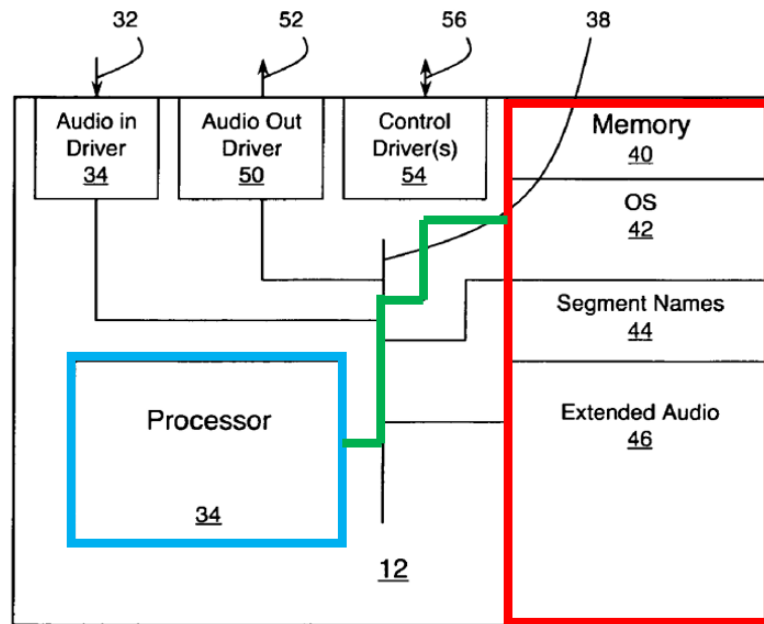


Fig. 2

Broussard, FIG. 2 (annotated)

Broussard further discloses in Figure 5 “flow for an audio trigger detection routine. First the digital audio signal from the audio buffer is retrieved 150. If at any time the user inputs a record command 146, a detection significance flag is set to high to trigger the main routines to begin recording.” *Id.*, ¶[0026].

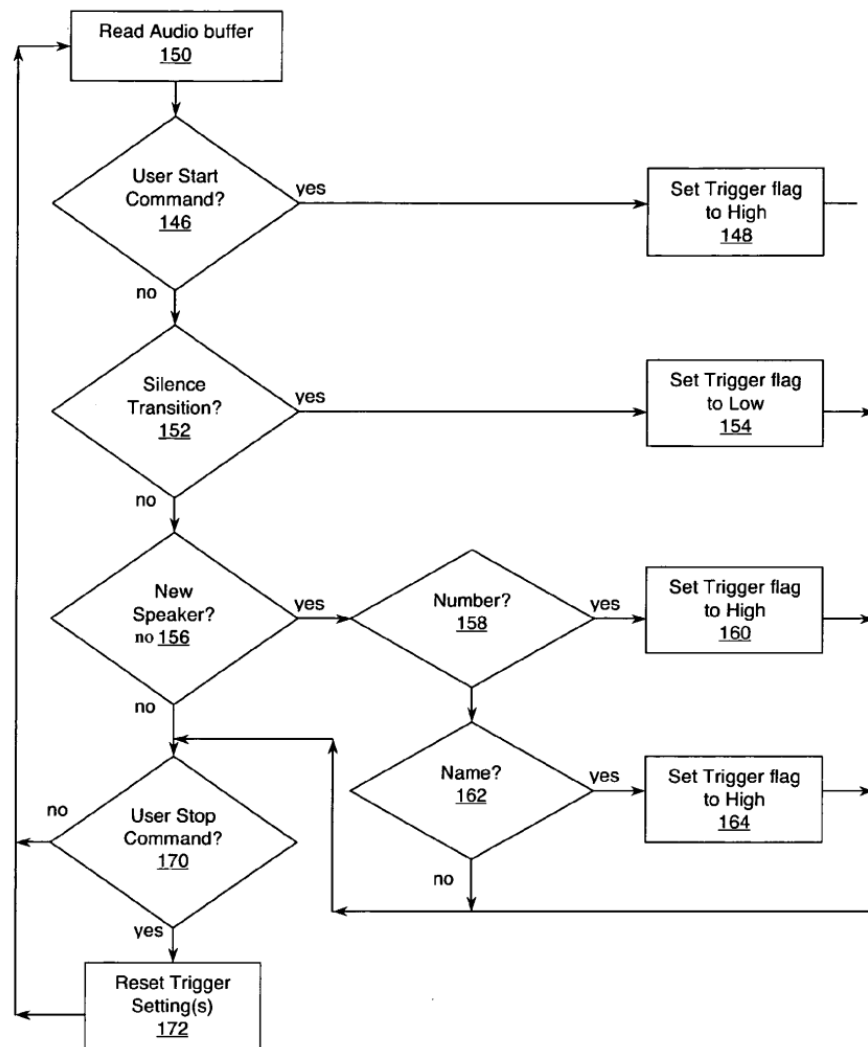


Fig. 5

Broussard, FIG. 5

“If triggers are detected, a signal 66 is sent to the user control interface 68 which provides feedback to the user though the control input/output 70 that the system recommends starting to record a new audio segment.” *Id.*, ¶[0019].

Victorian discloses a wireless “ear-level device” including an “external microphone” to pick up ambient sound, an “ear canal microphone” to detect sound

from the ear canal, and an “ear canal speaker” to transmit sound into the ear canal. *Victorian* ¶¶[0018], [0030]. *Andreasson* discloses a system and method for “selectively driving output units in phones or in accessories.” *Andreasson* ¶[0002].

Couper further discloses that “sound signatures 120 can specify audio profiles for sounds including, but not limited, to, gunshots, explosions, sirens, alarms, breaking glass, auto accidents, yelling or screaming, calls for help, etc.” *Couper*, ¶[0026].

Bulthuis discloses “a last-communication rewind mechanism for replay of at least a part, e.g., the last 5 minutes, of the communication recorded most recently.... As another example, the device is voice-controllable and the rewind mechanism is activated upon a specific voice command, in order to enable hands-free operation.” *Bulthuis*, ¶[0016].

VI. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art at the time of the alleged invention of the ’587 patent (“POSITA”), which for purposes of this proceeding is no earlier than September 22, 2008, would have had a Bachelor’s of Science degree (or equivalent) 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. *Schmandt*

¶17. A greater amount of education could compensate for fewer years of work experience, and vice versa. *Id.*

VII. CLAIM CONSTRUCTION

Petitioners are unaware of any “prior claim construction determination” related to the ’587 patent. *See* 37 C.F.R. § 42.100(b). Given the close correlation and substantial identity between the prior art references and the Challenged Claims, no express constructions of the claims are necessary. Thus, the claims should be given their plain and ordinary meaning.⁴ *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

VIII. DETAILED EXPLANATION OF GROUNDS

A. Ground 1A: *Fiedler* and *Broussard* Render Obvious Claims 1, 3, 4, and 12

1. Claim 1

a. “[1.pre] A system comprising:”

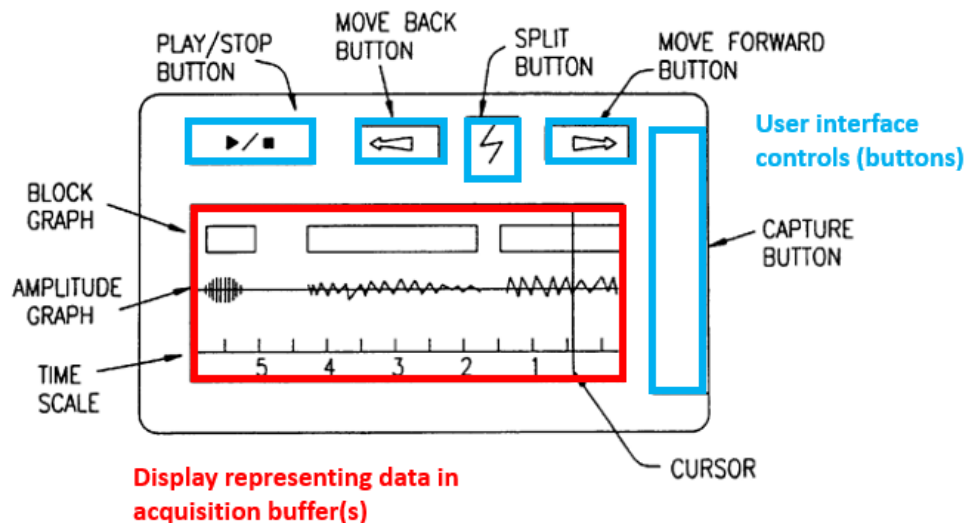
To the extent the preamble is limiting, *Fiedler* discloses or suggests this feature. *Schmandt* ¶¶95-99. For example, *Fiedler* discloses a multi-component

⁴ Petitioners reserve all rights to raise claim construction arguments and other arguments in any parallel or future litigation concerning the ’587 patent. For example, comparing the claims to the accused products in the litigation may raise controversies that require construction of certain claim terms.

system of hardware and software. *Fiedler*, 3:8-15, 3:66-4:9, 7:54-58, FIG. 1. This is consistent with how the '587 patent uses the term “system” to describe a collection of components. *See, e.g., '587Pat.*, 18:34-39. Accordingly, a POSITA would have understood *Fiedler* to disclose or suggest “a system.” *Schmandt* ¶¶99.

b. “[1.1] a user interface; and”

Fiedler discloses or suggests this feature. *Schmandt* ¶¶100-102. For example, *Fiedler* discloses a “user interface” having “controls to allow the user to recall (play back) data” including various buttons. *Fiedler*, 7:53-57, 8:45-47, FIG. 3. Accordingly, a POSITA would have understood *Fiedler* to disclose or suggest a user interface with a display and controls for, among other things, play back of media (“a user interface”). *Schmandt* ¶102.



Fiedler, FIG. 3 (annotated)

c. “[1.2] an audio device comprising:”

Fiedler discloses or suggests this feature. *Schmandt* ¶¶103-107. For example, *Fiedler* discloses a “program” running on a “general-purpose computer.” *Fiedler*, 3:11-19, 9:54-58. *Fiedler* also discloses using the device to capture and playback audio data. *Id.*, 3:11-19, 4:4-15. A POSITA would have understood an “audio device” to encompass a device with an audio-related function (for example, capturing, recording, or playing audio), such as *Fiedler*’s general purpose computer used to playback audio data. *Schmandt* ¶106. This is consistent with the audio devices described in the ’587 patent, such as a “PDA,” “computer,” or “smart phone.” ’587*Pat.*, 22:13-15, 22:45-46. Accordingly, a POSITA would have understood *Fiedler* to disclose or suggest a computer or other portable device that captures and plays back audio (“an audio device”). *Schmandt* ¶107.

d. “[1.3] a microphone configured to measure ambient sound and generate a microphone signal;”

Fiedler discloses or suggests this feature. *Schmandt* ¶¶108-113. For example, *Fiedler* discloses “a microphone feeding a continuous signal to an analog-digital converter which in turn passes a train of digital sample values to a set of input buffers.” *Fiedler*, 3:66-4:3. A POSITA would have understood that the “continuous signal” and the digital sample values are a “microphone signal” because they were generated from a microphone. *Schmandt* ¶109.

Fiedler discloses using the microphone to “pick up” and “record ambient

events.” *Id.*, 1:36-37, 13:23-27 (a microphone to “record ambient events surrounding a person”), 13:38-43 (disclosing wristwatch with “microphone or microphones, exposed to the outside environment so as to pick up ambient sounds.”); *see also id.*, 5:48-53, Claim 13, 17. This is consistent with how the ’587 patent describes an “Ambient Sound Microphone (ASM)” to “capture ambient sound.” ’587*Pat.*, 17:64-65; *see also id.*, 18:31-33 (“Ambient sound microphone 1120 receives ambient sound from the ambient environment around the user.”); 18:56-60.

To the extent PO argues that “measuring” ambient sound requires more than “capturing” ambient sound, *Fiedler* further discloses that the microphone signal is “measured against” an amplitude threshold. *Fiedler*, 5:54-6:10; *see also id.*, 5:42-53. Thus, *Fiedler*’s microphone provides another measure of the ambient sound and is further “configured to measure ambient sound.” *Schmandt* ¶112.

Accordingly, a POSITA would have understood *Fiedler* to disclose or suggest an audio device with microphone(s) to pick up ambient sounds (“a microphone configured to measure ambient sound”) and feed a continuous signal to an analog to digital converter (“and generate a microphone signal”). *Id.* ¶113.

e. “[1.4] a speaker configured to emit an audio signal;”

Fiedler discloses or suggests this feature. *Schmandt* ¶¶114-116. For example, *Fiedler* discloses “a speaker...for the purpose of playing back data in the acquisition buffers.” *Fiedler*, 8:21-23; *see also id.*, 4:4-9. *Fiedler* further discloses that the data

in the acquisition buffer is audio data to be played back. *Id.*, 7:54-57 (“The user is provided with a display representing audio data currently in the acquisition buffers, as well as controls to allow the user to recall (play back) data...”). *Fiedler* discloses that “[p]layback is achieved” by sending “audio data” to “the audio output.” *Id.*, 11:33-46. *Fiedler*’s disclosure of the “audio output” refers to the speaker. *Schmandt* ¶115.

Accordingly, a POSITA would have understood *Fiedler* to disclose an audio device with a speaker for audio playback (“a speaker configured to emit an audio signal”). *Id.* ¶116.

f. [1.5] through [1.8]

(i) [1.6] and [1.7]

Fiedler discloses multiple buffers and buffer arrangements for selective recall and preservation of audio data. *Fiedler*, 3:66-6:67. In a first arrangement, audio data flows from a set of “input buffers” to a circular set of “acquisition buffers.” *Id.*, 3:66-4:4. If the user desires to playback audio data in the acquisition buffers, the data flows from the acquisition buffers to “output buffers” and to the speaker. *Id.*, 11:33-47. If the user desires to permanently preserve the audio data in the acquisition buffers, the data is transferred to a “permanent” recording medium such as a non-volatile solid-state memory. *Id.*, 7:23-30; *Schmandt* ¶¶117-118.

In a second, alternative arrangement, audio data flows from a set of input

buffers to a set of acquisition buffers, just as in the first arrangement. But, *Fiedler* explains, upon detection of a triggering event, audio data is transferred from the “acquisition buffer” (or “original acquisition buffer”) to a “second acquisition buffer.” *Id.*, 6:42-47. *Fiedler* explains that the “second acquisition buffer ... will be used in place of the original acquisition buffer for all purposes described below, including ... for selection for recall and/or preservation.” *Id.* In this second arrangement, audio data is still recorded directly to the “original acquisition buffer” while the audio data leading up to the trigger event is copied from the “original acquisition buffer” to the second acquisition buffer. *Id.*, 6:54-63. Once the copying process has caught up with the direct recording process, then audio data flows from the input buffers directly to the “second acquisition buffer.” *Id.*, 6:64-67; *Schmandt* ¶¶119-121.

To note, *Fiedler*’s description up to column 6, line 32, and in particular its section on “Acquisition and Storage of Audio Data” (starting at column 4, line 10) refers generically to “acquisition buffers.” A POSITA would have understood that, in the second, alternative arrangement, this generic description applies to the “original acquisition buffer” before a trigger event is detected and **through completion of** the process of copying to the “second acquisition buffer.” *See Fiedler*, 6:55-67; *Schmandt* ¶122. A POSITA would have also understood that after completion of copying to the “second acquisition buffer,” and when audio data is

recorded directly to the second acquisition buffer, *Fiedler*'s generic descriptions of "acquisition buffer(s)" apply to the "second acquisition buffer." *Id.* ¶122.

This Petition focuses on the second, alternative arrangement—*Fiedler*'s disclosure involving an "original acquisition buffer" and a "second acquisition buffer." A POSITA would have understood that in the second arrangement, rather than transferring audio data directly from the "acquisition buffer" (or "original acquisition buffer") to permanent storage, the audio data is, upon detection of a trigger event, first transferred to a "second acquisition buffer." *Schmandt* ¶123. From the "second acquisition buffer," audio data may be played back (via the output buffers) or transferred to permanent storage. *Fiedler*, 6:42-47 (explaining that the second acquisition buffer is used in place of the original acquisition buffer for selection for recall or preservation); *Schmandt* ¶124. As explained below, this Petition maps *Fiedler*'s "original acquisition buffer" to the claimed "audio buffer" and *Fiedler*'s "second acquisition buffer" to the claimed "data buffer." *Schmandt* ¶125.

(a) "[1.6] an audio buffer configured to store at least a portion of the microphone signal"

Fiedler discloses or suggests this feature. *Schmandt* ¶¶126-130. *Fiedler* discloses that, from the input buffers, a train of digital audio samples "is continuously supplied to a circular set of acquisition buffers." *Fiedler*, 4:2-4; *see*

also id., 4:11-48. As noted above, a POSITA would have understood that, in *Fiedler*'s second arrangement, this description applies to the "original acquisition buffer." *Schmandt* ¶127. A POSITA would have understood that the "digital audio samples" that are written to the acquisition buffer(s) correspond to "at least a portion of the microphone signal" because the digital audio samples were derived from the microphone signal. *Id.*

This is consistent with the '587 patent, as the "buffers" disclosed in the '587 patent store at least audio data. *See, e.g.*, '587*Pat.*, 7:19-39 (describing an audio recording stored in a "buffer"), 8:58-9:10 (describing a recorded conversation stored in a "buffer"), 20:66-21:9, 23:36-38. Thus, a POSITA would have understood *Fiedler*'s original acquisition buffer to be an "audio buffer." *Schmandt* ¶¶128-129.

Accordingly, a POSITA would have understood *Fiedler* to disclose or suggest an original acquisition buffer ("an audio buffer") for storing digitized samples of a microphone signal ("configured to store at least a portion of the microphone signal"). *Schmandt* ¶130.

(b) "[1.7] a data buffer"

Fiedler discloses or suggests this feature. *Schmandt* ¶¶131-134. As discussed in §VIII.A.1.f(i), *Fiedler* discloses a "second acquisition buffer" and that "[o]n detection of a suitable triggering event ... the portion of the [original] acquisition buffer contents leading up to the triggering event may be transferred to a second

acquisition buffer.” *Id.*, 6:33-47. As also explained in §VIII.A.1.f(i)(a), the content of the acquisition buffers is audio data and the buffers disclosed in the ’587 patent, including a “data buffer,” store audio data. Thus, a POSITA would have understood *Fiedler*’s “second acquisition buffer” to be “a data buffer.” *Schmandt* ¶133.

Accordingly, a POSITA would have understood *Fiedler* to disclose or suggest a second acquisition buffer (“a data buffer”). *Schmandt* ¶134.

- (ii) **“[1.5] a memory configured to store instructions ... [1.8] a processor operatively coupled to the memory, the processor operatively coupled to the audio buffer, the processor operatively coupled to the data buffer, wherein the processor is configured to execute the instructions to perform operations comprising”**

Fiedler in combination with *Broussard* discloses or suggests these features of limitations [1.5] and [1.8]. *Schmandt* ¶¶135-155.

For example, *Fiedler* discloses “algorithms, which may be implemented as either hardware or software or both” and as a “program on a general-purpose computer.” *Fiedler*, 3:8-19; *see also id.*, 3:19-26; 9:54-61. A POSITA would have understood that programs and software are implemented with computer instructions

stored in a memory. *Schmandt* ¶136 (discussing *Computer Dictionary*).⁵ A POSITA would have also understood that a program running on a “general purpose computer” suggests a processor, coupled to the memory, that executes the instructions representing the program. *Schmandt* ¶137 (discussing *Tanenbaum* at 18, 21). A POSITA would have considered *Fiedler*’s disclosure to amount to an express suggestion to use a processor coupled to a memory executing program instructions stored in the memory to perform the functions of *Fiedler*’s program. *Id.* ¶138.

Fiedler also suggests that a processor transfers data from the input buffers to the original acquisition buffer, and from the second acquisition buffer to the output buffers. *Id.* ¶139. For example, *Fiedler* explains that as the input buffers become full, “an interrupt signal” is generated, and that “[w]hen the application program receives this signal, the sound data are transferred from that input buffer to the acquisition buffers.” *Fiedler*, 4:24-30. An “interrupt signal” is a signal sent to and received by a processor that triggers the processor to perform an operation.

⁵ To the extent that EX1013 to EX1026 are cited in this Petition, it is merely to demonstrate a POSITA’s knowledge and/or as evidence that a POSITA would have been motivated to make the combinations in the manner discussed in this Petition. These exhibits are not part of the unpatentability grounds.

Schmandt ¶140 (discussing *Tanenbaum* at 18-19). And here, a POSITA would have understood *Fiedler* to suggest that a processor receives the interrupt signal and then reads the audio data from the input buffers and writes it to the original acquisition buffer. *Id.*

Fiedler also explains that “[p]layback is achieved by means of a scheme analogous (in reverse) to the recording scheme,” with audio data read from the acquisition buffer and transcribed to output buffers. *Fiedler*, 11:33-47. And because the “second acquisition buffer” is used for playback, *Fiedler* suggests that, during playback, a processor reads audio data from the second acquisition buffer and writes it to the output buffers. *Schmandt* ¶141. To read and write data to/from the original acquisition buffer and the second acquisition buffer, the processor must be in data communication with the buffers. *Id.* This is consistent with how the ’587 patent describes being “operably coupled.” ’587*Pat.*, 18:34-45 (describing an earpiece with a microprocessor “operatively coupled” to other components with reference to Figure 11); *see also id.*, 8:52-54, 23:4-15, FIG. 13; *Schmandt* ¶141.

Furthermore, *Fiedler* discloses using “interchangeable memory module” such as “flash memory” as a recording medium for the acquisition buffers. *Id.*, 12:64-13:8. A POSITA would have understood interchangeable flash memory to be a memory device separate from the processor because it can be removed from the device. *Id.*, 13:1-7; *Schmandt* ¶142. Thus, because *Fiedler* suggests a processor

reading and writing data to/from the original acquisition buffer and the second acquisition buffer and discloses that the buffers are implemented in a memory separate from the processor, a POSITA would have considered *Fiedler*'s disclosure to amount to an express suggestion to use a processor that is operatively coupled to the original acquisition buffer and second acquisition buffer. *Schmandt* ¶143.

To the extent that *Fiedler* does not expressly disclose the claimed processor that is coupled to a memory and the acquisition buffers, a POSITA would have readily identified *Broussard*, which provides details of how to implement a recording device similar to *Fiedler*'s with a general purpose computer. *Schmandt* ¶144. *Broussard* discloses a “memory assistance device” such as a cell phone or PDA, that makes an audio recording. *Broussard* ¶¶[0002], [0012]; *Schmandt* ¶144. More particularly, *Broussard* discloses that “[t]he audio buffer 62 is read 92 and processed 94 by the digital audio trigger detection routine(s)” and “[i]f a trigger has been identified 96” the audio data begins to be recorded into “temporary memory 80” (also called a “temporary buffer”). *Broussard* ¶¶[0021], [0024]. When finished recording, “the user is prompted to record a segment name 126 and the user name is recorded and stored 128 linked/mapped to the extended audio segment in the system memory.” *Id.* ¶[0024]; *see also id.* ¶[0020]; *Schmandt* ¶¶145-146.

Broussard discloses software “stored in a memory and executed by a suitable instruction execution system such as a microprocessor, personal computer (PC) or

mainframe,” or “**data processor 34.**” *Broussard* ¶¶[0010], [0015]. The **data processor 34** is coupled to “**memory 40**” through a “**data bus 38.**” *Id.* ¶[0015]; *see also id.* ¶[0011] (disclosing memory to store programs and “for use by ... instruction execution system”), ¶[0002] (“memory devices” include “cellphones, PDAs”); FIG. 2; *Schmandt* ¶147.

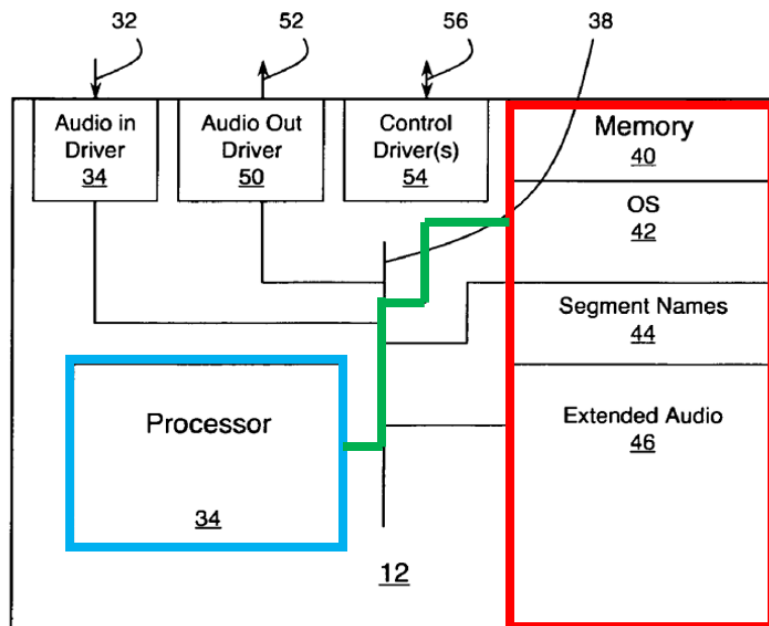


Fig. 2

Broussard, FIG. 2 (annotated)

Broussard’s Figure 2 schematically illustrates the processor coupled to the memory, which is further confirmed by its disclosure that the processor executes the instructions stored in memory. *Schmandt* ¶148; *see also Broussard* ¶¶[0010]-[0011] (disclosing memory that may “communicate[] ... in conjunction with an instruction execution system”). This is consistent with how the ’587 patent describes being

“operably coupled,” as noted above. *Schmandt* ¶148.

Moreover, a buffer is a form of storage/memory. *Schmandt* ¶149; *see also Fiedler*, 3:4-7, 3:16-23, 4:26-30. Therefore, a POSITA would have understood *Broussard* to disclose or suggest that the “audio buffer” and “temporary buffer” are part of the memory to which the processor is coupled. *Schmandt* ¶149. *Broussard* also explains that the audio buffer is “read” and “processed” and that “[i]f a trigger has been identified 96 ... then the temporary memory 80 begins to record 100 data in and coming through the buffer 62.” *Broussard* ¶[0021]. Thus, *Broussard* discloses a processor in communication with the buffers for reading data from them and writing data into them. *Schmandt* ¶149.

A POSITA would have appreciated that *Fiedler* and *Broussard* disclose devices with similar functionality. *Schmandt* ¶150. For example, as explained, both devices disclose storing audio data from a microphone in a buffer, detecting a trigger event in the audio data, and saving the recorded audio. Both references also disclose a device with a speaker and a display for providing information to the user. *Id.*

Thus, to the extent that *Fiedler* does not expressly disclose the claimed processor that is coupled to the memory and the buffers, a POSITA looking for additional implementation details for *Fiedler*’s recording device would have readily identified *Broussard* and would have understood the applicability of *Broussard*’s teaching of a processor to *Fiedler*’s recording device. *Id.* ¶151. That *Fiedler* and

Broussard disclose similar devices with similar functions confirms that a POSITA would have understood how to predictably apply *Broussard*'s teaching of a processor to *Fiedler*'s disclosed algorithms and functions. *Id.*

Thus, a POSITA would have considered the combination to amount to the use of a known technique (*Broussard*'s teachings of a recording device with a processor that executes software instructions stored in memory and is in communication with the buffers for reading data from them and writing data into them) to improve similar devices (*Fiedler*'s recording device) in the same way (to implement a processor to execute the program instructions stored in memory and to read and write audio data from and to the buffers of a trigger event activated recording device). *Id.* ¶152. A POSITA also would have considered the combination to amount to following *Fiedler*'s express suggestion to use a processor coupled to a memory executing program instructions stored in the memory and that is operatively coupled to the original acquisition buffer and second acquisition buffer. *Id.*

Accordingly, a POSITA would have understood the *Fiedler-Broussard* combination to disclose or suggest an audio device with software stored in memory ("a memory configured to store instructions") and a processor coupled to the memory to perform the functions of the software ("a processor operatively coupled to the memory...wherein the processor is configured to execute the instructions to perform operations") and the processor coupled to the original acquisition buffer and

second acquisition buffer in an interchangeable flash memory to read and write data into and out of them (“the processor operatively coupled to the audio buffer, the processor operatively coupled to the data buffer”). *Id.* ¶153.

Moreover, because *Fiedler* discloses that its system may be implemented in software as a program on a general-purpose computer (*Fiedler*, 3:8-15), the *Fiedler-Broussard* combination discloses or suggests the processor executing instructions to perform the functions of the combination. *Id.* ¶¶154-155. Thus, the *Fiedler-Broussard* combination discloses or suggests a processor executing instructions to perform the operations that meet claim elements 1.9-1.14 and the dependent claims discussed below.

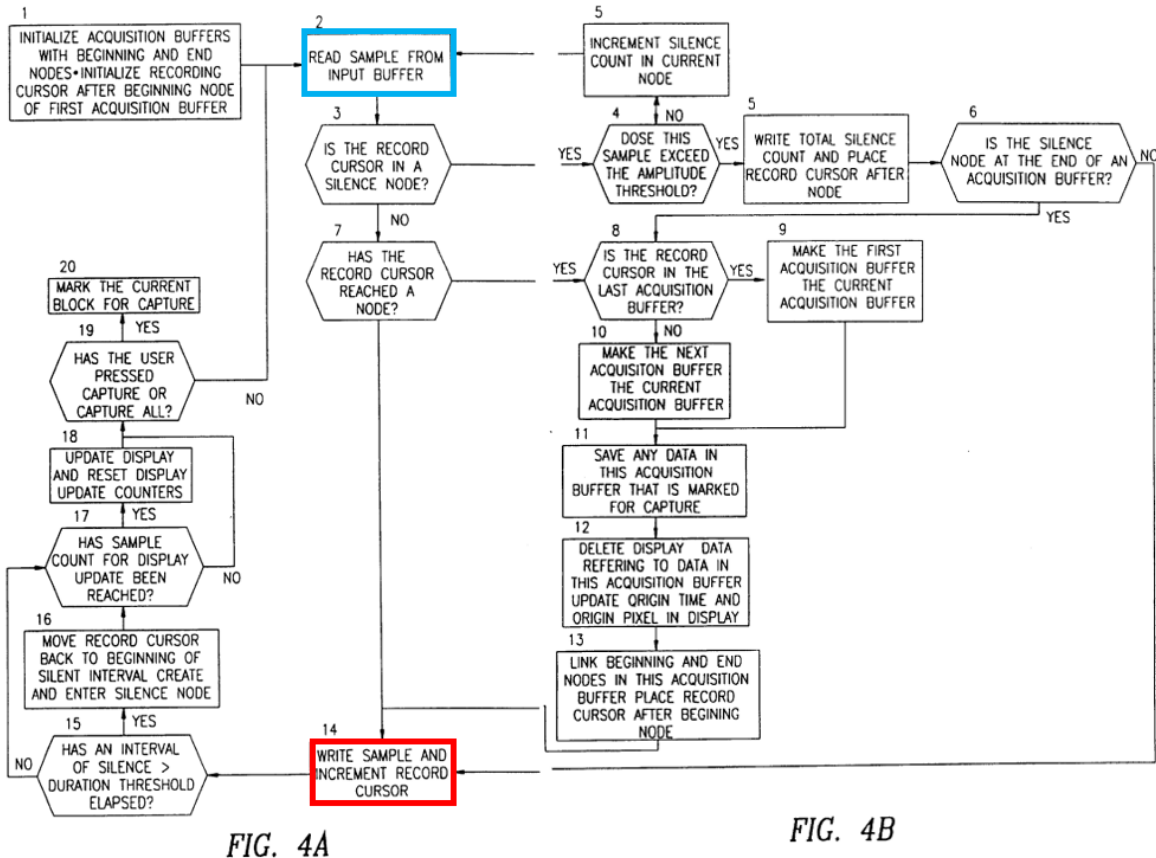
g. “[1.9] receiving the microphone signal;” “[1.10] sending a portion of the microphone signal to the audio buffer;”

Fiedler in combination with *Broussard* discloses or suggests these features. *Schmandt* ¶¶156-161.

Fiedler discloses that digital audio samples are transferred from input buffers to the original acquisition buffer. *Fiedler*, 3:66-4:4, 4:10-30. As explained in §VIII.A.1.f(i), the original acquisition buffer is the “audio buffer.” As explained in §VIII.A.1.d, the digital sample values are “the microphone signal” because they were generated from the microphone. *Schmandt* ¶¶157-158.

The transfer process—implemented by the processor in the *Fiedler-Broussard*

combination (see § VIII.A.1.f(ii))—is illustrated in *Fiedler*’s Figures 4A and 4B, and includes a step to “**read sample from input buffer**” and “**write sample**” to the acquisition buffer (blocks 2 and 14). *Fiedler*, FIGs. 4A-B; *Schmandt* ¶159.



Fiedler, FIGs. 4A, 4B (annotated)

A processor “reading” the digitized audio samples from the input buffer constitutes “receiving” the digitized audio samples, and the processor transferring (i.e., writing) the digitized audio samples to the acquisition buffer constitutes “sending” the digitized audio samples to the acquisition buffer. *Schmandt* ¶160. Each “sample” is a “portion” of the microphone signal. *Fiedler*, FIGs. 4A-4B;

Schmandt ¶160.

Accordingly, a POSITA would have understood the *Fiedler-Broussard* combination to disclose or suggest the processor executing instructions to read the digitized audio samples out of the input buffers (“receiving the microphone signal”) and transfer the samples into the original acquisition buffer (“sending a portion of the microphone signal to the audio buffer”). *Schmandt* ¶161.

h. “[1.11] analyzing the audio buffer for detecting a sonic signature;”

Fiedler in combination with *Broussard* discloses or suggests this feature. *Schmandt* ¶¶162-177.

Fiedler describes “event-activated recording” using a “triggering event” to determine, for example, when to begin transfer from an acquisition buffer to a second acquisition buffer. *See Fiedler*, 6:33-47. *Fiedler* further discloses the triggering event can be “auditory.” *Id.*, 14:22-23. But *Fiedler* does not describe the algorithm used to detect the triggering event in detail and leaves its implementation to a POSITA. *Schmandt* ¶163.

A POSITA would have been motivated to look for more information about how to implement *Fiedler*’s event-activated recording system and would have readily identified *Broussard*. *Id.* ¶164. *Broussard* discloses a two-buffer recording scheme similar to *Fiedler*. *Id.* *Broussard* discloses an “audio buffer 62” and a

“temporary buffer” (also called “temporary memory 80”). *Broussard* ¶¶[0021], [0024], FIG. 3. After detection of a trigger in the “audio buffer,” audio data “in and flowing through the buffer memory 62” is recorded into the temporary buffer 80. *Id.* ¶[0019]. *Broussard* describes a “signal processing component” named “trigger detection subsystems 64” that “uses the data in the buffer 62 to look for triggers in the data that indicate that the incoming signal contains information which should be recorded.” *Broussard* ¶[0019]; *see also id.* ¶[0020] (“the trigger detection system 64 continues to assess the information coming into the buffer 62”), ¶¶[0021], [0023]. A POSITA would have understood “look[ing] for triggers in the data” to disclose or suggest the processor “analyzing” the audio buffer for a trigger. *Schmandt* ¶¶164-167.

Broussard discloses various examples of audio triggers, including “record command,” “user start command,” “a proper name,” “numbers spoken,” and/or “key words.” *Id.* ¶¶[0026]-[0031], FIG. 5; *Schmandt* ¶168. *Broussard*’s user “record command” or “user start command” is a voice command to start recording because they are detected in the context of its audio trigger detection routine. *Schmandt* ¶169.

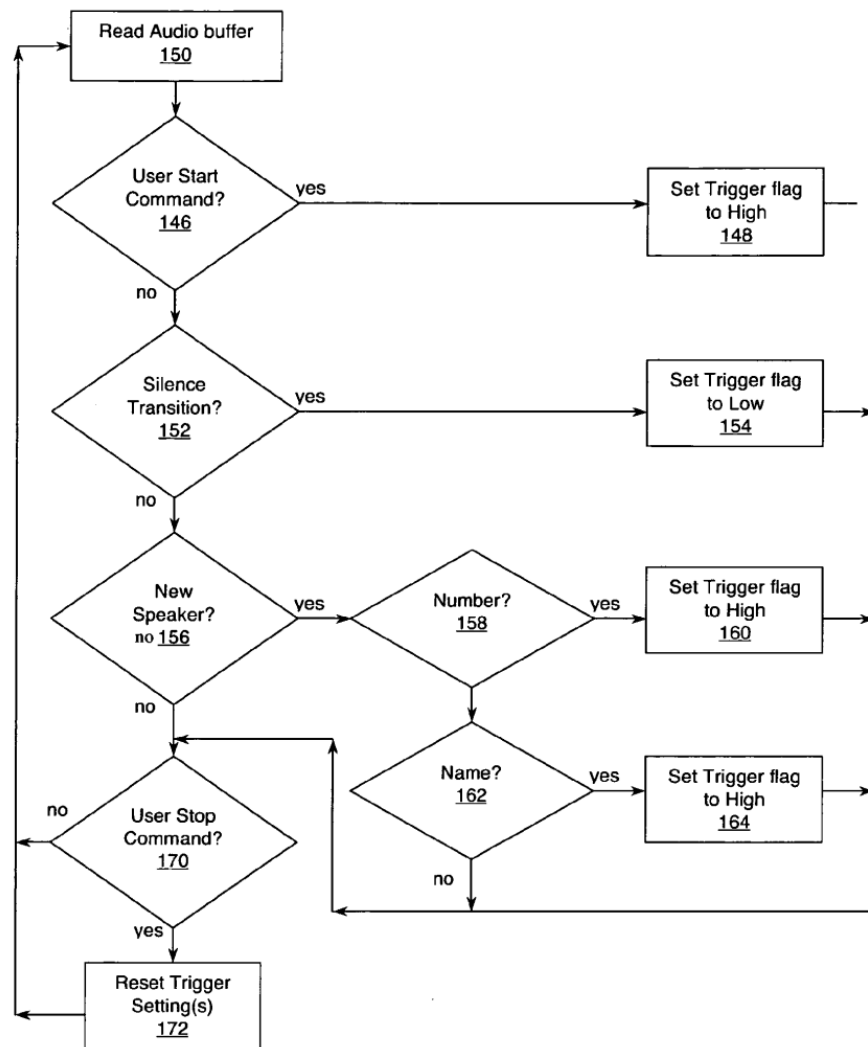


Fig. 5

Broussard, FIG. 5

Moreover, analyzing the original acquisition buffer for a trigger, such as a keyword, is consistent with how the '587 patent describes analyzing the audio buffer for a “sonic signature.” *See* '587*Pat.*, 4:66-67 (“The concept of recognizing sounds is described as Sonic Signature Detection.”), 7:51-52 (“In this example, a sonic signature is acoustic information related to the sounds of a person snoring.”), 9:14-

19 (“A user of Hear & Tell™ 232 can record the sound or provide a sound, called herein as a sonic signature”), 22:42-53, 27:38-39; *Schmandt* ¶170.

A POSITA would have been motivated to implement *Broussard*’s audio buffer analysis technique in *Fiedler* for implementing *Fiedler*’s event-activated recording and would have had a reasonable expectation of success in doing so. *Schmandt* ¶171. More particularly, *Fiedler* and *Broussard* describe similar trigger-event activated recording devices. *Id.* *Broussard* says more about what trigger events may initiate recording and how they are detected—by having a processor analyze the buffered audio data for particular sounds such as keywords. *Id.*

A POSITA looking to implement *Fiedler*’s event-activated recording would have readily understood that *Broussard*’s technique of analyzing the audio in a buffer would have been a suitable option for implementing its “event-activated recording” triggering means. *Id.* ¶¶172-173. *Fiedler* already describes recording audio data in the acquisition buffer(s) and processing the audio data to, for example, compare it against amplitude and duration thresholds. *Fiedler*, 7:34-51. A POSITA would have considered it obvious to implement *Broussard*’s audio buffer analysis technique by analyzing *Fiedler*’s original acquisition buffer for audio triggers. *Schmandt* ¶174. Because signal processing techniques for detecting audio triggers in buffered audio data were well-known (as shown at least by *Broussard*), this

modification would have been within the skill of a POSITA to implement. *Id.* ¶¶174-175.

Thus, a POSITA would have considered the combination to amount to use of a known technique (analyzing an audio buffer for a trigger, such as a keyword, to identify portions of audio for potential longer-term storage) to improve similar devices (*Fiedler*'s event-activated audio recording device having an acquisition buffer) in the same way (to implement event-activated recording using audio data saved in a buffer). *Schmandt* ¶176.

Accordingly, a POSITA would have understood the *Fiedler-Broussard* combination to disclose or suggest the processor executing instructions to analyze the original acquisition buffer to detect a trigger such as a keyword (“analyzing the audio buffer for detecting a sonic signature”). *Schmandt* ¶177.

i. “[1.12] notifying a user when the sonic signature is detected;”

Fiedler in combination with *Broussard* discloses or suggests this feature. *Schmandt* ¶¶178-187.

Broussard discloses that “[i]f triggers are detected,” “feedback” is provided “to the user though the control input/output 70 that the system recommends starting to record,” and “[i]f the user assents,” then the “data in and flowing through the buffer memory 62” is “recorded into a temporary memory section 80.” *Broussard*

¶[0019]; *see also id.* ¶[0021] (“a signal is generated to alert the user”), Claim 1 (“notifying user of potentially recordable event”). *Schmandt* ¶¶179-180. Moreover, a POSITA would have understood where *Broussard* discloses processing trigger detection routine(s) and alerting the user, that these actions are performed by the processor. *Broussard* ¶[0021], FIGs. 4-5; *Schmandt* ¶181.

A POSITA would have been motivated to further incorporate *Broussard*’s teaching of providing an alert, notification, and user feedback into the *Fiedler-Broussard* combination and would have had a reasonable expectation of success in doing so. *Schmandt* ¶¶182-183. A POSITA would have understood that it would have been helpful to do so because audio trigger detection systems may be prone to detection errors, such as false recognitions. *Id.* (discussing *Cohrs*, 1:58-2:15, 2:16-56). *Broussard*’s user-feedback technique would alleviate that problem by asking the user to confirm the decision to perform an operation such as make a recording. *Id.* ¶184. A POSITA would have further understood that *Broussard*’s technique would be helpful because *Fiedler* teaches the preservation of “events selected by [the] user,” (*Fiedler*, Claim 1), and a POSITA would have understood *Broussard*’s technique to enable the user to timely select recordings that included detected triggers for recall or preservation. *Schmandt* ¶185.

A POSITA would have considered the combination to amount to the use of a known technique (*Broussard*’s user-feedback technique, notification, and alerting)

to improve similar devices (*Fiedler*'s event-activated recording system) in the same way (to reduce the risk of false detections and recordings and allow timely preservation or recall of events). *Schmandt* ¶186.

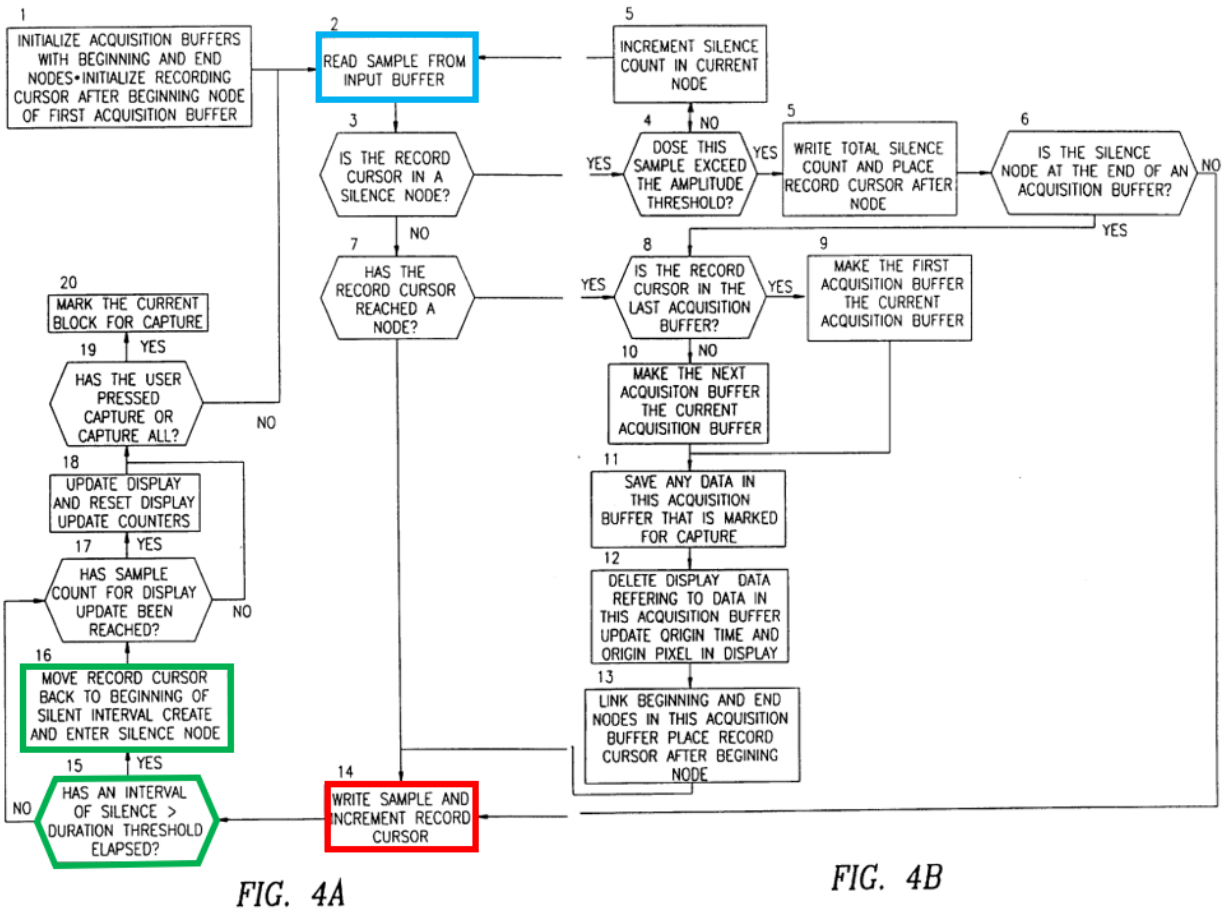
Accordingly, a POSITA would have understood the *Fiedler-Broussard* combination to disclose or suggest the processor executing instructions to alert or prompt the user (e.g., by cueing the user) when a trigger event was detected (“notifying a user when the sonic signature is detected.”). *Schmandt* ¶187.

j. “[1.13] sending a modified microphone signal to the data buffer replacing or adding to previous data stored in the data buffer; and”

Fiedler in combination with *Broussard* discloses or suggests this feature. *Schmandt* ¶¶188-197.

Fiedler discloses transferring data from an acquisition buffer to a second acquisition buffer. *Fiedler*, 6:42-44 (“[T]he portion of the acquisition buffer contents leading up to the triggering event may be transferred to a second acquisition buffer ...”). *Fiedler* further explains that the device will “continu[e] to record in the [original] acquisition buffer the triggering event and the events following the triggering event,” and, “[c]oncurrently with this continuous recording, copying the appropriate portions of the [original] acquisition buffer contents to the ... second acquisition buffer.” *Fiedler*, 6:55-63.

As explained in §§VIII.A.1.f(i)(a) and VIII.A.1.g, the audio data initially written to the original acquisition buffer corresponds to at least a portion of the microphone signal. *Fiedler* also discloses modifying the audio data after writing it to the acquisition buffer but before sending it to the second acquisition buffer. *Schmandt* ¶191. For example, as illustrated in Figure 4, after each sample of audio data is initially written to the acquisition buffer, the amplitude and duration thresholds are checked, and “[w]hen a sufficient interval of silence has been detected, the recording cursor goes back to the beginning of the sequence of amplitude values in the acquisition buffers corresponding to this interval and writes a silence node there (**blocks 15-16**).” *Id.*, 6:1-10.



Fiedler, FIGs. 4A, B (annotated)

Fiedler’s silence node scheme “modifies” the captured data (i.e., the microphone signal) because it replaces parts of the captured data with a silence node. *Schmandt* ¶192.

Fiedler discloses or suggests that when the modified audio data in the original acquisition buffer is transferred to the second acquisition buffer (“data buffer”), the transferred data is replacing or adding to previous data stored in the second acquisition buffer. *Schmandt* ¶193. For example, *Fiedler* explains that the acquisition buffers are overwritable and designed to permit recording in a

“continuous logical loop.” *Fiedler*, 1:36-40; 1:63-2:1 (“When the recording process fills the acquisition buffer, it overwrites the record of the earliest events recorded in the buffer with current events.”); *see also id.*, 2:38-44, 6:19-31. This is consistent with how the ’587 patent describes this feature, insofar as the ’587 patent describes the “data buffer” as a “circular buffer.” ’587*Pat.*, 21:5-10; *Schmandt* ¶¶193-194. More particularly, a POSITA would have understood a circular buffer to be a buffer that forms a logical loop, like *Fiedler*’s acquisition buffers, and in which old data is overwritten after the buffer is filled. *Schmandt* ¶194 (discussing *Comerford* ¶[0030]). Thus, *Fiedler* discloses that the modified microphone signal transferred from the original acquisition buffer to the second acquisition buffer will be “replacing or adding to previous data stored” in the second acquisition buffer. *Schmandt* ¶194.

As a separate and independent example, a POSITA would have understood that the transfer of audio data from the original acquisition buffer to the second acquisition buffer would not occur instantaneously and audio data is transferred from the original buffer to the second buffer in sequence. *Id.* ¶195. For example, *Fiedler* discloses that it continues to concurrently record to an acquisition buffer and copy from the acquisition buffer to the second acquisition buffer until “the copying process has caught up with the direct record process by reaching the present moment.” *Fiedler*, 6:64-67. Thus, the process of transferring audio data from the

original acquisition buffer to the second acquisition buffer involves sending audio data to the second acquisition buffer in sequence, each portion adding to audio data that was previously stored in the second acquisition buffer as part of the transfer process. *Id.* ¶195.

A POSITA would have understood that transferring audio data from the original acquisition buffer to the second acquisition buffer requires the processor to retrieve the modified audio data (“a modified microphone signal”) from the initial acquisition buffer and send it to the second acquisition buffer (“data buffer”). *Schmandt* ¶196. Moreover, a POSITA would have understood *Fiedler-Broussard* to disclose or suggest the processor executing program instructions to transfer the data from the original acquisition buffer to the second acquisition buffer because *Fiedler* at least suggests it is a processor that writes data into the acquisition buffers (*see* §VIII.A.1.f(ii)) and does not state that it is done by a non-processor means, such as direct memory access. *Id.*

Accordingly, a POSITA would have understood the *Fiedler-Broussard* combination to disclose or suggest the processor executing instructions to transfer (“sending”) audio data that has been interspersed with silence nodes (“a modified microphone signal”) in sequence from the original acquisition buffer to a second acquisition buffer that is overwritable (“to the data buffer replacing or adding to previous data stored in the data buffer”). *Schmandt* ¶197.

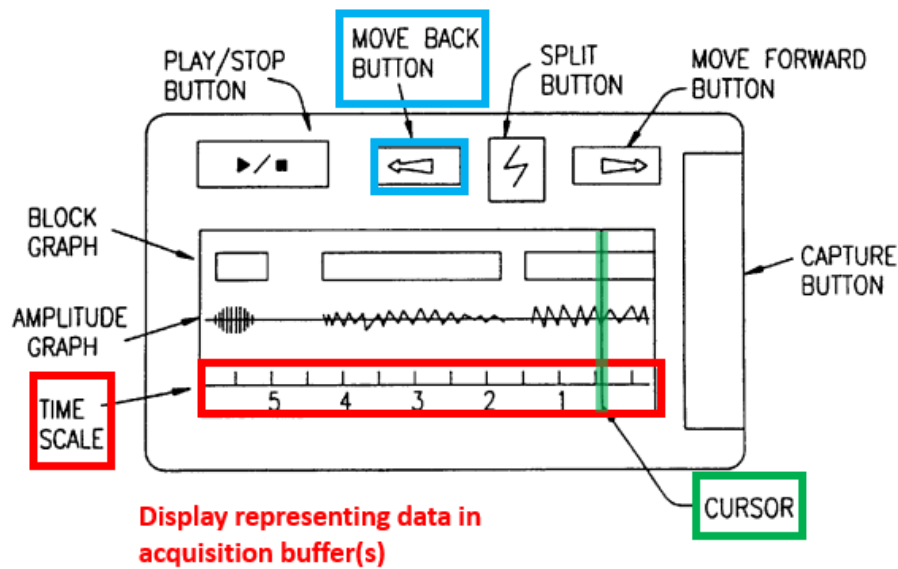
- k. “[1.14] sending a portion of the data stored in the data buffer, spanning a time period, to the speaker in response to a user request, wherein the user request is one of the sonic signature that is a voice command or a manual input from the user interface.”

Fiedler in combination with *Broussard* discloses or suggests this feature.

Schmandt ¶¶198-207.

Fiedler discloses that the second acquisition buffer “will be used in place of the original acquisition buffer for all purposes described below,” including “for recall,” i.e., playback. *Fiedler*, 6:42-47; *see also id.*, 7:56 (equating “recall” with “play back”). Thus, a POSITA would have understood *Fiedler*’s disclosure relating to playback of audio data stored in an acquisition buffer to be applicable to the “second acquisition buffer” after detection of a triggering event. *Schmandt* ¶199.

Fiedler illustrates in Figure 3 a “time scale,” which goes up to 5. *Fiedler* further discloses that the time scale is in units of “minutes and/or seconds” of audio data, and illustrates “positions in time relative to the current time of data in the acquisition buffers” (and thus, in the second acquisition buffer). *Fiedler*, 7:60-64; *Schmandt* ¶200.



Fiedler, FIG. 3 (annotated)

Fiedler discloses that the user triggers playback by pressing the “Move Back” button to move a cursor backward through the recorded audio in the acquisition buffer to the point where the user wants playback to commence. *Fiedler*, 8:46-59. Thus, *Fiedler* discloses or suggests that the user causes playback of anywhere from 0-5 “minutes and/or seconds” of audio stored in the second acquisition buffer. *Fiedler*, 7:60-64; *Schmandt* ¶201. A “user request” encompasses a user pressing the “Move Back” button because the user’s press of the button is a request from the user to playback the data. *Schmandt* ¶202.

Fiedler discloses that, during playback, in a scheme analogous and in reverse to the recording scheme, the audio data in the second acquisition buffer is transcribed to a queue of output buffers. *Fiedler*, 11:33-38. And, in turn, the output buffers “are

sent, in the order transcribed, to a waveform output device, which in turn routes their contents (via direct memory access (DMA)) through a digital-analog converter to the audio output.” *Fiedler*, 11:44-47. A POSITA would have understood the transfer from the second acquisition buffer to the output buffers to be performed by the processor. *Schmandt* ¶204. As explained in §VIII.A.1.e, *Fiedler*’s “audio output” is a speaker. *See also id.*, 4:4-9 (“The contents of the acquisition buffers are shown on a periodically updated display, and parts of the contents of the acquisition buffers may, by means of user controls, be played back through an output transducer such as a speaker....”), 8:21-23, FIG. 1. *Schmandt* ¶205.

Because *Fiedler* discloses that the user can arbitrarily trigger playback of anywhere from, for example, 0-5 minutes or seconds of audio stored in the second acquisition buffer, the audio data transcribed to the output buffer that is ultimately sent to a waveform output device and the audio output, spans the time period selected by the user. *Schmandt* ¶206.

Accordingly, a POSITA would have understood the *Fiedler-Broussard* combination to disclose or suggest the processor executing instructions to send at least 0-5 minutes or seconds of audio data in the second acquisition buffer to an output buffer that is ultimately sent to a waveform output device and the audio output (“sending a portion of the data stored in the data buffer, spanning a time period, to the speaker”) when the user presses the Move Back button on the user interface (“in

response to a user request, wherein the user request is ... a manual input from the user interface.”). *Schmandt* ¶207.

2. **Claims 3 (“The system according to claim 1, wherein the time period is less than 30 minutes.”), 4 (“The system according to claim 1, wherein the time period is less than 15 minutes.”), and 12 (“The system according to claim 1, wherein the time period is less than 1 minute.”)**

Fiedler in combination with *Broussard* discloses or suggests these claims. *Schmandt* ¶¶208-210. As explained in §VIII.A.1.k, *Fiedler* discloses that the data in the acquisition buffer, which may be played back, may span 0-5 minutes or seconds, and that a user chooses where to start playback by moving a cursor to a recorded block. *See also Fiedler* 7:60-64, 8:46-9:34, FIGs. 3, 6, 7. Thus, *Fiedler* discloses the user playing back, e.g., 5 seconds of audio, which is less than 1, 15 and 30 minutes. *Schmandt* ¶209.

Accordingly, a POSITA would have understood the *Fiedler-Broussard* combination to disclose or suggest the processor executing instructions to send seconds (e.g., 5 seconds) of audio data in the second acquisition buffer to the speaker (“wherein the time period is less than 30 minutes,” “wherein the time period is less than 15 minutes,” “wherein the time period is less than 1 minute”). *Schmandt* ¶210

B. Ground 1B: *Fiedler, Broussard, and Victorian* Render Obvious Claims 5-9

1. A POSITA Would Have Been Motivated to Combine *Fiedler* and *Broussard* with *Victorian*

A POSITA would have been motivated to modify the *Fiedler-Broussard* combination to apply *Victorian*'s teachings of a wireless ear-level device and would have had a reasonable expectation of success in doing so. *Schmandt* ¶¶211-222.

Fiedler discloses that a “speaker, earphone *or* similar transducer” is “provided for the purpose of playing back data in the acquisition buffers.” *Fiedler*, 8:21-23. Petitioners rely on *Fiedler*'s disclosure of a “speaker” in Ground 1A for claim 1 (*see* §VIII.A.1.e). By the 2008 timeframe, it was known to pair an audio device that had its own speaker with an earphone or earpiece that also had a speaker. *Schmandt* ¶212 (discussing *Batson*, 1:35-40). A POSITA would have been familiar with the advantages of that arrangement, such as providing the user the flexibility to use the audio device speaker in some contexts and the earpiece speaker in other contexts, such as for private listening in public spaces. *Id.* ¶213. Thus, despite *Fiedler* disclosing *either* a speaker or earphone, a POSITA would have been motivated to modify the *Fiedler-Broussard* combination to incorporate *both* a speaker and an earphone (as opposed to having a speaker and earphone as alternatives). *Id.* A POSITA would have understood such a combination to include the components described above in claim 1 for the *Fiedler-Broussard* combination, including the

speaker and a processor and memory with relevant instructions for replaying audio at the speaker as required for element [1.14], and would also have an earpiece *and* additional instructions to send audio to the earpiece when the earpiece is wirelessly connected. *Id.* The modification would have amounted to applying a known technique (adding an earpiece) to a known device (the *Fiedler-Broussard* combination with a speaker) ready for improvement (*Fiedler* already discloses compatibility with an earphone) to yield predictable results (the *Fiedler-Broussard* combination with an earphone in addition to a speaker). *Id.* ¶214.

By the 2008 timeframe, a POSITA would have been aware of a design trend of using wireless earpieces. *Schmandt* ¶215 (discussing *Zellner*, 1:11-23). A POSITA would have been aware of the various advantages of using a wireless earpiece, such as reduced obtrusiveness due to the lack of wires or cables. *Id.* ¶¶215-216. *Fiedler* discloses implementing its techniques in a portable device or wrist watch (*Fiedler*, 13:11-14:15), and a POSITA would have understood the particular advantages of using a wireless earpiece with such devices, as the lack of wires is even more convenient with mobile form factors. *Schmandt* ¶216.

A POSITA also would have been aware of wireless earpieces including an ear canal receiver, ear canal microphone, and ambient sound microphone, such as that disclosed by *Victorian*. *Id.* ¶217; *Victorian* FIG. 4A. *Victorian* is directed to an “ear-level communication system” that “allow[s] private, hand-free use” of a remote

device such as a computer, a personal digital assistant or a cellular phone. *Victorian* ¶[0002]; see also *id.*, Abstract, ¶[0008], [0009], [0016]. The ear-level device may be used as an “ear piece wirelessly extended from the remote device.” *Id.* ¶[0016].

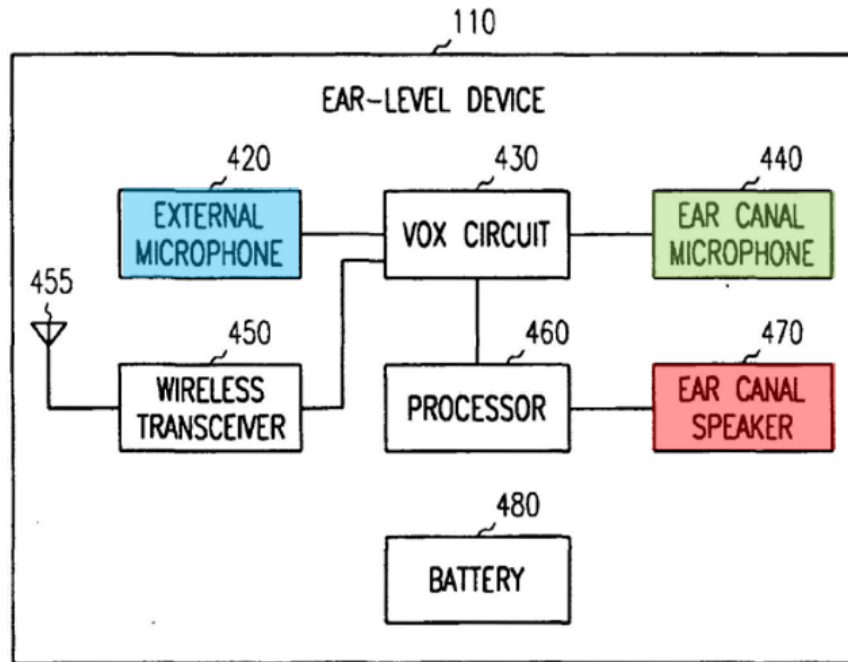


FIG. 4A

Victorian, FIG. 4A (annotated)

Figure 4A shows one embodiment of *Victorian*’s ear-level device. *Victorian* ¶[0029]-[0030]. The ear-level device includes “an external microphone 420, an ear canal microphone 440, an ear canal speaker 470 [and] a wireless transceiver 450.” *Id.* ¶[0030]. The “[e]xternal microphone 420 picks up ambient sound.” *Id.* Further, the “ear canal microphone 440 detects sound from the ear canal,” and the “[e]ar canal speaker 470” can play sound from a remote device or the external

microphone. *Id.* The wireless transceiver receives and transmits signals to and from a remote device. *Id.*

A POSITA would have considered modifying the *Fiedler-Broussard* combination to further include *Victorian*'s teaching of a wireless ear-level device to amount to combining prior art elements (the *Fiedler-Broussard* combination with *Victorian*'s wireless ear-level device) according to known methods (a POSITA was very familiar with techniques for implementing wireless communication with an earpiece) to yield predictable results (the *Fiedler-Broussard-Victorian* combination comprising an audio device and a wireless earpiece). *Schmandt* ¶219.

A POSITA also would have considered the combination to amount to applying a known technique (*Victorian*'s wireless ear-level device) to a known device (the *Fiedler-Broussard* device) ready for improvement (*Victorian* discloses that its earpiece can be used with a variety of devices including devices like the *Fiedler-Broussard* combination) to yield predictable results (the *Fiedler-Broussard-Victorian* combination comprising an audio device that communicates wirelessly with an earpiece). *Id.* ¶220.

A POSITA also would have considered the combination to amount to following a well-known design incentive or market force to implement a wireless earpiece with an audio device. *Id.* ¶221.

Accordingly, the *Fiedler-Broussard-Victorian* combination discloses or suggests the *Fiedler-Broussard* device wirelessly connected with *Victorian*'s ear-level device. *Id.* ¶222.

2. **Claims 5 (“The system according to claim 1, wherein the audio device is wirelessly connected to an earpiece.”); Claim 6 (“The system according to claim 5, wherein the earpiece includes: an ambient sound microphone; and an ear canal receiver.”); Claim 7 (“The system according to claim 6, wherein the earpiece further includes: an ear canal microphone.”)**

Fiedler in combination with *Broussard* and *Victorian* discloses or suggests these claims. *Schmandt* ¶¶223-228. As explained in §VIII.B.1, the *Fiedler-Broussard-Victorian* combination discloses or suggests the *Fiedler-Broussard* device wirelessly connected with *Victorian*'s ear-level device.

Victorian's ear-level device may be used as an “ear piece” and “wirelessly communicates” and exchanges wireless signals with a remote device such as a computer, PDA, or cellular phone. *Victorian* ¶¶[0009], [0016], [0030]. A POSITA would have understood that for *Victorian*'s ear-level device to wirelessly communicate with a remote device, it is wirelessly connected to the remote device. *Schmandt* ¶224.

Victorian's “**external microphone 420**,” which “picks up ambient sound” (*Victorian* ¶[0030]) is consistent with how the '587 patent describes an “ambient sound microphone.” '587*Pat.*, 17:64-65; *see also id.*, 18:31-33; *Schmandt* ¶225.

Victorian's “**ear canal speaker 470** transmits sound...to the [] ear canal” (*Victorian* ¶[0030]), consistent with how the '587 patent describes an “ear canal receiver.” '587Pat., 17:64-66; *see also id.*, 8:13-19; *Schmandt* ¶226. And *Victorian's* “**ear canal microphone 440** detects sound from the ear canal” (*Victorian* ¶[0030]), consistent with how the '587 patent describes an “ear canal microphone.” '587Pat., 17:67-18:1; *Schmandt* ¶227.

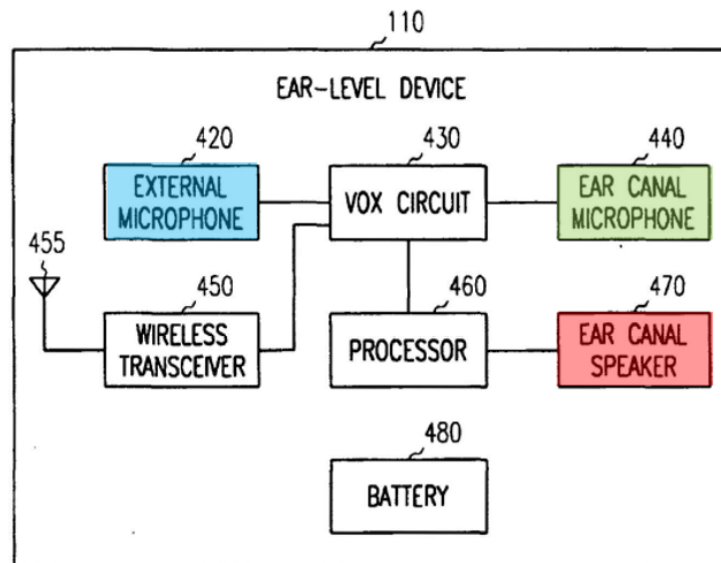


FIG. 4A

Victorian FIG. 4A (annotated)

Accordingly, a POSITA would have understood the *Fiedler-Broussard-Victorian* combination to disclose or suggest the *Fiedler-Broussard* combination wirelessly connected to the *Victorian* ear-level device (“wherein the audio device is wirelessly connected to an earpiece”), wherein the ear-level device includes an external microphone (“wherein the earpiece includes: an ambient sound

microphone; and) and a speaker (“an ear canal receiver”) and also includes an ear canal microphone (“wherein the earpiece further includes an ear canal microphone”). *Schmandt* ¶228.

3. Claim 8 (“The system according to claim 7, wherein the operation of notifying the user sends a notification signal to the ear canal receiver.”)

Fiedler in combination with *Broussard* and *Victorian* discloses or suggests this claim. *Schmandt* ¶¶229-239. As explained in §VIII.A.1.i, a POSITA would have understood the *Fiedler-Broussard* combination to disclose or suggest the processor executing instructions to alert or prompt the user (e.g., by cueing the user) when a trigger event was detected (“notifying a user when the sonic signature is detected.”). *Schmandt* ¶230.

Broussard discloses using a speaker, which may be auxiliary and “plugged in” to audibly “alert” or “cue” the user for input. *Broussard* ¶¶[[0012], [0013], [0019]; *Schmandt* ¶231. A POSITA would have been motivated to use *Victorian*’s ear canal speaker to implement *Broussard*’s audible alert or cue because it would have been a less obtrusive way of prompting the user than outputting the cue through the speaker of the audio device. *Schmandt* ¶232. More particularly, a POSITA would have understood that there are some contexts in which a user of the *Fiedler-Broussard* device would not want the cue to be played publicly. *Id.* For example, a POSITA would have known that one known application of recording devices like

the *Fiedler-Broussard* device is for live meetings and/or classroom lectures. *Id.* (discussing *Le, Heckerman*). A POSITA would have understood it was preferable to use less obtrusive notifications in such settings. *Id.* ¶233 (discussing *Parker* ¶¶[0004]). And if a user of the *Fiedler-Broussard-Victorian* combination was trying to record a live meeting or a class lecture, a POSITA would have understood that it would be less obtrusive to prompt the user through the earpiece receiver than through the speaker of the device. *Id.* ¶234 (discussing *Andreasson* ¶[0049], *Victorian* ¶¶[0002], [0008], [0016]).⁶ Moreover, a POSITA would have been aware of techniques for sending an audible notification to an earpiece. *Id.* ¶¶235-236 (discussing *Andreasson* ¶¶[0045]-[0050], *Chin* ¶¶[0051], [0057]). Therefore, a POSITA would have been motivated to implement *Victorian*'s technique of sending audio through an auxiliary speaker (e.g., an earpiece) to improve the *Fiedler-Broussard*. *Schmandt* ¶237.

A POSITA would have considered the combination to amount to the use of a known technique (*Victorian*'s technique to send audio to an auxiliary speaker such as an earphone) to improve similar devices (the *Fiedler-Broussard-Victorian* combination is a similar recording device) in the same way (to provide an audible

⁶ To be clear, *Andreasson* is being used to demonstrate a POSITA's knowledge. It is not part of the unpatentability ground 1B.

cue that is not disruptive to live meetings or class lectures that the user is trying to record). *Schmandt* ¶238.

Accordingly, a POSITA would have understood the *Fiedler-Broussard-Victorian* combination to disclose or suggest the processor executing instructions to send an audible cue to the ear canal receiver in the earpiece when a trigger event is detected (“wherein the operation of notifying the user sends a notification signal to the ear canal receiver.”). *Schmandt* ¶239.

4. Claim 9 (“The system according to claim 5 wherein the earpiece further includes: a sealing section.”)

Fiedler in combination with *Broussard* and *Victorian* discloses or suggests this feature. *Schmandt* ¶¶240-243.

Victorian discloses the ear-level device includes a “custom earmold” that is “fully occluded to maximize audio efficiency.” *Victorian* ¶[0027]. And in one embodiment, the ear-level device is comprised of a behind-the-ear (BTE) module and an in-the-ear (ITE) module, and the ITE module is a “custom or modular earmold” that is “fully occluded to maximize audio efficiency.” *Id.* ¶[0044], FIG. 6. This is consistent with how the ’587 patent describes a “sealing section,” also called a “sealing unit.” ’587*Pat.*, 18:9-10 (“a seal is typically achieved by means of a soft and compliant housing of sealing unit 1108”); 18:11-26 (“Sealing unit 1108 is an

acoustic barrier” and “reduce[s] the sound pressure level at the user’s eardrum”); 19:61-62 (referring to “sealing section 1108”); *Schmandt* ¶¶241-242.

Accordingly, a POSITA would have understood the *Fiedler-Broussard-Victorian* combination to disclose or suggest an ear-level device (“earpiece”) with a custom earmold that is fully occluded to maximize audio efficiency by insulating the ear canal microphone from external noise (“wherein the earpiece further includes: a sealing section.”). *Schmandt* ¶243.

C. Ground 1C: *Fiedler, Broussard, Victorian, and Andreasson* Render Obvious Claim 8

1. Claim 8 (“The system according to claim 7, wherein the operation of notifying the user sends a notification signal to the ear canal receiver.”)

As explained in §VIII.B.3, the combination of *Fiedler, Broussard*, and *Victorian* renders claim 8 obvious. To the extent PO argues or the Board finds otherwise, claim 8 would have been obvious in view of *Fiedler, Broussard, Victorian*, and *Andreasson*. *Schmandt* ¶¶244-255.

Andreasson “relates to selectively driving output units in phones or in accessories.” *Andreasson* ¶[0002]. *Andreasson* discloses a portable electronic device with a “control unit for performing a method including” (1) determining whether an earphone is connected; and (2) determining whether the earphone is attached to the user’s ear, and if attached to the ear, selecting the earphone to output an audio signal of an event, and if not, transmitting the audio signal to the speaker of the portable

device. *Id.* ¶¶[0016], [0041], [0047]-[0049], FIG. 5; *Schmandt* ¶246. *Andreasson* discloses implementing a wireless connection to the earphone and using a “pressure receiving unit 32” in the earphone to detect if the earphone is attached to the user’s ear. *Id.* ¶¶[0003], [0042]-[0043], [0055]. Other sensors for detecting if the earpiece is being worn are possible, too. *Id.* ¶[0055].

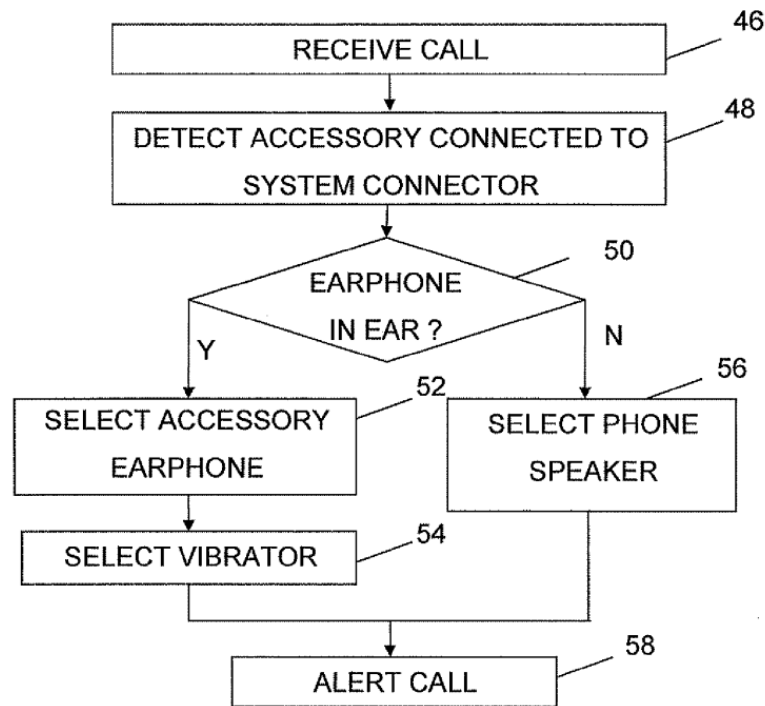
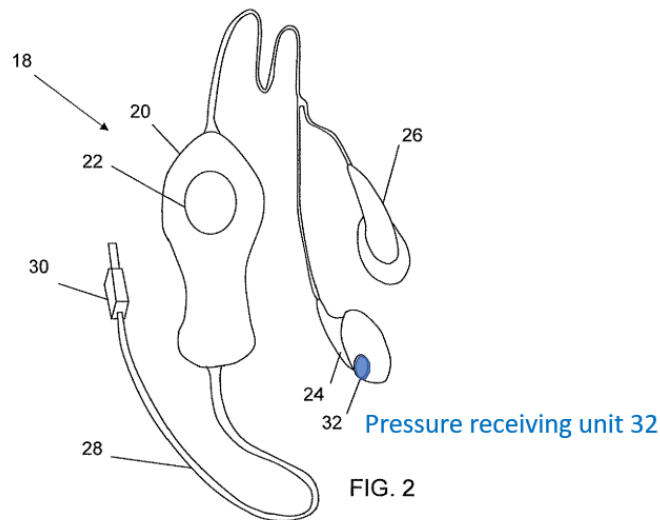


FIG. 5

Andreasson, FIG. 5

According to *Andreasson*, “[t]his process provides an efficient selection of audio output units and of limiting the disturbance to the environment whenever it is possible. This also saves battery power, since signal is output to units are in use.” *Id.* ¶[0049].



Andreasson FIG. 2 (annotated)

Andreasson discloses that the “control unit” of the portable device is “preferably provided in the form of a microprocessor with corresponding program code for performing method steps.” *Id.* ¶[0050]. A POSITA would have understood that “program code” constitutes instructions to be executed by the microprocessor. *Schmandt* ¶249. Thus, a POSITA would have understood *Andreasson* to disclose or suggest a portable device connected to an earphone with instructions to (1) determine whether an earphone is connected; and (2) determine whether the earphone is attached to the user’s ear, and if attached to the ear, selecting the earphone to output an audio signal of an event, and if not, transmitting the audio signal to the speaker of the portable device. *Id.*

A POSITA would have been motivated to modify the *Fiedler-Broussard-Victorian* combination to implement *Andreasson*’s teachings. *Schmandt* ¶250. As

shown by *Andreasson*, a POSITA would have understood that with hands-free devices like *Victorian*'s ear-level device, there was a need to implement a technique to manage routing of the output of audio signals as between the speaker of the audio device and the ear canal receiver of the earpiece, and a POSITA would have considered *Andreasson*'s technique a suitable option in the *Fiedler-Broussard-Victorian* combination. *Id.* A POSITA also would have understood that it would be advantageous to give the user the flexibility to selectively output audio signals to the ear canal receiver or the speaker of the audio device without having to disconnect the earpiece from the audio device. *Id.* ¶251. For example, a user of the *Fiedler-Broussard-Victorian-Andreasson* combination could use the recording functionality with minimal disturbance in a classroom lecture or meeting, and then playback the recording through the speaker of the audio device by simply removing the earpiece from his/her ear. *Id.*

A POSITA would have understood that implementing *Andreasson*'s technique would have been within the skill of an ordinary artisan. *Id.* ¶252. *Andreasson* discloses implementing its teachings with portable electronic devices similar to those disclosed by *Fiedler* and *Broussard*. *Id.* ¶252. A POSITA would have understood that *Victorian*'s ear-level device design was compatible with a sensor like those disclosed by *Andreasson*, such as a pressure sensor. *Id.* ¶253. Thus, the modification would have merely required implementing one of the sensors

identified by *Andreasson* in *Victorian*'s ear-level device to detect whether it was inserted into the user's ear or not, and then programming the processor of the *Fiedler-Broussard-Victorian* combination to implement *Andreasson*'s control unit instructions for routing audio signals so that the audio signal was routed to the earpiece when *Victorian*'s ear-level device was being worn, and routed to the speaker of the audio device when the earpiece was not being worn. *Id.*

Thus, in the *Fiedler-Broussard-Victorian-Andreasson* combination, the memory of the *Fiedler-Broussard-Victorian* combination is modified to include instructions to (1) determine whether the earpiece is wirelessly connected to the audio device and (2) determine whether the earpiece is placed in the user's ear, and if so, output audio signals to the ear canal speaker ("ear canal receiver"), and if not, to output audio signals to the audio device's speaker. *Id.* ¶254. Thus, the combination discloses or suggests that when the audio device is wirelessly connected to an earpiece, there are instructions to perform operations including sending a notification signal to the ear canal receiver and instructions to perform the operation of sending a portion of the data stored in the data buffer to the speaker as required by limitation 1.14 when the user is not wearing the earpiece. *Id.*

Accordingly, a POSITA would have understood the *Fiedler-Broussard-Victorian-Andreasson* combination to disclose or suggest "wherein the operation of

notifying the user sends a notification signal to the ear canal receiver.” *Schmandt* ¶255.

D. Ground 1D: *Fiedler*, *Broussard*, and *Couper* Render Obvious Claims 10 and 11

1. Claim 10 (“The system according to claim 1, wherein the sonic signature detected is one of a siren or an alarm.”)

Fiedler in combination with *Broussard* and *Couper* discloses or suggests this claim. *Schmandt* ¶¶256-266.

As explained above in §VIII.A.1.h, the *Fiedler-Broussard* combination discloses or suggests the processor executing instructions to analyze the original acquisition buffer to detect a trigger such as a keyword (“analyzing the audio buffer for detecting a sonic signature”). *Fiedler* explains that its disclosure relates to an improvement in “event-activated recording,” and that event-activated recording may be “[s]ound-activated” and/or used in a “security system.” *Fiedler*, 1:43-54. In view of the foregoing, a POSITA would have been motivated to consider different types of auditory triggering events that may be used in connection with the *Fiedler-Broussard* combination, for example, in a security system. *Schmandt* ¶258.

Couper teaches such auditory triggering events in a security system. *Schmandt* ¶259. In particular, *Couper* discloses mobile devices that include a microphone for picking up audio (*id.* ¶¶[0024], [0026]) and that detect incidents by comparing the

audio received by the microphone with “sound signatures” indicative of an incident, such as “sirens” and “alarms.” *Id.* ¶[0026].

A POSITA would have been motivated to apply *Couper*’s use of sound signatures to detect sirens and alarms to the *Fiedler-Broussard* combination. *Couper* is similar to the ’587 patent and the *Fiedler-Broussard* combination because they all relate to the use of a trigger in connection with recording audio. *Schmandt* ¶260. For example, *Couper* discloses an audio recording embodiment with functionality very similar to the preservation scheme described by *Fiedler*, explaining that “the mobile device can record a continuous loop and, if a detected sound matches a sound signature 120,” the mobile device can “prevent that audio from being recorded over.” *Id.* ¶[0044]; *Schmandt* ¶260.

In view of *Couper*’s disclosure, a POSITA would have understood that modifying the *Fiedler-Broussard* combination to detect sounds indicative of an incident, such as a siren or alarm, would make the *Fiedler-Broussard* combination more useful in more contexts, including in the security system context disclosed by *Fiedler*. *Schmandt* ¶261. Moreover, a POSITA also would have understood that the modification could be more useful to the user, for example, in post-incident investigations and litigation associated with the detected incidents. *Id.* ¶262 (discussing *Johnson*, 2:9-47, 6:56-58). Thus, a POSITA would have been motivated

to implement such functionality by analyzing the original acquisition buffer to detect a siren or alarm as a trigger event. *Id.* ¶262.

In view of the above, a POSITA would have considered modifying the *Fiedler-Broussard* combination to detect a siren or alarm as disclosed by *Couper* to amount to the use of a known technique (detecting the sound signature of a siren or alarm) to a known device (the *Fiedler-Broussard* combination) ready for improvement (the *Fiedler-Broussard* combination is already configured to detect sonic signatures but does not explicitly describe the sonic signatures to use in *Fiedler's* security system application) to yield predictable results (the *Fiedler-Broussard* combination configured to detect the sonic signature of a siren or alarm). *Schmandt* ¶263.

A POSITA also would have considered the combination to amount to the use of a known technique (detecting the sound signature of a siren or alarm) to improve similar devices (*Couper's* audio recording device is similar to the *Fiedler-Broussard* combination) in the same way (to provide mobile devices with the ability to detect sonic signatures indicative of incidents that may require emergency dispatch). *Schmandt* ¶264.

A POSITA would have understood that adapting the *Fiedler-Broussard* combination to detect a siren or alarm as a trigger event would have merely required using similar processing and analysis techniques used to detect the types of trigger

events disclosed by *Broussard* (e.g., a keyword), except that the target sound to be identified would be a siren or alarm. *Schmandt* ¶265. That is, a POSITA would have understood that modifying the *Fiedler-Broussard* combination to detect a siren or alarm would have been well within the skill of an ordinary artisan because the *Fiedler-Broussard* combination is already designed to detect particular sounds. *Id.*

Accordingly, a POSITA would have understood the *Fiedler-Broussard-Couper* combination to disclose or suggest the processor executing instructions to analyze the original acquisition buffer to detect a trigger such as a siren or alarm (“wherein the sonic signature detected is one of a siren or an alarm”). *Schmandt* ¶266.

2. Claim 11 (“The system according to claim 10 wherein the user interface is a button.”)

Fiedler in combination with *Broussard* and *Couper* discloses or suggests this claim for the same reasons discussed in §VIII.A.1.b. *Schmandt* ¶267.

E. Ground 2: *Fiedler*, *Broussard*, and *Bulthuis* Render Obvious Claims 1 and 2

1. Claim 1

a. 1[pre] through 1.10

Fiedler in combination with *Broussard* discloses or suggests 1[pre] through 1.10 for the same reasons discussed above in §§VIII.A.1.a (1[pre]) through VIII.A.1.g (1.10), respectively. *Schmandt* ¶268.

b. “[1.11] analyzing the audio buffer for detecting a sonic signature;”)

Fiedler in combination with *Broussard* and *Bulthuis* discloses or suggests this feature. *Schmandt* ¶¶269-282.

As explained in §VIII.A.1.h, the *Fiedler-Broussard* combination discloses or suggests the processor executing instructions to analyze the original acquisition buffer to detect a trigger such as a voice command to start recording. *Id.* ¶270.

Fiedler describes initiating playback of audio data in the acquisition buffer when the user presses a button on a user interface (*Fiedler*, 6:42-47, 8:46-61, 12:26-63), but does not disclose using a voice command to play back audio data. *Schmandt* ¶271. It was well-known in the art to control a playback function with a voice command. *Id.* ¶¶272-273. For example, *Bulthuis* discloses that the user may instantly rewind and replay the last N minutes of a conversation stored in a circular buffer by either a “physically actuatable selector mechanism” or a “specific voice command.” *Bulthuis* ¶[0016]. The replay feature allows the user to take notes or clarify points that the user did not understand. *Id.* ¶[0047].

By the 2008 timeframe, a POSITA would have been aware of a well-known trend to implement speech or voice user interfaces on devices so that devices could be controlled with voice commands and there were well-recognized benefits to doing so. *Schmandt* ¶¶274-277 (discussing *Stahl*, *Cohen*, and *Chu*). For example, the use

of voice commands allows a user to control a device while simultaneously performing other tasks that require the user's hands and/or visual attention. *Id.* *Stahl* discloses that “[t]o increase the user-friendliness and options for use of devices ... and thus to make the devices more attractive, an ever increasing number of devices are so equipped that control of the device is possible by means of acoustic command signals.” *Stahl* ¶[0002]. “[V]oice-controllable devices are highly convenient, since the operator may operate the respective device without having to use his/her hands” and thus voice control “is also more generally attractive with regard to device operation” than buttons. *Id.*

In view of the above, a POSITA would have been motivated to implement *Bulthuis's* teachings of a voice-command controlled replay functionality to the *Fiedler-Broussard* combination and would have had a reasonable expectation of success in doing so. *Schmandt* ¶277. A POSITA would have understood that the modification would have merely required programming the *Fiedler-Broussard* combination to detect, in the original acquisition buffer, voice commands to replay audio, for example, “Playback the last one minute of audio.” *Schmandt* ¶278. Moreover, *Fiedler* discloses implementing event-activated recording such that, after detection of a trigger event, audio data leading up to the trigger event are copied from the original acquisition buffer to the second acquisition buffer, and that this process involves “[c]ontinuing to record in the [original] acquisition buffer the

triggering event and the events following the triggering event.” *Fiedler*, 6:48-63. Thus, the combination discloses or suggests analyzing the original acquisition buffer (“audio buffer”) for a replay voice command to playback audio data. *Schmandt* ¶278.

Therefore, a POSITA would have considered the combination of *Fiedler*, *Broussard*, and *Bulthuis* to amount to the use of known technique (*Bulthuis*’s technique to use voice commands to initiate replay of buffered audio) to improve similar devices (*Fiedler-Broussard*’s audio data playback device) in the same way (to enable voice command operation of a replay or playback feature). *Schmandt* ¶279.

The combination also amounts to applying a known technique (implementing a voice command to control replay of buffered audio) to a known device (the *Fiedler-Broussard* device) ready for improvement (*Fiedler-Broussard* already discloses or suggests analyzing the original acquisition buffer for a voice command) to yield predictable results (a device that analyzes the audio data stored in the original acquisition buffer for a voice command to initiate playback of audio data in the second acquisition buffer). *Id.* ¶280.

A POSITA would have understood that analyzing the original acquisition buffer for a voice command to replay audio is consistent with how the ’587 patent describes analyzing the audio buffer for a “sonic signature.” *See* ’587*Pat.*, 4:66-67

(“The concept of recognizing sounds is described as Sonic Signature Detection.”); 7:51-52; 9:14-19, 22:42-53, 27:38-39; *Schmandt* ¶281.

Accordingly, a POSITA would have understood the *Fiedler-Broussard-Bulthuis* combination to disclose or suggest the processor executing instructions to analyze the original acquisition buffer (“analyzing the audio buffer”) to detect a replay voice command to playback audio data in the second acquisition buffer (“for detecting a sonic signature”). *Schmandt* ¶282.

c. “[1.12] notifying a user when the sonic signature is detected;”

Fiedler in combination with *Broussard* and *Bulthuis* discloses or suggests this feature. *Schmandt* ¶¶283-289.

As explained in §VIII.E.1.b, the *Fiedler-Broussard-Bulthuis* combination discloses or suggests initiating playback of buffered audio data upon detection of a replay voice command. This playback of audio in response to the replay voice command is consistent with how the ’587 patent describes “notifying a user when the sonic signature is detected.” ’587*Pat.*, 5:19-38, 19:16-31. *Schmandt* ¶¶284-285. For example, the ’587 patent explains that “[p]rocessor 1116 analyses the acoustic information for a sound similar to the sonic signature. Once identified, the earpiece will provide a response to the sound based on the application. In a first exemplary embodiment, the earpiece will ... amplify the identified signal

(ambulance or police car) thereby notifying the user of the approaching vehicle.”

’587Pat., 19:19-26. In another embodiment, “[s]onic signatures related to emergency vehicles ... are stored in the system” and “[a] response is provided if one of the stored sonic signatures is detected.” ’587Pat., 5:23-27. For example, “upon detecting a fire truck siren,” the device “can initiate playing the identified signal.” *Id.*, 5:27-30.

Moreover, a POSITA would have understood that the claim language merely limits the timing of the notification, i.e., at the time “*when* a sonic signature is detected” and does not necessarily require, for example, notifying a user *that* a sonic signature was detected or notifying a user *of* the sonic signature that was detected. Thus, a POSITA would have understood that when the audio is replayed when a replay voice command is detected, the replaying of the audio performs the step of notifying a user—for example, notifying the user of the audio that was just recorded, or implicitly notifying the user that the user’s voice command was recognized—when a sonic signature is detected. *Schmandt* ¶286.

If PO argues that replaying the audio data cannot meet this limitation, it would have nevertheless been obvious to further modify the *Fiedler-Broussard-Bulthuis* device to incorporate *Broussard*’s feedback/alert/notification technique (described in §VIII.A.1.i) for the purpose of confirming that the user uttered a replay voice command. *Schmandt* ¶287. The same motivation for implementing *Broussard*’s

feedback/alert/notification technique in the context of confirming the user's voice command to start recording would apply to the *Fiedler-Broussard-Bulthuis* voice command to start replay. *Id.* Namely, speech recognition systems are vulnerable to false recognitions, and it was common to implement a user feedback mechanism to confirm the user's voice command. *Id.* (discussing *Cohrs*, Abstract, 1:12-13, 2:16-20). Thus, a POSITA would have considered the combination to amount to applying a teaching or suggestion in the prior art (prompting the user to confirm a user voice command) to modify the *Fiedler-Broussard-Bulthuis* device to arrive at the claimed invention (a device that notifies the user when a sonic signature is detected). *Schmandt* ¶288.

Accordingly, a POSITA would have understood the *Fiedler-Broussard-Bulthuis* combination to disclose or suggest the processor executing instructions to alert or cue the user to confirm the replay voice command or merely replaying audio data from the acquisition buffer upon detection of the voice command (“notifying a user when the sonic signature is detected.”). *Schmandt* ¶289.

d. [1.13] and [1.14]

Fiedler in combination with *Broussard* and *Bulthuis* discloses or suggests [1.13] and [1.14] for the same reasons discussed in §VIII.A.1.j and §VIII.A.1.k, respectively. *Schmandt* ¶¶290-291.

2. **Claim 2 (“The system according to claim 1, wherein the sonic signature is a voice command, and where the voice command is to replay audio.”)**

Fiedler in combination with *Broussard* and *Bulthuis* discloses or suggests this feature for the same reasons discussed in §VIII.E.1.b. *Schmandt* ¶292.

IX. SECONDARY CONSIDERATIONS

There is no evidence in the ’587 patent’s prosecution history or elsewhere supporting any secondary considerations arguments, or evidence of nexus of such alleged evidence to the challenged claims. See generally EX1004; *Schmandt*, ¶¶40-47, 293. To the extent PO asserts the existence of any secondary considerations in its responses, Petitioners reserve the right to address any such evidence.

X. THE DISCRETIONARY FACTORS FAVOR INSTITUTING TRIAL

A. 35 U.S.C. §314(a)

PO may ask the Board to exercise its discretion to deny institution despite the strong invalidity showing on the merits. The Board should decline to do so because the weight of the factors articulated in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11, 6 (Mar. 20, 2020) (precedential) favors institution.⁷

⁷ The *Fintiv* framework should not be followed because it is legally invalid as (1) exceeding the Director’s authority, (2) arbitrary and capricious, and (3) adopted without notice-and-comment rulemaking.

1. Stay

Factor 1 is neutral. Petitioners have not requested a stay but intend to do so. The PTAB has explained that it will not speculate on how any such motion would be resolved, before one is filed. *Google LLC v. Parus Holdings, Inc.*, IPR2020-00847, Paper 9 at 12 (PTAB Oct. 21, 2020). Additionally, the PTAB has explained that this factor is neutral where no such stay motion has yet been filed. *See, e.g., Hulu LLC v. SITO Mobile R&D IP, LLC*, IPR2021-00298, Paper 11 at 10-11 (PTAB May 19, 2021).

2. Trial Date

This factor weighs against denial. There is no trial date in the Harman litigations, and the court has not even set a scheduling conference in either case to address the trial date. The median time to trial in Delaware is three years, which would set the trials for about July 2026. As this Petition is filed in February 2024, a FWD would be expected by August or September 2025—almost a year before any expected trial dates in the Harman litigations. EX1034. And the docket control order in the Samsung litigation currently sets jury selection for June 2, 2025, about 17 months away. EX1033. Any comparison of a projected FWD date against the scheduled trial date in the Samsung litigation is speculative. *See Dish Network v. Broadband iTV*, IPR2020-01280, Paper 17 at 16 (PTAB Feb. 4, 2021) (“We cannot ignore the fact that the currently scheduled trial date is more than nine months away

and much can change during this time”). Setting that aside, an August or September 2025 FWD would be 2-3 months after the currently scheduled Samsung trial date. Thus, the Samsung trial date should have little to no impact on this factor. *See Microsoft Corporation v. D3D Technologies, Inc.*, IPR2021-00703, Paper 10 at 12 (PTAB Oct. 12, 2021) (concluding that although the final written decision is projected to issue about a month after the trial date, Fintiv Factor 2 is neutral); *Protect Animals with Satellites v. OnPoint Sys., LLC*, IPR2021-01483, Paper 11 at 11-13, 17 (Mar. 4, 2022). The Board has instituted with even more time between trial and FWD. *See NetNut Ltd. v. Bright Data Ltd.*, IPR2021-01492, Paper 12 at 9-16 (Mar. 21, 2022) (instituting IPR without stipulation and copending trial date six months before FWD).

3. Diligence/Investment

Factor 3 weighs strongly against discretionary denial. This Petition is being filed before a deadline to serve infringement contentions has even been set in the Harman litigations, and a mere 18 days after PO served its infringement contentions in the district court on January 22, 2024. Invalidity contentions are not yet due in the Harman litigations, and are due March 18, 2024 in the Samsung litigation. No substantive orders have been issued by the court in any of the underlying litigations, and investment in the parallel litigations will have remained low at the time of institution. EX1033. Assuming that a Decision on Institution is issued by June 2024,

much work in district court will remain. *Id.* In the Samsung litigation, the opening claim construction brief is currently due October 24, 2024, the *Markman* hearing is scheduled for December 5, 2024, and opening expert reports are due January 13, 2025. These dates have not yet been set in the Harman litigations.

4. Overlap

Petitioners challenge claims 1-12 this Petition, and PO has alleged infringement of claims 1-12 in its infringement contentions in the Samsung litigation. EX1032. Petitioners stipulate that, unless the Board denies or later vacates institution of this Petition, Petitioners will not seek resolution of invalidity in the copending Samsung and Harman litigations based on the specific grounds asserted in this Petition. *See also* EX1035. PO has not served infringement contentions in the Harman litigations, and because no trial date has been set in the Harman litigations, a FWD is likely to be issued before trial in the Harman litigations.

5. Parties

Petitioners and PO are also parties to the parallel litigations. Given that no trial date has been set in the Harman litigations and the Samsung trial date is only about 2-3 months before the expected FWD, this factor should be no worse than neutral.

6. Other considerations

The merits are compelling here. Moreover, because there are separate litigations proceeding in different courts, it would be more efficient for the PTAB to adjudicate these challenges. Petitioners therefore respectfully submit that the *Fintiv* factors favor institution and that discretionary denial of this Petition would be neither appropriate nor equitable.

B. 35 U.S.C. §325(d)

The Board should likewise not exercise its discretion under §325(d) to deny institution of this petition. *See Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8, at 17-18 (PTAB Dec. 15, 2017) (precedential); *Advanced Bionic, LLC v. MED-EL Elektromedizinische Gerate GmbH*, IPR2019- 01469, Paper 6, at 9-11 (PTAB Feb. 13, 2020) (precedential).

The Office did not issue any rejections during prosecution and there is no evidence that the Office considered any of the Grounds presented in this Petition. *Bulthuis* and *Andreasson* were not disclosed to the Office during prosecution. And, although *Fiedler*, *Broussard*, *Victorian*, and *Couper* were disclosed by information disclosure statement, they were disclosed along with over three hundred other references. (EX1001 at (56) References Cited), and the Office never evaluated any of these references on the record. Thus, *Becton* factor (c) strongly favors not exercising discretion to deny this Petition. *SolarEdge Techs. LTD v. SMA Solar*,

IPR2020-00021, Paper 8, at 12 (PTAB Apr. 10, 2020) (“Because the Examiner did not rely on [the cited references] to reject a claim, Becton factor (c) weighs strongly against” discretionary denial).

To the extent the Office substantively considered *Fiedler*, *Broussard*, *Victorian*, and *Couper*, they are presented in a different light here. The Petition presents detailed expert evidence which shows how the references disclose or render obvious every limitation of the challenged claims, as well as the reasons that a POSITA would pursue the asserted combinations. Thus, Petitioners’ challenges are based on additional evidence and arguments that the Office did not consider, or that if they were considered, as to which the Office clearly erred. *See Mylan Pharms. Inc. v. Merck Sharp & Dohme Corp.*, IPR2020-00040, Paper 21, at 20 (PTAB May 12, 2020) (new expert testimony weighs against exercising discretion under § 325(d)).

More particularly, the Office erred in not recognizing that *Fiedler* discloses an initial acquisition buffer that receives a microphone signal and in which the microphone signal is modified, and a second acquisition buffer that receives the modified microphone signal and the contents of which are sent to a speaker for playback. The Office further erred in not recognizing that *Broussard* teaches how a computer used for audio processing includes a processor coupled to a memory storing instructions and buffers storing audio in order to transfer the audio data as required. The Office further erred in not recognizing that a POSITA would have

been motivated to combine *Fiedler* and *Broussard* for the reasons mentioned in §VIII.A.1

The Office identified three references in the Notice of Allowance. EX1004 at 44. According to the Office, those references did not disclose an “always on recording system” with limitations 1.9-1.14. But the claims no longer require an “always-on recording system,” and Petitioners submit that none of the prior art presented in this Petition is cumulative of the prior art discussed by the Office. For example, *Suzuki*, the only reference identified by the Office as disclosing two separate buffers does not disclose recording ambient sound or detecting a sonic signature, like *Fiedler* and *Broussard*.

XI. MANDATORY NOTICES UNDER 37 C.F.R. §42.8

A. Real Parties-in-Interest

Petitioners identify themselves as the real parties-in-interest.

1. Related Matters

To the best of Petitioners’ knowledge, the ’587 patent has only been involved in the following district court litigations:

- *Staton Techiya, LLC v. Samsung Electronics Co., Ltd. et al.*, 2:23-cv-00319-JRG-RSP (E.D. Tex.), filed July 10, 2023.
- *Staton Techiya, LLC v. Harman International Industries, Incorporated*, 1:23-cv-00801-JCG (D. Del.), filed July 25, 2023.

- *Staton Techiya, LLC v. Harman-Kardon, Inc. et al.*, 1:23-cv-00802-JCG (D. Del.), filed July 25, 2023.

Attached to this petition as EX1031 is a chart identifying all patents/application that are in the same family as the '587 patent.

B. Lead and Backup Counsel

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C. Service Information

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D. Power of Attorney

Powers of attorney are filed herewith according to 37 C.F.R. §42.10(b).

XII. FEES

Petitioners concurrently electronically submits the required fees for this Petition. The Board is authorized to charge Arnold & Porter Kaye Scholer LLP's deposit account, No. 50-2387, for any fee deficiency.

Date: February 9, 2024

Respectfully submitted,

/Ali R. Sharifahmadian/
Ali R. Sharifahmadian (Reg. No. 48,202)
Lead Counsel

CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that the foregoing Petition for *Inter Partes* Review contains 13,925 words, excluding those portions identified in 37 C.F.R. §42.24(a), as measured by the word-processing system used to prepare this paper.

/Ali R. Sharifahmadian/
Ali R. Sharifahmadian (Reg. No. 48,202)
Lead Counsel

CERTIFICATE OF SERVICE

I certify that on February 9, 2024, I caused a true and correct copy of the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 11,610,587 and supporting exhibits to be served via overnight delivery on the Patent Owner at the following correspondence address of record as listed on Patent Center:

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