1 UNITED STATES PATENT AND TRADEMARK OFFICE

2 _____

3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

4 _____

5 META PLATFORMS, INC.,

6 Petitioner,

7 v.

8 EIGHT KHZ, LLC,

9 Patent Owner.

10 _____

11 Case IPR2023-01019

12 U.S. Patent No. 10,368,179 B1

13

14 Case IPR2023-01020

15 U.S. Patent No. 10,488,184 B1

16 _____

17

18

19 Deposition of DURAND RENÉ BEGAULT, PH.D.

20 Conducted Virtually

21 Friday, June,14, 2024

22 11:39 a.m. EDT

Meta
Exhibit 1147
Meta v. 8KHZ
IPR2023-01019

1 Job No.: 539256
2 Pages: 1 - 337
3 Stenographically reported by: Judith E. Bellinger,
4 RPR, CRR, CSR-TX CCR-WA, CCR-NM
5
6
7 Deposition of DURAND RENÉ BEGAULT, PH.D.,
8 conducted virtually.
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16
17 Pursuant to notice, before Judith E.
18 Bellinger, Registered Professional Reporter,
19 Certified Realtime Reporter, and Notary Public in
20 and for the State of Maryland.
21
22

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C O N T E N T S

EXAMINATION OF DURAND RENÉ BEGAULT, PH.D. PAGE
By Ms. Osman 6

E X H I B I T S

(Attached to the transcript)

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1 P R O C E E D I N G S
2
3 DURAND RENÉ BEGAULT, PH.D.,
4 Being first duly sworn, was examined
5 and testified as follows:
6
7 EXAMINATION BY COUNSEL FOR THE PETITIONER
8 BY MS. OSMAN:
9 Q Good morning, Dr. Begault. My name is
10 Inge Osman, I'm an attorney at Latham & Watkins,
11 and I'm here today on behalf of Petitioner Meta.
12 How are you today?
13 A I am fine except I'm recovering from a
14 cold.
15 Q I'm sorry to hear that. I hope you
16 feel better soon.
17 MS. OSMAN: Can counsel from Eight KHZ
18 introduce themselves, please.
19 MR. DUNN: This is Patrick Dunn from
20 Spencer Fane.
21 MS. PARTRIDGE: I'm sorry, I didn't
22 hear what you were saying. My name is Jayme

1 Partridge, I'm from Spencer Fane, and Patrick Dunn
2 and I are here on behalf of Quantum, patent owner.
3 MS. OSMAN: Got it.
4 MR. DUNN: Eight KHZ.
5 MS. PARTRIDGE: I thought that might be
6 the case. I'm doing great. Okay.
7 BY MS. OSMAN:
8 Q Dr. Begault, can you, please, state and
9 spell your full name for the record.
10 A Yes. My name is Durand, D-U-R-A-N-D,
11 René, R-E-N-E, with an accent mark on the final E,
12 Begault, B-E-G-A-U-L-T.
13 Q Thank you, Dr. Begault.
14 And where are you right now?
15 A I am in my home office.
16 Q Okay. And where is your home office?
17 A It's located in Noir Beach, California.
18 Q Okay. Did you bring any materials with
19 you to the deposition today?
20 A The only materials I have brought is a
21 hard copy of my supplemental declaration, and I
22 think it's referred to as a popper. So it's,

1 basically, a hard copy of my two declarations,
2 pertinent to what we're talking about today, and
3 they have not been marked or edited in any other
4 way. So they're just literal printouts because
5 sometimes it's easier for me to see them as they
6 are, you know, in hard copy as opposed to trying
7 to read on a screen.
8 Q I understand that, certainly.
9 Okay. So you have no notes with you
10 and you have hard, clean copies of both of your
11 declarations; is that correct?
12 A That's it.
13 Q Okay. Thank you.
14 I know you were previously deposed as
15 part of the parallel District Court litigation.
16 Have you had any other depositions
17 since that deposition in the parallel District
18 Court litigation?
19 A So the parallel -- I'm not sure exactly
20 what that is. I've been deposed in other matters,
21 but I don't believe they have to do with the
22 present case.

1 Q Okay. Let me ask my question again. I
2 think that was a little confusing.
3 How many times have you been deposed
4 over the past year?
5 A Over the past year?
6 Q Uh-huh.
7 A I have to look at my current CV to tell
8 you that. I think it's four or five times. Maybe
9 four times.
10 Q Okay. So fair to say you probably
11 remember the rules of depositions?
12 A Oh, yes.
13 Q Okay. Now, I'm going to go over the
14 rules, just for the record and to refresh your
15 recollection, even though I understand you're a
16 pro at this.
17 So you know, I'll be asking the
18 questions and you'll be answering them, right?
19 A Yes.
20 Q Okay. And the court reporter, Judy, is
21 writing down everything that's said. So, please,
22 make sure that your answers are verbal, and that's

1 yes or no and not shaking your head or nodding
2 your head.
3 Does that make sense?
4 A Yes, it does.
5 Q Okay. If at any time during the
6 deposition you don't understand one of my
7 questions, please, tell me and I'll rephrase it.
8 Is that fair?
9 A Absolutely.
10 Q Great.
11 And additionally, especially because we
12 are in a remote deposition today, only one of us
13 can speak at a time.
14 So I ask that you pause and let me
15 finish my questions and I will, likewise, pause
16 and let you finish your answer.
17 Does that sound fair?
18 A Yes.
19 Q Thank you.
20 Now, during the deposition today, your
21 lawyer may object to one of my questions. She's
22 only doing that for the record. Unless she tells

1 you not to answer my question, you still have to
2 answer.
3 Does that make sense?
4 A Yes, it does.
5 Q Okay. Now, during the deposition
6 today, as I'm sure you know, you might give an
7 answer and then later remember that you need to
8 correct or clarify something.
9 If that happens, will you let me know
10 and we'll stop and clarify your testimony?
11 A Yes, I will.
12 Q Thank you.
13 Is there -- now, I know you said you
14 were not feeling well. Will that prevent you from
15 giving truthful and accurate testimony here today?
16 A No, it just might mean that I might
17 start coughing.
18 Q Okay. Well, we can certainly take a
19 break if you need one.
20 Is there any other reason why you may
21 not be able to give truthful and accurate
22 testimony here today?

1 A None whatsoever.
2 Q Okay. Now, we're going to try to take
3 a break about every hour during the deposition
4 today. But of course if you need one earlier than
5 that, please, let me know.
6 Does that sound fair?
7 A Yes, it does.
8 Q The only thing I'm going to ask you if
9 we have a question pending, please, answer the
10 question and then we'll stop and take a break
11 after that, okay?
12 A That sounds reasonable.
13 Q All right. Great.
14 Now, because we are in a remote
15 deposition today, I'm going to ask you a few
16 questions about the room that you're sitting in
17 and what's around you.
18 Is there anyone else in the room with
19 you right now?
20 A No.
21 Q Do you have any -- so you told me you
22 have your two declarations with you.

1 Are there any other documents or notes
2 in the room with you?
3 A There are notes that have to do with a
4 shopping list for the grocery store, but there's
5 nothing pertinent to this case.
6 Q Okay. Can you agree with me that you
7 will not open or reference any other documents or
8 notes during the deposition today, other than the
9 documents that we share as part of the deposition?
10 A Well, I will only reference those
11 documents that are pertinent to today's
12 deposition. So I don't know what documents you're
13 going to be asking me about, but I will certainly
14 restrict myself to documents that have to do with
15 what we're talking about today.
16 Does that make sense?
17 Q I'm not sure you answered my question.
18 I'm asking, can you, please, agree that you will
19 not open any documents or notes that are either
20 not your declarations, that you've told me are in
21 front of you, or documents that I've shared with
22 you?

1 So during the deposition today, I want
2 to know if you're looking at any other notes or
3 documents.
4 So can you agree with that?
5 A I'm not looking at any other notes or
6 documents. If you were to ask me something, let's
7 say, about the New York telephone book, which I
8 don't know if it even exists anymore, but as a
9 hypothetical, and I happen to have a copy of that
10 there, then that would, of course, be something I
11 would open up because you had brought it up.
12 Q Sure.
13 A So that's -- I'm sorry, I misheard.
14 Q My apologies I cut you off. Please
15 continue.
16 A No, I think I was just basically saying
17 that if you bring up a document, like the New York
18 telephone book, and I happen to have a New York
19 telephone book here, then, of course, I would look
20 at that or see if I had a copy of a New York
21 telephone book.
22 But I'm going to, basically, be looking

1 at what we already discussed, which is a hard
2 copy, that's unmarked, of my two declarations that
3 concern the, what I believe we'll refer to as the
4 '179 and '184 patents, and I'm not referring to
5 any notes.
6 Q So you said the '179 and '184 patents.
7 So you understand that this deposition is related
8 to two IPR proceedings involving Patent
9 Number 10,368,179, which we will refer to as the
10 '179.
11 Is that right?
12 A Let me confirm. 10,368,179, yeah,
13 that's correct, suffix B1.
14 Q That's the 179 patent you were just
15 referring to?
16 A Yes, to the best of my knowledge,
17 that's what that is.
18 Q Okay. And then the second patent
19 relevant to these proceedings is the 10,448,184
20 patent, correct?
21 A Yes. I can confirm that with suffix
22 B1.

1 Q Great. And that's the '184 patent that
2 you were just referring to, right?
3 A Yes.
4 Q And so if I refer to the '179 and '184
5 patents, you'll know what I'm talking about,
6 right?
7 A Yes.
8 Q And so, you told me that if I ask you
9 about the New York telephone book and you happen
10 to have a copy, that you will go find that copy.
11 Can you commit that you will not open
12 any documents or books other than the ones I share
13 with you or that I specifically ask you to open
14 during the deposition today?
15 A Yes, that's reasonable.
16 Q Wonderful, thank you.
17 How many computers or electronic
18 devices do you have with you in the room today?
19 A I have never counted. As you might
20 know, I'm very involved in technology, so there's
21 quite a few computers and electronic devices all
22 about me in my office.

1 Q How many computers or electronic
2 devices are you using today, right now?
3 A One.
4 Q One.
5 A Okay, well, I guess you could count my
6 smart watch, but -- as a computer. I should put
7 it into airplane mode, so I think I will do that,
8 just to make sure it doesn't disturb us.
9 Q That would be great, thank you.
10 A That is technically an electronic
11 device, by today's definition.
12 So it is now in airplane mode. I
13 believe I have silenced my two iPhones, yeah.
14 Q Wonderful.
15 So the only electronic devices that are
16 currently open and in use is the computer that
17 you're using right now?
18 A That is correct.
19 Q Wonderful.
20 How many applications do you have open
21 on your computer?
22 A I have one called Zoom meeting. I have

1 the electronic versions of the declaration and the
2 supplementary declaration, that are also both
3 unmarked and appear to be the exact copies that
4 I -- no, they are the exact copies that I did the
5 printouts on. I just have them up as electronic
6 versions.
7 I also brought up, just in case it was
8 necessary on a web, what do you call this? Web
9 browser. I have opened the Google Patents
10 versions of the four patents that are mentioned in
11 these, just for convenience sake, if we needed to
12 refer to those.
13 Q Dr. Begault --
14 A So there's a total of three
15 applications open on my computer right now.
16 There's Zoom meeting, there's a program called
17 Preview, which has my declaration and my
18 supplementary declaration, unmarked, exactly the
19 same copies I have the hard copy versions of. And
20 I have a web browser with the Google Patents
21 versions, mostly because it's just easier on my
22 eyes, of four prior art patents that are mentioned

1 in my declaration, just for ease of our
2 deposition, if you were to refer to those.
3 Q Which four prior art patents do you
4 have open in Google Patents right now?
5 A I have opened Virtual/Augmented Reality
6 Transition System and Method, and that is
7 U.S. Patent 9,690,374, suffix B2. Inventors
8 Christian Clement, Alexander Faaborg,
9 F-A-A-B-O-R-G.
10 Q Dr. Begault, do you agree that during
11 this proceeding we've been referring to prior art
12 references by the last name of the inventor?
13 Is that something that's in your
14 declaration?
15 A Well, I think that's a reasonable
16 shorthand.
17 Q And you use that shorthand in your
18 declarations?
19 A I believe I do. Let me check. I don't
20 know if I used the number in addition to them. I
21 think the first time they're called out, they
22 might be called out more explicitly. But at some

1 point, yeah, I think we used one of the names of
2 the inventors as a shorthand, like, Clement, for
3 example, we might use the word Clement as a
4 shorthand.
5 Q Okay. The first of the four prior art
6 patents opened on your screen right now is the
7 Clement prior art reference; is that right?
8 A Yes. This corresponds to the shorthand
9 Clement.
10 Q Perfect.
11 Can you let me know what the other
12 three prior art references are?
13 A Yes. So I also have pulled up here, on
14 Google Patents, United States 7,876,903 B2. It is
15 a patent titled Method and Apparatus for Creating
16 a Multidimensional Communication Space for Use in
17 a Binaural Audio System. And the inventor is Paul
18 Sauk, S-A-U-K.
19 Q Thank you.
20 What's the third patent that you have
21 open?
22 A The third patent I have opened up is

1 United States 9,037,468, and its title is Sound
2 Localization for User in Motion, and the inventor
3 is Steven Osman, O-S-M-A-N.
4 Q Thank you.
5 And what is the fourth patent you have
6 open?
7 A It is Apparatus and Method for Sound
8 Processing in a Virtual Reality System. Its
9 patent number is U.S. 8,520,872 B2. The inventors
10 are S-E-O-C-K dash W-O-O, Jang, S-A-N-G dash K-I,
11 Kang, K-A-N-G, and K-E-U-N dash S-U-P Lee.
12 Q So if I refer to that patent as the
13 Jang patent, you'll know what I'm talking about?
14 A Yes, I will.
15 Q Okay. And if I refer to each of these
16 prior art references by the last name of the first
17 inventor, you'll know what I'm talking about?
18 A Yes.
19 Q Thank you.
20 Could you, please, close that web
21 browser, please.
22 A Okay. It's done.

1 Q Wonderful.
2 I'd like to keep your computer, during
3 the course of this deposition, I'd like only open
4 the Zoom platform so that you can speak -- so that
5 we can speak over Zoom, and whatever documents I
6 share.
7 If you want to keep open virtual copies
8 of your declarations, that's fine, but, please,
9 restrict it to your declarations, what other
10 documents -- any other documents that I share.
11 Do you have a document share website
12 open?
13 A No.
14 Q Okay.
15 A What is a document share website?
16 MS. OSMAN: Erin, can we get set up a
17 document share website so that Dr. Begault can
18 download references as we share them?
19 Is there a way for us to do that?
20 PLANET DEPOS TECHNICIAN: There is.
21 I'll get that set up and I'll put the link in the
22 chat.

1 MS. PARTRIDGE: I need that, too, but I
2 assume -- I'll just pull it out of the chat.
3 PLANET DEPOS TECHNICIAN: Yes.
4 Q So, Dr. Begault, during the course of
5 the deposition today, I would like you to only
6 have open that document share website. Please
7 don't open anything else on any web browser.
8 Do you agree?
9 A Is it okay to have my electronic
10 version of my declaration and my supplementary
11 declaration open?
12 Q Yeah. Those, I assume, are not in your
13 web browser; is that right?
14 A Right. Those are just in a PDF reader.
15 Q Perfect. That's fine.
16 Do you have any messaging program open
17 right now?
18 A No, I do not.
19 Q Any email program open?
20 A Maybe on a different window so that I
21 could get set up here. I'll close it.
22 Q Thank you.

1 Do you have any other lines of
2 communication with your attorneys open?
3 A I do not.
4 Q And I see that Erin just kindly
5 inserted into the chat a link to the document
6 share website.
7 A Okay. That will require me to reopen
8 my web browser. Let me go -- how do I see the
9 chat now? View, speaker, download. I'm looking
10 to see how I can see the chat.
11 Okay. Hang on. Show chat. I see.
12 Okay, there. All right.
13 I see a link. So I should click that
14 and download this; is that what I'm supposed to
15 do?
16 Q There's nothing to download right now.
17 Just click the link, please.
18 A Okay. I see something that says, at
19 the top, PD OneDrive Erin Schuppert, and I see
20 something called test.pdf.
21 Q Great.
22 A Are those -- is this what you were

1 referring to earlier as a document share facility
2 or device or software? I'm not sure what you're
3 referring to it -- but anyway --
4 Q Yeah.
5 A -- is this what I'm supposed to have?
6 Q Yeah. Thank you.
7 A No problem.
8 Q Okay. So while we're on record, during
9 the deposition today, I ask that you don't have
10 any other screens in front of you and that you
11 don't open any other applications on either your
12 computer, your phone, or any other device.
13 Do you agree?
14 A I do agree.
15 Q Great.
16 And if some point during the deposition
17 today your answers to any of these questions
18 change, will you let me know?
19 A Yes.
20 Q Thank you.
21 So, for instance, if someone comes into
22 the room, you'll let me know?

1 A Oh, I see what you're asking. I see.
2 Yes, nobody will come into the room.
3 Q Okay. Great.
4 Dr. Begault, what did you do to prepare
5 for your deposition today?
6 A Well, I printed out a hard copy of my
7 declaration and my supplemental declaration.
8 I reviewed the patents that we
9 discussed earlier, that you had me close the
10 Google Patents versions of. Let's see.
11 I had a discussion with the attorneys,
12 I think it was mostly over --
13 MS. PARTRIDGE: I'm sorry, I'm going to
14 instruct you that you can talk to her about who
15 you met with and for how long, but not our
16 conversations, specifically. And I'll instruct
17 you not to reveal that for attorney-client
18 privilege purposes.
19 A Thank you, and I apologize.
20 So, there was a discussion. I'm trying
21 to recall what else.
22 Oh, yes, I reviewed a declaration by

1 Agnieszka Roginska.
2 Q Did you do anything else?
3 A I'm trying to recall. I looked at the
4 deposition notices. I'm not recalling anything
5 other than that. It's, basically, review of the
6 patents that are discussed in my declaration, or
7 declarations, plural, and then the Roginska --
8 Dr. Roginska's declaration. I may have reviewed
9 her deposition transcript as well, but I think
10 that encompasses everything.
11 Q Okay. You said you met with attorneys.
12 Which attorneys did you meet with?
13 A Well, this was a telephonic
14 conversation, and I believe those are the two
15 attorneys that are present.
16 Q Was it one telephone conversation?
17 A I'm trying to recall. I think it was
18 one. There might have been a second one about
19 meeting times or deposition times, or something of
20 the sort. My schedule. I wasn't sure about my
21 schedule at one point.
22 Q Was it a Zoom conversation or a

1 telephone conversation?
2 A Telephonic, I think.
3 Q Telephonic?
4 A If it was Zoom, I probably had my
5 camera off because I was suffering from a cold.
6 Yeah, I think it was a Zoom conversation, so it
7 was, essentially, like, a telephonic conversation
8 because there was no camera.
9 Q And how long was that conversation,
10 would you say?
11 A I don't really recall.
12 Q Was it eight hours?
13 A Definitely less than eight hours.
14 Q Was it less than four hours?
15 A Definitely less than four hours.
16 Q Was it less than two hours?
17 A Definitely less than two hours.
18 Q Was it less than one hour?
19 A I don't recall.
20 Q Okay. And was that -- when did that
21 conversation take place? Was it yesterday?
22 A I don't recall that. I think it might

1 have been a couple days ago. I don't recall the
2 exact date. It could have been last week. No, I
3 think it was a couple days ago.
4 Q Okay. So other than that one
5 less-than-two-hour phone conversation with your
6 attorneys, did you meet with your attorneys at all
7 to prepare for this deposition?
8 A Well, again, I'm thinking about
9 telephonic conversations I've had. So, okay,
10 there was one other individual that I did have a
11 conversation with, that's correct.
12 Q Who is that other individual?
13 A That was Attorney Jayne. I'm not
14 recalling Jayne's last name.
15 THE WITNESS: Can you help me?
16 MS. PARTRIDGE: I can. Piana.
17 THE WITNESS: Thank you. I apologize;
18 I forgot her last name.
19 MS. PARTRIDGE: I'm going to tell her.
20 But, go ahead.
21 Q When did you meet with Jayne Piana?
22 A Again, it was a telephonic conversation

1 with -- well, it was a voice conversation via
2 Zoom. I believe that was a week ago. So you
3 recall, I was recalling two conversations and, so,
4 I think I had a conversation with her.
5 Q Okay. So you had two conversations
6 with attorneys, one was with Jayne Piana.
7 Was anybody else present at that
8 meeting?
9 A No, I don't think so.
10 Q And how long would you say that
11 conversation was?
12 A I don't recall.
13 Q Was it longer than eight hours?
14 A Definitely not.
15 Q Was it longer than four hours?
16 A Definitely not.
17 Q Was it longer than one hour?
18 A I don't recall.
19 Q Was it longer than two hours?
20 A I don't think so.
21 Q Okay. So somewhere between --
22 somewhere less than two hours, you suspect?

1 A Yeah, that sounds good.
2 Q And you said, you had one meeting with
3 Jayne Piana and then you had another meeting with
4 the attorneys present today.
5 Was anybody else present at that second
6 meeting with attorneys?
7 A I'm trying to recall.
8 I believe, perhaps, an attorney
9 Homayoon Raf -- I can't say his last name. I want
10 to pronounce it Spanish. H-A-O-M-A-Y-O-O-N [sic]
11 Rafatijo, R-A-F-A-T-I-J-O.
12 THE WITNESS: Jayme, did I spell his
13 last name correctly?
14 MS. PARTRIDGE: I don't know. But we
15 can get the spelling for you.
16 A Okay. Okay. Yes.
17 Q Okay. And other than those two
18 meetings, did you meet with any other attorneys,
19 at any other time, to prepare for this deposition?
20 A No.
21 Q Okay. You named a few documents that
22 you reviewed. You said you reviewed the four

1 patents, prior art patents that you already
2 identified for me. And Dr. Roginska's declaration
3 and Dr. Roginska's deposition transcript, and the
4 two, '179 and '184, patents in this litigation --
5 in this proceeding.
6 Did you review any other documents to
7 prepare for this deposition?
8 A I think I gave you an exhaustive list
9 earlier of what I reviewed.
10 Do you want me to restate it?
11 Q I don't. I'm asking if there are any
12 other additional documents that you reviewed to
13 prepare for this deposition?
14 A Not that I'm recalling. I think I
15 answered accurately earlier.
16 Q Okay. Did you review any materials
17 other than what's cited in your declarations and
18 other than what we've discussed already?
19 A For what purpose?
20 Q To prepare for this deposition today.
21 So let me ask you the question again.
22 Did you review any other documents than

1 what's cited in your declaration, and then what
2 we've discussed already today, to prepare for this
3 deposition today?
4 A I'm not recalling any other documents
5 that I reviewed to prepare for this deposition --
6 Q Okay.
7 A -- today.
8 Q Thanks.
9 So, other than counsel, did you discuss
10 the substance of your declaration with anyone
11 else?
12 A No.
13 Q Have you spoken to any other experts
14 about the contents of your declaration?
15 A No.
16 Q How much time would you say you've put
17 into this case so far? And when I say "this
18 case," I mean the IPR proceedings and the related
19 District Court litigation.
20 A How much time? First off, I don't
21 know -- I've been involved in several declarations
22 related to various matters that seem to come under

1 the general subject area.
2 Then there seems to be different parts
3 of those. And, honestly, I can't tell you how
4 many hours I put into any subpart of any of those.
5 Q How many hours would you say you've put
6 into these IPR proceedings, these two specific
7 declarations and the preparation for your
8 deposition today?
9 A I believe to prepare for the deposition
10 today, it's probably more than two and less than
11 12 hours. And as far as anything else before
12 that, I really have no recollection.
13 Q So, you have no recollection as to how
14 many hours you've spent preparing the declarations
15 that you submitted in this proceeding -- in these
16 two proceedings?
17 A I could tell you it's probably less
18 than 150 and more than 40.
19 Q Okay. Is it less than a hundred hours?
20 A I think I just answered you. I can
21 estimate that it's somewhere between more than 40
22 and less than 150. Everything else would be total

1 speculation. And even those limits I'm giving
2 you, I'm just guessing.
3 Q Okay. Are you being compensated for
4 your time?
5 A Do you mean am I working for free?
6 Q I'm asking you, are you being
7 compensated for your time working on this -- in
8 this proceeding?
9 A Well, yes.
10 Q Okay. And what is your hourly rate?
11 A My hourly rate, for this particular
12 matter, is $400 an hour for consultation, and, I
13 believe it's 580 for deposition, trial testimony,
14 per hour.
15 Q Okay. Dr. Begault, who wrote your
16 declarations?
17 A I wrote my declarations.
18 Q Okay. Did you work with counsel in
19 writing your declarations?
20 A Counsel provides a sort of general
21 outline. Counsel provides editing. In other
22 words, I'm not capable of producing the formatting

1 that these documents have. There might have been
2 a minor edit or word change or, perhaps, a legal
3 phrase that I might have used a more layperson way
4 of saying something. I don't recall exactly.
5 But, otherwise, I am the author of these two
6 declarations.
7 Q And when you say counsel provides a
8 general outline, what does that outline look like?
9 MS. PARTRIDGE: And I want to caution
10 you not to provide any attorney-client privileged
11 information. You can tell her -- basically, at a
12 very high level, you can answer her question.
13 A So, could you answer -- I'm sorry,
14 could you answer. Could you ask your question
15 again.
16 Q Dr. Begault, you told me the attorneys
17 provided you with an outline. What does that
18 outline look like?
19 MS. PARTRIDGE: Same objection.
20 A Well, you can see the outline as shown
21 in the table of contents of the supplemental
22 declaration on page ii, I think it's called Roman,

1 you know, small double I. So there's a kind of
2 outline there, you know, reading very -- you know,
3 various topic areas.
4 And when I say they provided this, it
5 was interactive, and there are subsections to this
6 that I produced because I'm interested in making
7 my opinion coherent and to flow correctly.
8 So, that's what it is on the
9 supplemental deck --
10 Q Could you --
11 A We're talking over each other.
12 Q Dr. Begault, can I just jump in for a
13 second. I don't want you to waste your time.
14 Let's confine our discussion today to just your
15 supplemental declaration; that's what we're going
16 to focus on.
17 So it sounds like what you're saying is
18 they provided an outline that looks a lot like the
19 table of contents, and you typed up all the words
20 in the declaration; is that correct?
21 A Well, the way you're describing, that's
22 a little linear. I would say it was more of an

1 iterative process. So, for instance, we probably
2 started off with something like there needs to be
3 an introduction, a qualification.
4 MS. PARTRIDGE: Dr. Begault, please, be
5 careful not to disclose any attorney-client
6 privileged information, and keep your comments at
7 a very high level, please.
8 I do not want you to discuss any
9 attorney-client privileged conversations or
10 communications.
11 THE WITNESS: Very good.
12 A So, as I said, as the author of this,
13 and when I said an outline was given, it was on a
14 very high level, just having to do with what you
15 can glean from the table of contents there.
16 And, basically, this is a way of
17 organizing thoughts and opinions that, ultimately,
18 are my decision.
19 Q Okay. So it sounds like you're saying
20 the attorneys provided you with an outline that
21 looks like the table of contents, and then you
22 went ahead and provided the first draft, the

1 attorneys provided input, but, ultimately, every
2 word in this declaration is yours.
3 Is that fair?
4 A No.
5 MS. PARTRIDGE: Object to form.
6 Q Not every word in this declaration is
7 yours?
8 A I agree with the second part of your
9 statement there, your characterization. The first
10 part of your characterization you that -- you
11 described this very linear process, they handed me
12 an outline and then I typed in all the words.
13 I developed that outline being, you
14 know, interactively, if you will. And, again,
15 sometimes this doesn't have anything more to do
16 than where, in the document, I'm going to express
17 one of my opinions or in what order.
18 So, for instance, in the supplemental,
19 it occurred to me that I wanted to describe, with
20 some great detail, the technical means by which
21 certain things are implemented. So, that was an
22 outline that only I could provide, you see?

1 So, that's why I said the first part of
2 your characterization was incorrect, because
3 that's a little too linear.
4 I certainly have formed this, but every
5 word in this outline -- I'm sorry, not in the
6 outline. Every word in this declaration is,
7 ultimately, mine because I read it thoroughly and
8 signed off on it.
9 Q Understood.
10 So you said you wanted to describe,
11 with great detail, the technical means by which
12 certain things are implemented.
13 Which certain things did you think it
14 was very important to describe in great detail?
15 MS. PARTRIDGE: And, again, I caution
16 you not to reveal any attorney-client privileged
17 information, Dr. Begault.
18 MS. OSMAN: Ms. Partridge I'm not
19 asking him any attorney-client privileged --
20 MS. PARTRIDGE: I understand. But I
21 have to keep the objection, Ms. Osman.
22 MS. OSMAN: Understood.

1 Q Dr. Begault, you can answer the
2 question.
3 Do you need me to repeat it?
4 A Yes.
5 Q You said you wanted to describe, with
6 great detail, the technical means by which certain
7 things are implemented.
8 Which certain things did you think it
9 was very important to describe in great detail?
10 MS. PARTRIDGE: Same objection.
11 A I wanted to describe, in great detail,
12 those things that are in my supplemental
13 declaration, oh, I would say, beginning around
14 page 37, paragraph 65, subsection B, Methods of
15 Creating Alerts in the Claims.
16 So this is the section where I wanted
17 to give some detail, I might have used the word
18 "great detail," but some specific details about
19 the way that a POSA would understand. And when I
20 say "POSA," I'm using that as my shorthand for a
21 person of skill in the art. Would understand the
22 meaning of how these various claims or things in

1 the patent would be implemented.
2 Q Okay. So that starts at, you said,
3 page 37, paragraph 65, right?
4 A And this is not an exclusive list; this
5 is just one section where I wanted to focus in
6 specifically on -- well, let's put it this way: I
7 want to offer what a POSA would understand, in
8 order to be able to better explain it to a
9 layperson what some of these technological means
10 involve.
11 Q Okay. And this is -- these are the
12 methods of creating alerts in the claims; is that
13 right?
14 MS. PARTRIDGE: Objection. Form.
15 A This is page 37, Section B, amongst
16 other places, I think there's a kind of -- other
17 places in the declaration, I think this is a -- I
18 guess I would call it a detail of some of those
19 methods.
20 Q Okay. And you thought it was very
21 important to explain how a person of ordinary
22 skill would have understood the methods of

1 creating alerts in the claim?
2 MS. PARTRIDGE: Objection. Form.
3 Mischaracterizes testimony.
4 A I think my answer was I wanted to
5 provide a layperson with an understanding of what
6 a POSA would understand.
7 Q Why was it important to provide that
8 understanding?
9 A I believe that these declarations are,
10 ultimately, intended for nonexperts.
11 Q Why was it especially important to
12 provide that understanding with regard to
13 Section B, which is entitled "Methods of Creating
14 Alerts in the Claims"?
15 MS. PARTRIDGE: Objection. Asked and
16 answered.
17 A I'm sorry. Why was it -- with emphasis
18 on the word "especially"? Or, I'm sorry, I mean
19 I -- can you repeat your question or just ask it
20 again? I think I can answer it pretty easily.
21 Q I'm happy to ask it again.
22 Why was it important to provide an

1 understanding with regard to what methods of
2 alerting -- creating alerts in the claims meant?
3 MS. PARTRIDGE: Objection. Asked and
4 answered.
5 A I believe a nonexpert might not have
6 the understanding that an expert would have.
7 So, in a declaration such as this, I
8 think it's a duty, if you will, to bring forth an
9 understanding of technical concepts.
10 Q Dr. Begault, what percent of your
11 income is generated by your expert consulting
12 work?
13 A It's been a while since I've looked. I
14 think -- so, are you referring to my income from
15 what?
16 Q From any consulting work that you do.
17 A Oh, from any consulting work that I do?
18 Well, a hundred percent of my income from
19 consulting for just one firm.
20 Q That's not my --
21 A I don't do any other consulting on any
22 other work, other than through Charles Salter

1 Associates.
2 Q Let me re-ask my question.
3 What percent of your income is
4 generated by your expert consulting work?
5 A Percentage of income? You mean any
6 money I make from anything?
7 Q Yes.
8 A I haven't analyzed that, really. I
9 mean, I think I make a certain income from
10 investments. I have another job. I have my
11 consulting work.
12 So, I'll just tell you, roughly, if --
13 well, so I'm just asking for a little more
14 specificity, I guess, in your question.
15 Q I can re-ask my question. I think it's
16 fairly clear.
17 I'm asking what percent or what
18 proportion of your income do you earn from doing
19 consulting work?
20 MS. PARTRIDGE: Objection. Form.
21 A It's been a while since I've looked, so
22 I'll guess 30 to 40 percent, something of that

1 sort.
2 Q Okay. And is that consistent year over
3 year?
4 A No. I think it varies. Depends on the
5 year. Depends on what I'm doing.
6 Q Is it this year you'd guess 30 to
7 40 percent?
8 A Yeah, that sounds like a good guess.
9 Q How about last year? What percent was
10 it last year?
11 A I guess I would guess the same thing.
12 I guess I would guess. I would guess the same
13 thing. Sorry.
14 Q And the year before?
15 A Same answer.
16 Q So it's a pretty consistent stream of
17 income for you?
18 MS. PARTRIDGE: Objection.
19 THE WITNESS: I'm sorry, I interrupted
20 you.
21 MS. PARTRIDGE: Objection. Form.
22 THE WITNESS: Okay.

1 A I think there have been years where
2 I've been busier in my consulting work and less
3 busy. But I'm on a salary for my consulting work.
4 Q Okay.
5 A So it's more -- so it's not always
6 transparent.
7 Q What do you mean when you say "It's not
8 always transparent"?
9 A I meant how busy I am and percentage of
10 income.
11 Q Okay. About what percent of your
12 working time is spent on your expert consulting
13 work?
14 A Well, that can vary week to week.
15 Sometimes it's as little as zero. Sometimes it
16 might be 60 hours in a week, on very rare
17 occasions.
18 Q If you were to tell me what percent of
19 your working time, on a yearly basis, is spent on
20 expert consulting work, what would you estimate
21 that percent would be?
22 A I think I'd have to come back to that.

1 Year to year it changes, estimates. You know, it
2 really -- boy, it kind of depends on how busy a
3 year it's been. So it's hard to answer your
4 question.
5 But, it never -- I don't know. On
6 average, I think it's something like, you know,
7 maybe 20 hours a month. It depends, I mean,
8 really, on particularly what's my caseload or if
9 anybody's -- if I have any caseload at that
10 particular moment.
11 Q So this year, what would you say, what
12 percent of your working time have you spent on
13 expert consulting work?
14 A This year? Oh, boy. I'd be guessing,
15 again, maybe 30 to 40 percent.
16 Q And a similar percent last year?
17 A Yeah, that sounds about right.
18 Q Okay. Dr. Begault, do you consider
19 yourself an expert in the field of virtual
20 reality?
21 A I consider myself an expert in
22 acoustics and virtual reality, with regards, in

1 particular, to three-dimensional audio. I have a
2 better-than-layperson's expertise in virtual
3 reality.
4 Q But you are -- you would consider
5 yourself an expert in the virtual audio or the 3-D
6 audio domain; is that right?
7 MS. PARTRIDGE: Objection. Form.
8 A Well, I definitely consider myself an
9 expert in the field of 3-D audio and virtual
10 reality as regard sound. And then, if we use the
11 definition of an expert as somebody who has
12 greater knowledge than a layperson in a particular
13 field, then I suppose that qualifies me as an
14 expert in virtual reality. So, you know, again,
15 it has to do with when you say the word "expert,"
16 I'm trying to think of the particular context, et
17 cetera.
18 But for today's purposes, I'm certainly
19 an expert in the topics that we're covering.
20 Q Okay. So you are an expert in the
21 field of virtual reality; is that right?
22 MS. PARTRIDGE: Objection. Form.

1 A By the definition that I have greater
2 knowledge than a layperson. As an example, I also
3 have expertise in the field of human factors. I
4 don't generally write expert reports on human
5 factors --
6 Q Okay.
7 A -- for legal matters. But I usually
8 write expert reports having to do with audio and
9 audio technology, video.
10 Q Would you be comfortable writing an
11 expert report in the field of virtual reality?
12 MS. PARTRIDGE: Objection. Form.
13 A I would say that this report is an
14 expert report having to do with virtual reality.
15 Q Okay. Are you an expert in the field
16 of virtual reality games?
17 MS. PARTRIDGE: Objection. Form.
18 A Only to the degree that the acoustics
19 and acoustic rendering, signal processing, and
20 spatial representations, and the audio
21 technologies that occur, the processing methods
22 and some of the considerations that overlap with

1 audio.
2 Q Have you heard of the Oculus DK1.
3 A Not specifically the Oculus DK1. I
4 believe you are referring to a head-mounted
5 display called the Oculus that, I believe, is
6 marketed by Meta.
7 Q What is a head-mounted display?
8 A Well, that depends on what era we're
9 talking about. There's a very general definition
10 of what that might be. There have been
11 head-mounted displays, for many years, explored by
12 the military, et cetera.
13 Q What is a head-mounted display? What
14 would a person of ordinary skill in the art, at
15 the time of around 2014, 2015, have understood a
16 head-mounted display to mean?
17 A Well, they would possibly understand it
18 to mean everything having to do with the whole
19 history of head-mounted displays. There's all
20 kinds of variations and understandings and
21 capabilities, that I think are pretty
22 well-described in books on the history of virtual

1 reality, et cetera.
2 Q Are there certain components that tend
3 to be incorporated in a head-mounted display?
4 MS. PARTRIDGE: Objection. Form.
5 A Other than a head and a display. The
6 form of the display can be, typically,
7 something -- I think, again, I'm not recalling
8 exactly. I think some of the earlier head-mounted
9 displays restricted, maybe, to a monocular visual
10 display.
11 Q So they only had visual displays and
12 monocular visual displays at that?
13 MS. PARTRIDGE: Objection to form.
14 A Again, I'm really digging into my
15 memory banks here, so I'm going to be unspecific.
16 I'm just going to give you an example that, you
17 know, I think there's a historical version of an
18 Air Force pilot or something with a monocular kind
19 of glass that might show something, like, a runway
20 or a target, or something like that. So it was
21 considered head-mounted, let's say, in the same
22 way that my glasses are head mounted.

1 Q So it sounds like -- what I asked you
2 is, what would a person of ordinary skill in the
3 art have understood a head-mounted display to be
4 as of 2014 or 2015?
5 And your answer seems to be it would
6 have included something that goes on your head and
7 would have included a display; is that right?
8 MS. PARTRIDGE: Objection.
9 Mischaracterizes testimony.
10 A What I'm saying is that in the time
11 frame that you provided, that it could mean any
12 number of variants of things that had a -- some
13 sort of coupling to a head and that had some sort
14 of form of visual, auditory, possibly tactile, I
15 don't even know if it was anything olfactory.
16 But, you know, there's a whole very -- as I just
17 testified, there's a whole variation of different
18 things that, collectively, I think, referred to or
19 were referred to, at the time frame you're talking
20 about, as head-mounted displays.
21 Q Okay. So when I asked you about the
22 Oculus DK1, you said you don't -- you haven't

1 heard, specifically, of the Oculus DK1; is that
2 right?
3 A I was referring to a specific model,
4 DK1.
5 Q I'm asking about a specific model.
6 Do you know about the Oculus DK1?
7 MS. PARTRIDGE: Objection. Form.
8 A I have seen an Oculus headset
9 somewhere, I don't recall exactly where. I might
10 have even tried one on at a convention, or
11 something of that sort. I don't recall if it was
12 a DK1 or DK4 or, you know, whatever model.
13 Q Okay. So you couldn't tell me how an
14 Oculus DK1 works?
15 A Not with any great detail.
16 Q And is your answer the same with regard
17 to the Oculus DK2?
18 A Yeah, exactly. In other words, I know
19 they have a visual display, I know they have an
20 auditory display. By, I would call it, indirect
21 knowledge and not actually holding one and taking
22 one apart, which I may do some day, who knows.

1 But at this point, I've never taken one apart to
2 know how it might work interactively with other
3 software or hardware.
4 Q So, you know that the Oculus DK2 has a
5 visual display and an auditory display; is that
6 right?
7 A No, I'm going to be a little more
8 specific here. I'm going to say that every
9 instance that I've been aware of, which have
10 primarily been through media, but also having
11 tried on an Oculus headset once or twice in my
12 life, that there's a visual display involved and I
13 believe it's a stereo-visual display, and I
14 believe that it has stereo, or some sort of sound
15 reproduction, I think, possibly, 3-D audio.
16 And to my knowledge of that, I don't
17 recall if it was a DK1 or DK2. So I can't tell
18 you specifically if something is different from
19 what my personal experience was versus the two
20 specific models you mentioned to me.
21 Q But your recollection is that every
22 Oculus model, including the earliest DK1 and DK2

1 models, had a visual display and 3-D audio; is
2 that right?
3 MS. PARTRIDGE: Objection. Form.
4 Mischaracterizes testimony.
5 A No, that's right not.
6 Q No? I'm just trying to get at, do you
7 know the answer to this question?
8 MS. PARTRIDGE: Objection. Form.
9 A Well, let's re-read your question
10 because I'm trying to answer it accurately.
11 Q I know. I appreciate that. I'm just
12 trying to understand.
13 Do you know what components either the
14 Oculus DK1 or DK2 had?
15 MS. PARTRIDGE: Objection. Form.
16 A Again, I have experienced something
17 that I know was an Oculus headset and it contained
18 stereophonic visual display. I believe it had
19 interactive capabilities. I believe it had 3-D
20 audio. And I have no clue as to its model number,
21 if I was experiencing a prototype, et cetera, no
22 idea.

1 Q When would you say you experienced this
2 Oculus prototype or model, or whatever it was?
3 MS. PARTRIDGE: Objection to form.
4 A I believe it was over two years ago.
5 For sure it was over two years ago.
6 Q Was it over five years ago?
7 A It was before COVID because it was at a
8 conference.
9 So, I believe the last time I
10 experienced one might have been, oh, boy, I don't
11 remember. It was pre-2000.
12 Q So, this was before 2000?
13 A Yes. Yes.
14 Q Okay. And you said it had -- this
15 Oculus device had interactive capabilities.
16 What does that mean?
17 MS. PARTRIDGE: Objection. Form.
18 A The visual imagery would change as a
19 function of my head movement left and right.
20 Q Okay.
21 MS. PARTRIDGE: Ms. Osman, we've been
22 on about an hour. Is now a good time to take a

1 break?
2 MS. OSMAN: I'd like to keep going. We
3 can take a break in a few minutes, if that's okay.
4 MS. PARTRIDGE: Dr. Begault, are you
5 okay to go on for a few minutes? If not, we can
6 take a break right now since there's no question
7 pending.
8 THE WITNESS: Well, I can go on for
9 another few questions, I suppose. That's fine by
10 me. Why don't we stop at 9:45, which is my time,
11 and probably 12:45 your time.
12 Is that acceptable for everybody?
13 MS. OSMAN: Fine with me, Dr. Begault.
14 THE WITNESS: Is that okay with you,
15 Jayme?
16 MS. PARTRIDGE: Sure.
17 THE WITNESS: Okay.
18 Q So you experienced an Oculus device
19 that had interactive capabilities, and you said
20 that means the visual images changed as you moved
21 your head.
22 Did the sounds also change as you moved

1 your head?
2 MS. PARTRIDGE: Objection. Form.
3 A I believe they did.
4 Q Do you recall, were you able to
5 interact with visual images in that -- using that
6 Oculus device?
7 MS. PARTRIDGE: Objection. Form.
8 A I -- and I don't play a lot -- I don't
9 play games and, so, somebody might have been
10 manipulating controls for me. So, I think there
11 was a simulation of interactivity, at least. All
12 I recall was that -- that maybe I was looking at
13 different locations in a room. And that's about
14 all I remember.
15 Q What conference was this? You said
16 this was at a conference.
17 Do you remember what conference it was?
18 A No. It was -- I don't remember which
19 conference it was exactly. I can tell you it was
20 an Audio Engineering Society conference and I
21 think its emphasis was on virtual reality.
22 Q Do you remember where the conference

1 was?
2 A Los Angeles.
3 Q Is this a conference that you attend
4 regularly?
5 A This was -- well, I've been attending
6 Audio Engineering Society conferences regularly
7 since the '90s, but this was a special conference,
8 so it hasn't been repeated, to my knowledge.
9 Perhaps it has been.
10 Q Why do you say it was a "special
11 conference"?
12 A Well, the Audio Engineering Society has
13 annual conventions which include -- excuse me -- a
14 conference component -- excuse me. And then there
15 are targeted or, you know, conferences on specific
16 topics. And so, this was in the latter category.
17 It was a conference on a specific topic.
18 Q So, it was an Audio Engineering Society
19 conference with a VR emphasis in LA before the
20 2000s?
21 MS. PARTRIDGE: Objection. Form.
22 Q Do you remember this Oculus DK1 device,

1 did it track -- track you while you had the
2 headset on?
3 MS. PARTRIDGE: Objection. Form.
4 Mischaracterizes testimony.
5 A You know, I'm going to correct my
6 answer on something. So this conference was long
7 enough ago that I presume I was using an Oculus
8 device. But, you know, I actually don't recall
9 exactly if it was an Oculus device.
10 I say that because I believe it was
11 maybe around that time that some phototypes were
12 introduced, I don't know. It could very well have
13 been, because the conference was long enough ago,
14 that, you know, I'm zeroed in on the sound,
15 basically, is what I'm always zeroed in on. So it
16 might not have been an Oculus device.
17 But your questions keep coming back to
18 DK1 and DK2. And, again, I'm going to
19 reemphasize, I have no idea what model it was.
20 And I'm going to correct some of my previous
21 answers and say, you know, I'm not even certain if
22 it was an Oculus device that I was wearing. I

1 kind of made a presumption about that.
2 Q Okay. So it's not necessarily even an
3 Oculus device, I understand.
4 Do you know, did this -- did this
5 device, whatever it was, track you while you were
6 wearing the headset?
7 MS. PARTRIDGE: Objection. Form.
8 A Whatever the device was that I was
9 wearing, I know that if I turned my head left and
10 right, or right, I should say. You can't do them
11 both at once. If I turned my head to the left,
12 there was the virtual imagery that one would
13 expect, right, that the imagery stayed in its
14 virtual location while I moved my head to the
15 left. And I know if I moved my head to the right,
16 then the virtual imagery stayed where it was. I
17 think because it was a conference, you know,
18 you're sitting in a chair, and then somebody's
19 handing you a -- some sort of gaming device, like
20 a joystick or something of that sort. And so,
21 that's kind of what I recall.
22 And, again, forgive me for saying with

1 any certainty that it was an Oculus device; I made
2 a presumption there.
3 Q I appreciate the clarification.
4 MS. PARTRIDGE: And, you know, we're
5 going to take a break because we said we were
6 going to at 11:45. So we're taking a break now.
7 There's no question pending.
8 MS. OSMAN: That's fine.
9 THE WITNESS: And what time should we
10 return?
11 MS. PARTRIDGE: 15 minutes.
12 PLANET DEPOS TECHNICIAN: We're going
13 off the record at 12:46.
14 THE WITNESS: Thank you.
15 (Recess taken.)
16 PLANET DEPOS TECHNICIAN: Back on the
17 record, 13:01.
18 MS. OSMAN: Thank you.
19 BY MS. OSMAN:
20 Q Dr. Begault, did you speak with your
21 attorney during the break?
22 MS. PARTRIDGE: Dr. Begault, I'm going

1 to allow you to answer that question yes or no and
2 nothing else.
3 MS. OSMAN: Ms. Partridge, if you
4 talked to him about the substance of this
5 deposition, that's not privileged.
6 BY MS. OSMAN:
7 Q Dr. Begault, did you talk to your
8 attorney during this break?
9 MS. PARTRIDGE: Dr. Begault, I object
10 on privilege and I instruct you not to answer
11 other than yes or no.
12 MS. OSMAN: Okay. Then we can go on
13 break and we can have a talk with the board to
14 talk about this.
15 MS. PARTRIDGE: Okay.
16 MS. OSMAN: Let's go on break. We can
17 talk about --
18 Let's go off the record.
19 PLANET DEPOS TECHNICIAN: Let's go off
20 the record. 13:02.
21 (Recess taken.)
22 PLANET DEPOS TECHNICIAN: Back on the

1 record. 13:02.
2 BY MS. OSMAN:
3 Q Dr. Begault, did you speak with your
4 attorney during the break?
5 MS. PARTRIDGE: Objection. Privileged.
6 I'll allow you to answer the question
7 yes or no.
8 A Yes.
9 Q Did you speak with your attorney about
10 the substance of this deposition during the break?
11 MS. PARTRIDGE: Dr. Begault, I am going
12 to instruct -- I will instruct you not to reveal
13 any attorney-client privileged information based
14 on any conversation.
15 Q Dr. Begault, did you speak with your
16 attorney about the substance of this deposition
17 during the break?
18 MS. PARTRIDGE: I will allow you to
19 answer that question of whether or not you spoke
20 to your attorney as yes or no.
21 A I answered, previously, that I spoke to
22 the attorney.

1 Q Did you speak to your attorney about
2 the substance of this deposition?
3 MS. PARTRIDGE: Objection.
4 Attorney-client privilege.
5 A If I'm understanding what you guys are
6 talking about, then I can answer that I spoke to
7 the attorney, and that's the limit of what I can
8 say.
9 Q Okay. My question for you is
10 different. Did you speak to your attorney about
11 the substance of this deposition during the break?
12 MS. PARTRIDGE: And I am objecting as
13 attorney-client privilege and ask you not to
14 reveal any attorney-client privileged information.
15 Q Dr. Begault, are you planning to follow
16 that objection [sic]?
17 A Well, I'm only going to -- if I
18 understand what's going on right now, because I
19 don't, other than to know that I can answer yes,
20 that I had a conversation with the attorneys, my
21 understanding is everything else is privileged.
22 MS. OSMAN: Okay. Let's go on break.

1 Let's go off the record. I think we need to call
2 the board. Let's go off the record.
3 PLANET DEPOS TECHNICIAN: Off the
4 record, 13:04.
5 (Recess taken.)
6 PLANET DEPOS TECHNICIAN: Back on the
7 record, 13:20.
8 BY MS. OSMAN:
9 Q Dr. Begault, is it correct that sitting
10 here today, you can't tell me how the Oculus DK1
11 worked?
12 A I'm here. Just, for the record.
13 Q Dr. Begault, did you hear my question?
14 A Test 2, 3, okay.
15 Q Could you hear my question,
16 Dr. Begault?
17 A Oh, wait. I'm sorry. I had my audio
18 off. Now I can hear you.
19 All right. I'm with you.
20 Q Dr. Begault, is it right that sitting
21 here today, you can't tell me how the Oculus DK1
22 worked?

1 A That's correct. I can't tell you how
2 the Oculus DK1 worked.
3 Q Is it also correct that you can't tell
4 me how the Oculus DK2 worked?
5 A That's correct. I have no idea what
6 exactly an Oculus DK2 is.
7 Q How about HTC Vive beta? Do you know
8 what that is?
9 A No idea.
10 Q Sitting here today, you cannot tell me
11 how the HTC Vive beta worked either?
12 A That's correct.
13 Q How about HTC Vive pre? Have you heard
14 that before?
15 A No, I have not.
16 Q Do you know what it is?
17 A I don't.
18 Q And you can't tell me how it worked?
19 A That's correct. What was it, I'm
20 sorry, can you repeat that? An HTC...
21 Q Vive pre.
22 A Can you spell that last part?

1 Q P-R-E.
2 A Vibe, V-I-B-E, pre?
3 Q V-I-V-E.
4 A I'm not sure exactly what that is,
5 however you spell it. I'm still not sure how you
6 spell it. But, no, I'm not familiar with that.
7 Q Dr. Begault, do you attend VR
8 conferences?
9 A No. Not really. I attend the
10 conferences put on by the Audio Engineering
11 Society.
12 I've gone to meetings generally
13 concerned with virtual reality, I think mostly in
14 the 1990s, back when it was nascent, just
15 developing, but that's a very loose term. It gets
16 used for all types of things, so...
17 Q Have you heard of the Game Developers
18 Conference?
19 A I've heard of the Game Developers
20 Conference.
21 Q Have you attended any Game Developers
22 Conferences?

1 A Never.
2 Q Never.
3 How about Oculus Connect? Have you
4 heard of that conference?
5 A No, I have not.
6 Q So I assume you've never attended that
7 conference either?
8 A That's correct.
9 Q Have you heard of the Consumer
10 Electronics Show?
11 A Yes, I have.
12 Q Have you attended that conference?
13 A No, I haven't.
14 Q How about the Electronic Entertainment
15 Expo?
16 A I have not attended a conference of the
17 electronic something expo.
18 Q Entertainment Expo, thank you.
19 A I have not attended that conference.
20 Q Have you heard of Steam Dev Days?
21 A No, I have not heard of Steam Dev Days.
22 Q And you have not attended that

1 conference either?
2 A No, that's correct.
3 Q Unite Boston, is that a conference that
4 you've heard of or attended?
5 A No.
6 Q And Maker Faire, is that a conference
7 that you've heard of or attended?
8 A I've heard of it, but never attended
9 it, and I'm not sure exactly what it is.
10 Q By 2014, or 2015, creating 3-D audio
11 environments was well-known; is that right?
12 MS. PARTRIDGE: Objection. Form.
13 A There were many papers about how to
14 create 3-D environments by 2015, including my own
15 book.
16 Q So you agree with me that by 2015,
17 creating 3-D audio environments was well-known?
18 MS. PARTRIDGE: Objection. Form.
19 A Well-known, maybe, to people who had an
20 interest in that area.
21 Q Okay. What's the difference between
22 3-D audio and binaural sound?

1 A I think that, generally speaking, it
2 depends on how it's being used, the specific
3 context. So, I think we need to define it so that
4 there's no ambiguity.
5 Q I'm asking you to define it. What is
6 3-D audio and what is binaural audio?
7 MS. PARTRIDGE: Objection. Form.
8 A Well, the way that I use those terms is
9 interchangeable, pretty much. Binaural sound can
10 also include dummy head recordings, which do not
11 include some of the 3-D sound technologies that
12 allow more flexible manipulation of the captured
13 sound.
14 Q For our purposes today, is it fair to
15 assume that you're using 3-D audio and binaural
16 sound interchangeably?
17 MS. PARTRIDGE: Objection. Form.
18 A I believe that's how I pose it in my
19 declaration, but I'd like to check that. Is that
20 okay to check that, just to confirm that we're on
21 the same page about that, in terms of the context
22 that we're speaking about?

1 Q Dr. Begault, why don't you check that
2 during a break. For now, let's keep moving.
3 A Okay. I'll make a note to do that.
4 Q Thank you.
5 MS. PARTRIDGE: And, Dr. Begault, if
6 you need to do that to answer Ms. Osman's
7 questions, you need to do that on the record, not
8 during the break.
9 A Well, then should I do it now?
10 Q Well, no. I don't want you to take the
11 time to do it now.
12 My question -- you said that you used,
13 generally, 3-D audio and binaural sound
14 interchangeably; is that right?
15 MS. PARTRIDGE: Objection.
16 Mischaracterizes his testimony.
17 A Again, it depends on the context we're
18 speaking about. I'm just trying to recall if I
19 made a statement to that effect in my declaration
20 specifically or not.
21 But I will say that binaural sound can
22 encompass dummy head recordings. Some people, in

1 some contexts, will call that 3-D sound. Other
2 times, we'll talk about 3-D sound, like, I believe
3 I spoke about it in my book, in the way that
4 people were using digital signal processors to be
5 able to have flexible control over sound positions
6 and imagery in a way that wasn't possible with
7 dummy head recordings. So, again, it's very
8 context-specific about when we're using these
9 phrases.
10 So we have to sort of drill down and
11 look at the particular context. So that's why I'm
12 trying to be careful and to say that, for purposes
13 of our discussion, which has to do with my
14 declaration, that I'd like to clarify if I've, you
15 know -- how I've referred to those things.
16 Q For the purposes of our discussion
17 today, if you're drawing a distinction between 3-D
18 audio and binaural sound, can you make that clear?
19 MS. PARTRIDGE: Objection. Form.
20 A I will make clear, yeah, when we're
21 talking about audio processing, I will be very
22 precise about what I mean.

1 Q Great. By 2014 and 2015, did those of
2 ordinary skill know how to use head-related
3 transfer functions to generate binaural sound?
4 A Persons of ordinary skill in the art
5 would have been able to do the research to be able
6 to implement 3-D audio, in terms of creating
7 virtual sound.
8 Q Okay. And by 2014 or 2015, did those
9 of ordinary skill also know how to incorporate
10 that binaural sound into virtual environments?
11 MS. PARTRIDGE: Objection. Form.
12 A Well, that would depend on the person
13 of ordinary skill in the art having any knowledge
14 of virtual environments or not, or virtual reality
15 systems. So that's a completely different ball of
16 wax, right?
17 So plenty of people working strictly in
18 the audio field, like I do, who are quite, you
19 know, adept at implementing 3-D audio, but your
20 question was more broad. It was about would they
21 know how to incorporate that into a virtual
22 reality system. And I don't know if that

1 necessarily follows.
2 Q So by 2015, it's not necessarily the
3 case that those of ordinary skill in the art would
4 know how to incorporate binaural sound into a
5 virtual environment; is that right?
6 MS. PARTRIDGE: Objection. Objection.
7 Form.
8 A I don't believe that a person of skill
9 in the art familiar with 3-D audio, with emphasis
10 on the audio, would necessarily have the requisite
11 skills to manipulate virtual visual imagery, for
12 instance, which would probably be necessary to
13 implement a virtual reality system.
14 Q The visual imagery would be necessary
15 to implement the virtual reality system?
16 MS. PARTRIDGE: Objection. Form.
17 A Usually when the term "virtual reality"
18 is used, it tends to incorporate, generically
19 speaking, and, again, this depends on what
20 specific context we're talking about, because some
21 people might use the terms differently, but when
22 we think of virtual reality, we're thinking about,

usually, some combination of visual and auditory. And so, the auditory component, 3-D sound, would be a domain of expertise for folks like myself. But I would have no idea how to, for instance, create a virtual visual image.

Q Okay. Are you equating virtual reality with a virtual environment?

MS. PARTRIDGE: Objection. Form.

A Well, it depends who you're talking to.

So at NASA, years ago, we, in the '90s, we didn't like the term virtual reality. We called it virtual environments. Because we -- we're saying, well, reality is very different than what you see in a virtual environment.

So in that context, you know, we were concerned with the phrasing, and that's something that I sometimes say. You know, I'll use the word virtual environment.

But I could think of other ways to use the word virtual environment, too. For instance, we could speak about a virtual acoustic environment. And so, that would be a very

1 different thing.
2 But, okay, I think this is sort of
3 context-dependent. So, again, all the papers that
4 came out of NASA in the 1990s, we called that
5 virtual environments, whereas, I think, the
6 commercial world was calling it virtual reality.
7 Q And those virtual environments and the
8 papers that came out of NASA in the 1990s, those
9 included visual and auditory -- visual and
10 auditory displays; is that right?
11 MS. PARTRIDGE: Objection. Form.
12 Foundation.
13 A Not all the papers included audio.
14 Q But they all included visual displays.
15 MS. PARTRIDGE: Objection. Form.
16 Foundation.
17 A No. There were also displays that were
18 haptic, for instance. There were also
19 combinations of auditory and haptic.
20 Q So were there virtual environments that
21 did not include visual images?
22 MS. PARTRIDGE: Objection to form.

1 A I think I testified earlier that I have
2 spoken about creating virtual environments that
3 are strictly acoustic. So I could create a
4 virtual acoustic environment.
5 Q So my question for you, that started
6 this discussion, was, by 2014 or 2015, did those
7 of ordinary skill in the art know how to
8 incorporate binaural sound into a virtual
9 environment? Your answer, as I understood it,
10 was, no, because it wouldn't know how to do the
11 images.
12 Are you now saying that a virtual
13 environment doesn't require images?
14 MS. PARTRIDGE: Objection. Foundation.
15 Mischaracterizes testimony.
16 A I think your original question, and the
17 one I was trying to answer, was, and this is the
18 context in which I was answering your question,
19 was that although many people might have had
20 auditory, or I should say, audio signal processing
21 expertise, to create 3-D sound and to create 3-D
22 audio virtual environments, such as myself, I

1 understood your question to say, well, would they
2 know how to implement those virtual acoustics into
3 a virtual reality system that included visual
4 imagery?
5 And my answer to that was, no, they
6 wouldn't know -- necessarily know how to implement
7 that because now we're talking about systems and
8 software that produces visual imagery, somehow
9 connected to signal processing that's concerned
10 with visual imagery that has to, then, communicate
11 with signal processing or processes that create
12 virtual auditory imagery. And there's a line
13 between those things often, in terms of people's
14 expertise and the type of software which you would
15 write, et cetera.
16 Q Let me ask my question again, perhaps
17 you can answer it this time.
18 By 2014 or 2015, did those of ordinary
19 skill in the art know how to incorporate binaural
20 sound into visual environments?
21 MS. PARTRIDGE: Objection. Form.
22 Objection. Asked and answered.

1 A Only in the following context: In a
2 strictly virtual audio world, in a world where we
3 are not talking about communicating to a visual
4 rendering system, there are persons of ordinary
5 skill in the art, in audio and audio signal
6 processing and related skills having to do with
7 acoustic, psychoacoustics, and signal processing
8 would know very well how to create a virtual
9 auditory environment.
10 Q Okay.
11 A But your question goes, again, I think,
12 to would they know how to put that into a virtual
13 visual environment. I don't know if the right
14 wording was "put into," but there is a domain of
15 audio, and audio expertise, audio software, signal
16 processing, that's very different from the demands
17 and the technological requirements to create
18 virtual visual imagery.
19 Q Okay. And when I say virtual
20 environment without specifying virtual auditory
21 environments, that could include images --
22 MS. PARTRIDGE: Objection. Form.

Q -- correct?
A Maybe.
Q Okay.
MS. PARTRIDGE: Objection to form.
MS. OSMAN: I didn't ask a question. Thank you.
MS. PARTRIDGE: Well, you indicated correct and it showed up as a question.
So, objection. Form.
Q And by 2014 or 2015, did those of ordinary skill in the art know that they could alert users that they were leaving an environment by altering the process of binaural sound?
MS. PARTRIDGE: Objection. Form.
A What do you mean by "processing"?
Q What does processing mean to you?
A A lot of different things. I mean, it's -- processing means change.
Q Okay. Let me re-ask my question.
By 2014 or 2015, did those of ordinary skill in the art know that they could alert users that they were leaving an environment by changing

1 binaural sound?
2 MS. PARTRIDGE: Objection. Form.
3 A I don't believe that, at that time, as
4 I've indicated in my declaration, there was
5 anything akin to the changes in binaural sound
6 that I've spoken about in my declaration.
7 Q At that time, there were no changes,
8 changing binaural sound was not known?
9 MS. PARTRIDGE: Objection. Form.
10 Objection. Mischaracterizes testimony.
11 A Changing binaural sound, generally, was
12 known. We would do that as a matter of course.
13 We might change the perceived azimuth of a sound
14 or its perceived elevation position. So,
15 certainly, we could change the location of a
16 virtual image. So that kind of processing was
17 certainly known.
18 Q How about changing the processing of
19 binaural sound to convert it to stereo, was that
20 known?
21 MS. PARTRIDGE: Objection. Form.
22 A Well, it depends on what you're talking

1 about. If we're just talking about could you flip
2 a switch to go between binaural and, let's say,
3 stereo versus mono, versus any other type of
4 processing on, let's say, a device, I'm not sure.
5 But, again, depends on what is the context we're
6 speaking about.
7 Q I'm just trying to understand. By 2014
8 or 2015, did those of skill in the art know how to
9 change binaural sound from either stereo or mono?
10 MS. PARTRIDGE: Objection to form.
11 Asked and answered.
12 A There were attempts to modify dummy
13 head recordings, which are binaural recordings, to
14 attempt to make them sound convincing over
15 loudspeakers.
16 Q I'm not sure you answered --
17 A Stereo loudspeakers.
18 Q I'm not sure that answers my question.
19 My question for you was, by 2014, did
20 those of ordinary skill in the art know how to
21 change binaural sound into stereo or mono sound?
22 MS. PARTRIDGE: Objection. Form.

A I just gave you an example that was known by 2014 or 2015. There were a number of processes that were well-known, that were attempts to change a binaural sound, which would normally be delivered over headphones, over loudspeakers.

Q If you were hearing headphones --

A Sorry. And just one follow-up to that. Stereo loudspeakers.

Q Okay. I think you maybe are still not answering my question. My question wasn't specifically how they would make this change, I'm just asking, at a higher level, would a person of skill in the art know how to change binaural sound to either mono or stereo?

MS. PARTRIDGE: Objection. Form.

A They might know some ways to do it, like the way I just gave you an example of.

You could also, I mean, hypothetically speaking, take the left and right channel of a binaural signal, mix them together into a monaural signal. So a person would know how to do that, I suppose. A person of skill in the art would know

1 how to do that very hypothetical thing.
2 Q And by 2014, or 2015, would those of
3 ordinary skill in the art have understood that
4 they could change the processing of binaural sound
5 to provide an alert or to provide a warning? Is
6 that something that they would have understood?
7 MS. PARTRIDGE: Objection. Form.
8 Asked and answered.
9 A No. I think that the change in the
10 signal processing used for binaural sound, as a
11 warning or alert specifically to the ways that
12 that is done as described in my declaration, I had
13 not heard of that. I don't think people of --
14 persons of skill in the art would have known that
15 by 2014 or 2015.
16 Q So there's nothing inherent about, for
17 instance, changing binaural sound to stereo or
18 mono that would provide a warning to a user?
19 MS. PARTRIDGE: Objection. Form.
20 Objection. Foundation.
21 A That's not true.
22 Q So it sounds like you are saying that

1 changing binaural sound to stereo or mono would
2 provide an alert or warning to user?
3 MS. PARTRIDGE: Objection.
4 Mischaracterizes testimony.
5 A No. Not necessarily. It depends.
6 Q Are there -- it depends.
7 Are there instances in which changing
8 binaural sound to mono or stereo would provide an
9 alert of warning to a user?
10 MS. PARTRIDGE: Objection. Form.
11 Asked and answered.
12 A In the ways that are described in my
13 declaration, I believe that those would be
14 effective alerts of changes to binaural sound.
15 But those are specific methods that are described
16 that I think would be possible of creating an
17 alert.
18 Q Okay. So you're saying -- and forgive
19 me if I get this wrong, please, correct me.
20 Sounds like what you're saying is changing
21 binaural sound to stereo or mono could be an alert
22 or a warning to a user, but it's not necessarily,

1 not in every instance; is that right?
2 MS. PARTRIDGE: Objection. Form.
3 Mischaracterizes testimony.
4 A I'm trying to understand the question
5 here to answer you accurately.
6 So, one can make these changes to
7 binaural sound to stereo, to monaural, and they
8 can be done in a way that would not provide an
9 alert. They could be done in a way that could
10 provide an alert.
11 Q Did those of ordinary skill in the art,
12 at the time of the invention, know how to reduce
13 the volume of sound?
14 MS. PARTRIDGE: Objection. Form.
15 A Yes. I believe that the idea of
16 changing the gain of a sound is well-known to
17 people of skill in the art.
18 Q And did those of ordinary skill in the
19 art know that they could alert users they were
20 leaving an environment by reducing the volume of
21 sound?
22 MS. PARTRIDGE: Objection. Form.

1 A That, I'm not sure about.
2 Q Why do you say you're not sure?
3 A Well, I'd have to know what we're
4 talking about specifically. Leaving a virtual
5 environment might mean a lot of different things.
6 I mean -- and I think your word, your question was
7 alert? Did you say "alert"? No, I'm sorry, you
8 better restate the question.
9 Q Sure. Let me re-read the question
10 because I didn't say virtual environment either.
11 I said, do those of ordinary skill in the art know
12 that they could alert users that they were leaving
13 an environment by reducing the volume of sound?
14 MS. PARTRIDGE: Objection. Form.
15 A So what do you mean by "environment"?
16 Q What does environment mean to you?
17 MS. PARTRIDGE: Objection. Form.
18 A As I stated in my declaration,
19 everything that surrounds us. I could give you
20 the more specific definition if I read from my
21 declaration. It's fairly specific in there.
22 Q I prefer that you answer my question.

1 So, using that definition of
2 environment, do you want me to re-read my
3 question?
4 A I do.
5 Q Okay.
6 A Excuse me.
7 Q Would those of ordinary skill in the
8 art, at the time of the inventions, know that they
9 could alert users that they were leaving an
10 environment by reducing the volume of the sound?
11 MS. PARTRIDGE: Objection. Form.
12 Asked and answered.
13 A Well, again, you haven't defined what
14 environment you're talking about. I don't think a
15 person of skill in the art would know I was
16 leaving my office and going to another room by
17 reducing the volume of something that's
18 unspecified in your question. I don't know what
19 we're talking about, in terms of reducing the
20 volume of what?
21 Q So you think reducing the volume of
22 sound would not provide an alert in a physical

1 environment? Would it provide an alert in a
2 virtual environment?
3 MS. PARTRIDGE: Objection to form.
4 Mischaracterizes the testimony.
5 A I didn't say that it wouldn't or it
6 would. I said I don't know because I'm trying to
7 get more specific with what you're talking about.
8 There's a whole universe of
9 interpretations I can give to that question.
10 So I'm sitting here trying -- so I gave
11 you that crazy hypothetical of I'm leaving my room
12 and going to another room and some sort of sound
13 reduces in volume. I don't know. I need help
14 here.
15 Q Is there a circumstance under which you
16 could alert users that they were leaving an
17 environment by reducing the volume in sound?
18 MS. PARTRIDGE: Objection. Asked and
19 answered. Form.
20 A There could be circumstances where that
21 would work.
22 Q So, reducing by the ton of the

1 inventions, those of ordinary skill in the art
2 would have known that they could use the reduction
3 of volume of sound as an alert to users, at least
4 under some circumstances, correct?
5 MS. PARTRIDGE: Objection. Form.
6 A They could use a reduction in volume
7 for what? I'm asking because I need clarification
8 on your question.
9 Q Sure. So it sounds like what you're
10 saying is that under some circumstances, reducing
11 the volume of sound would constitute an alert to
12 the user; is that right?
13 MS. PARTRIDGE: Objection. Form.
14 A Under some -- under the circumstances
15 I've described in my declaration, I have given an
16 example where a reduction in volume could act as
17 an alert that one is leaving an environment.
18 Q Can you point me to that example,
19 please, Dr. Begault?
20 A Sure.
21 So I'm going to look at my printout so
22 I can find that page.

1 Q Wonderful.
2 A All right.
3 Q Okay.
4 A I think I can point you to paragraph 69
5 and paragraph 70. Maybe 68, 69, and 70. So I'll
6 direct you to pages 38 and 39.
7 Q Okay. So let me ask you my question
8 again. So by the time of the alleged inventions,
9 did those of ordinary skill in the art know that
10 they could use -- they could alert users by
11 reducing the volume of sound?
12 MS. PARTRIDGE: Objection. Form.
13 Asked and answered.
14 A I don't know if a person skilled in the
15 art would have known that a significant change in
16 the volume of virtual sound would be useful in
17 that regard.
18 I think that there was an understanding
19 about reducing volume by a POSA. People knew
20 about changing gains on sounds.
21 But, here, we're talking specifically
22 about lowering the sound volume as a significant

1 change, all right? And, also, possibly as a
2 spatial auditory distance cue.
3 Q Okay. What is a WED?
4 A Oh, boy. I used to know. Wearable --
5 oh, boy. A wearable E display. I forget the E.
6 Q Okay. Does the '179 and '184 patent
7 use that phrase in any particular way?
8 MS. PARTRIDGE: Objection. Form.
9 A Honestly, I don't recall.
10 Q Okay. Does a WED, I think it's
11 wearable electronic device, does that necessarily
12 include a certain component or components?
13 A It include a device and it's wearable,
14 and contains electronics. I think that's about
15 the best I can do for you.
16 Q Okay. By the time of the alleged
17 inventions, did those of ordinary skill in the art
18 know how to use a wearable electronic device, a
19 WED, to determine if a user was leaving an
20 environment?
21 MS. PARTRIDGE: Objection. Form.
22 A I'm trying to recall if there were

1 examples of that.
2 So, what might we include within WEDs
3 anyway? What scope of things are we calling
4 wearable electronic devices? I mean, is it my
5 watch? Is it a pair --
6 Q I would ask you that question. What's
7 included in a WED?
8 A Well, generically speaking, I've never
9 read a dictionary definition, but, you know, based
10 on what that means, that could include everything,
11 including my watch, that could include headphones,
12 could include just about anything, right?
13 Q So, if that's your definition, that's
14 fine. My question is the same.
15 Do you want me to re-ask the question?
16 A Yes, please.
17 Q By the time of the alleged invention,
18 did those skilled in the art know how to use a WED
19 to determine if a user was leaving an environment?
20 MS. PARTRIDGE: Objection. Asked and
21 answered. Objection. Form.
22 A I don't know. It depends which area of

1 person skilled in the art are we talking about.
2 Are we talking about audio persons? People whose
3 expertise are persons of skill in the art in audio
4 and 3-D audio?
5 Q What about people who are experts in
6 the field or VR? Did they know how to use a WED
7 to determine if a user was leaving an environment?
8 MS. PARTRIDGE: Objection. Form.
9 Objection. Asked and answered.
10 A Well, not being a person of skill in
11 the art in virtual reality, generally, was
12 speaking about visual displays and haptic displays
13 and that sort of thing, then my answer there is,
14 I'm not certain if they would know or not.
15 Q Okay. So you don't know -- so your
16 testimony is you don't know if those in the field
17 would know how to use a WED to determine if a user
18 is leaving the environment?
19 MS. PARTRIDGE: Objection. Form.
20 A Oh. That's a different question. I
21 thought your question was something having to do
22 with an alert or something.

1 If you go back two questions, then
2 maybe I can answer your last question.
3 Q So let me read it again. My question,
4 I hope, is the same. It's did those of ordinary
5 skill know how to use a WED to determine if a user
6 was leaving an environment?
7 MS. PARTRIDGE: Objection. Form.
8 A And so, I asked for a couple of
9 clarifications.
10 Person of skill in the art in audio or
11 person of skill in the art in something else?
12 Q Well, why don't you tell me if a person
13 of skill in the art according to the level of
14 ordinary skill that you propose in the
15 declaration?
16 MS. PARTRIDGE: Objection. Form.
17 A Right. Can I re-read that, what that
18 says?
19 Q Sure.
20 A Okay. Great. Let's do that. Well,
21 then we'll go back to your question.
22 So, I said a person of ordinary skill

1 in the art would have technical fields relevant to
2 the digital signal processing, electrical
3 engineering, computer engineering, computer
4 science, a familiarity with basic principles of
5 audio engineering, and a familiarity with the
6 relevant literature means of implementing virtual
7 3-D binaural audio processing, including those
8 that were widely available at the time of the
9 disclosure. Noting that virtual binaural is used
10 interchangeably with 3-D, back to a prior question
11 there.
12 So, this does not talk about a person
13 of skill in the art having, necessarily, any
14 knowledge, I believe, that was pertinent to your
15 last question, which was wearable electronic
16 devices.
17 I think that the one wearable
18 electronic device, that that person skilled in the
19 art would be very familiar with, are the acoustic
20 transducers commonly referred to as headphones.
21 Q Okay. So your testimony is, based on
22 the level of ordinary skill in the art that you've

1 proposed in your declaration, you do not believe
2 that that person of ordinary skill would know how
3 to use a WED to determine if a user was leaving an
4 environment; is that correct?
5 MS. PARTRIDGE: Objection.
6 A They might know something. They might
7 have a suspicion that there are tracking devices,
8 right, that those have been well-known since the
9 '90s, all kinds of tracking devices that have come
10 about. But they wouldn't be necessarily -- know
11 much more than the fact that they exist; that they
12 have something to do with the location of a
13 person, perhaps, their hand. It depends on the
14 particular implementation and context. So it kind
15 of depends where and what we're talking about.
16 So I do believe that that's kind of the
17 level of expertise that might even be beyond a
18 POSA that a layperson might be familiar with.
19 Q Okay. Now, let's modify the question
20 to impose the level of ordinary skill in the art
21 proposed by the petitioner and by Dr. Roginska,
22 where there is experience in virtual and augmented

1 reality.
2 So if a POSA now has, not only audio
3 engineering experience, but also experience in
4 virtual augmented reality, did that person of
5 ordinary skill in the art know, at the time of the
6 alleged inventions, how to use a WED to determine
7 if a user was leaving an environment?
8 MS. PARTRIDGE: Objection. Form.
9 Objection. Relevance.
10 A So you're asking me to go into
11 Dr. Roginska's mind to know what she meant by a
12 POSA?
13 Q No. That's not -- that wasn't my
14 question.
15 I'm telling you that -- well, let's
16 strike that.
17 You said you reviewed Dr. Roginska's
18 declaration; is that correct?
19 A That's correct.
20 Q Okay. Dr. Roginska proposed a slightly
21 different definition of person of ordinary skill
22 in the art. According to her, a person of

1 ordinary skill in the art would have had
2 experience in virtual and augmented reality.
3 So I'm asking you the same question
4 that I asked you -- that I've asked you now, which
5 is, did a person of ordinary skill -- if we're
6 imposing a definition of person of ordinary skill
7 in that art that includes someone with experience
8 with virtual or augmented reality, did a person of
9 ordinary skill in the art know how to use a WED to
10 determine if a user was leaving an environment?
11 MS. PARTRIDGE: Objection. Form.
12 Objection. Relevance. Objection. Outside the
13 scope.
14 A Again, I'm not certain. I mean,
15 it's -- that was her definition. I gave you an
16 answer earlier about most, not only POSAs, but
17 laypeople probably have some fundamental idea of
18 the concept of tracking devices being part of a
19 system. But that's about the limit of it, right?
20 So I don't know if that even qualifies as a person
21 of skill in the art. But my definition is
22 different because of focusing on audio and escrow

1 acoustics.
2 Q Okay.
3 A Implementation is part of 3-D audio.
4 Q Okay. But you can't tell me under
5 Dr. Roginska's definition?
6 MS. PARTRIDGE: Objection.
7 Q That's my question.
8 MS. PARTRIDGE: Objection. Outside
9 scope.
10 A I think I just answered your question
11 about that.
12 Q Are you a person of ordinary skill in
13 the art, under Dr. Roginska's definition?
14 A I believe I answered that for you
15 earlier, indirectly.
16 I don't know exactly what her
17 requirements are for a -- I don't remember her
18 exact phrase, for -- maybe you're going to have to
19 re-read it to me or I'd have to look at it. Which
20 aspects -- which aspects of Dr. Roginska's
21 definition of a POSA? Maybe go through each of
22 them.

1 Q Well, her definition, here, let me read
2 it to you. Her definition requires -- the key
3 aspect is, requires experience in virtual reality
4 and/or augmented reality.
5 MS. PARTRIDGE: Objection. Form.
6 Incomplete.
7 A Well, it, again, it depends what she
8 means by virtual reality and augmented reality.
9 Again, I probably have greater familiarity with
10 certain aspects of what are referred to, often, as
11 virtual reality systems or virtual environment
12 systems, given my years of experience at NASA, et
13 cetera.
14 But, I wouldn't necessarily say that
15 those are necessary as, you know -- well, I guess
16 I don't need to contradict her definition
17 necessarily. I just need to answer your question.
18 So you're asking me, again, what?
19 Q I'm asking you if you --
20 A I'm getting lost.
21 Q Sure. I'm asking you if you meet
22 Dr. Roginska's definition of person of ordinary

1 skill in the art?
2 A I, personally?
3 Q Yeah.
4 MS. PARTRIDGE: Objection. Form.
5 THE WITNESS: I apologize for getting
6 mixed up there.
7 A I have greater expertise than a
8 layperson in those fields of virtual environments
9 and virtual and augmented reality, but I would not
10 say that I'm skilled in any aspect of many --
11 well, I'm not skilled in a lot of the aspects of
12 virtual reality, right. So I have no expertise in
13 the area of tracking devices or visual displays or
14 I can't program the communication systems that
15 allow the visual and the auditory systems to
16 render things. There's many levels to that level
17 of expertise that I think go beyond Dr. Roginska's
18 declaration as well, actually, the things she
19 speaks about.
20 Q Okay. So did those of ordinary skill
21 in the art, and I want to apply your definition of
22 to what a person of ordinary skill in the art,

1 just to be clear. According to your definition
2 of, did those of ordinary skill in the art know
3 how to use a wearable electronic device, without a
4 tracking device, to determine if a user was
5 leaving an environment?
6 MS. PARTRIDGE: Objection. Form.
7 Objection. Outside scope.
8 A You know, I'm trying to imagine if
9 there was a GPS functioning watch that might have
10 tracked people's position while they're hiking or
11 something. I don't know. I'm kind of speculating
12 here, if that existed or people knew about that.
13 I think those did exist. So if those are
14 wearable, I don't know if they were in a wearable
15 version. I'm just sitting here trying to recall
16 it. By the way, I am getting a little fatigued.
17 I wouldn't mind a break soon, but I'm happy to
18 finish with this line of questioning, if it
19 doesn't go on too long.
20 Is that okay with you?
21 Q That's fine. I have a few more
22 questions, if you wouldn't mind bearing with me a

1 little bit longer.
2 To confirm, you're saying you just
3 don't know if persons of ordinary skill in the art
4 would have known how to use a wearable electronic
5 device without an independent tracking device?
6 MS. PARTRIDGE: Objection. Form.
7 A No, I don't think that's what I said.
8 I --
9 Q So -- sorry, I misunderstood. Can you
10 repeat your answer then, or explain?
11 A No, I'm going to need you to repeat
12 your question.
13 Q Of course. I'll read it again.
14 Did those of ordinary skill in the art
15 know how to use a WED without an independent
16 tracking device to determine if a user was leaving
17 an environment?
18 MS. PARTRIDGE: Objection. Form.
19 Outside scope.
20 A I don't know.
21 Q As of the time of the alleged
22 inventions, 2014 or 2015, did designers know how

1 to create a system that allowed users to interact
2 with virtual sound-producing objects?
3 MS. PARTRIDGE: Objection. Form.
4 And, Ms. Osman, I'll let him answer
5 this, but you're already going past when he asked
6 for a break.
7 MS. OSMAN: I told --
8 Q Go ahead and answer.
9 MS. PARTRIDGE: It's a new subject, but
10 I'll let him answer the question since it's
11 pending, but after that, we'll take a break.
12 A Please repeat the question.
13 Q Did those of ordinary skill in the art
14 know how to use -- excuse me. As of the time of
15 the alleged inventions, 2014 or 2015, did
16 designers know how to create a system that allowed
17 users to interact with virtual sound-producing
18 objects?
19 MS. PARTRIDGE: Objection. Form.
20 A In the audio world, by 2015, depending
21 on how we define the word "interaction," there
22 were ways -- well, that a POSA, by my definition,

1 would know how to, let's say, interactively change
2 the virtual position of a sound, for instance.
3 Q So are you saying they could select and
4 move a sound?
5 MS. PARTRIDGE: Objection.
6 Mischaracterizes testimony.
7 A I have a patent, I think it's around
8 that era -- or around that time, where sounds
9 could be moved based on your desire to move a
10 sound.
11 Q Okay. Could you, like, highlight a
12 sound in some way?
13 MS. PARTRIDGE: Objection. Form.
14 A Well, we could move it to allow
15 somebody to hear it more clearly.
16 Q Is there anything else that you could
17 do with a sound?
18 MS. PARTRIDGE: Objection. Form.
19 Q Let me ask -- let me re-ask that
20 question.
21 Is there any other way that a user
22 could interact with a sound, a virtual

1 sound-producing object?
2 MS. PARTRIDGE: Objection. Form.
3 A That's a very broad question. I guess
4 there is. To interact with the sound? I mean,
5 sure. I mean, there's something called, for
6 instance, a binaural mixing console that allows a
7 recording engineer to interactively change the
8 level of different sounds in a recording
9 environment.
10 Q Let me re-ask my question to make it a
11 little bit clearer, I hope. Is there any other
12 way that a user, in some sort of environment,
13 could interact with a virtual sound-producing
14 object?
15 MS. PARTRIDGE: Objection. Form.
16 A I gave you an answer. There was a
17 recording studio, something called a binaural
18 mixing console recording, and engineers would
19 interact, doing things like changing the position
20 of the guitar relative to the vocalist, moving
21 sounds around for, you know, whatever effect that
22 they wanted to do. So that's -- was something

1 that a user in a recording studio would do.
2 MS. PARTRIDGE: Ready to take a break,
3 Dr. Begault?
4 THE WITNESS: I am.
5 MS. OSMAN: This is a good time for a
6 break. We can take one now. Can we do
7 ten minutes? Is that fine, Dr. Begault?
8 THE WITNESS: Yeah, that would be
9 sufficient. Can we make it, actually, 15? Would
10 that be acceptable?
11 MS. OSMAN: That's fine, we can make it
12 15.
13 THE WITNESS: So I have 11:13 my time,
14 so we're going to come back at 11:28.
15 MS. OSMAN: That's fine.
16 PLANET DEPOS TECHNICIAN: Off the
17 record. 14:13.
18 THE WITNESS: Thank you.
19 (Recess taken.)
20 PLANET DEPOS TECHNICIAN: Back on the
21 record. 14:31.
22

1 BY MS. OSMAN:
2 Q Hello, Dr. Begault. Did you speak with
3 your attorney during the break?
4 A No.
5 MS. PARTRIDGE: Objection.
6 I'll allow you to answer that question
7 yes or no, Dr. Begault.
8 Q Dr. Begault, same question. Did you
9 speak with your attorney during the break?
10 MS. PARTRIDGE: Objection. Same
11 objection.
12 I will allow you to answer that
13 question yes or no, Dr. Begault.
14 A No.
15 Q Okay. Dr. Begault, I understand that
16 you provided an opinion on claim construction.
17 What process did you use to arrive at
18 the claim construction positions that you propose?
19 MS. PARTRIDGE: Objection. Form.
20 Objection. Outside the scope.
21 Are you talking about claim
22 construction in the District Court litigation,

1 Ms. Osman?
2 MS. OSMAN: Ms. Partridge, I will
3 appreciate if you could restrain your speaking
4 objections.
5 MS. PARTRIDGE: I'm not going to let
6 him answer these questions if it's part of the
7 litigation --
8 MS. OSMAN: Let's go off the record,
9 please. Thank you.
10 PLANET DEPOS TECHNICIAN: Off the
11 record. 14:32.
12 (Discussion held off the record.)
13 PLANET DEPOS TECHNICIAN: We are back
14 on the record. 14:34.
15 BY MS. OSMAN:
16 Q Dr. Begault, I apologize for the
17 interruption there.
18 I understand -- I'll repeat my question
19 so we can get back to what I was asking.
20 So I understand that you provided an
21 opinion as to claim construction in your
22 declaration.

1 What process did you use to arrive at
2 the constructions that you propose?
3 MS. PARTRIDGE: Objection. Form.
4 A I think the process involved defining
5 certain terms. I think there was an exercise, at
6 one point in this litigation, where I was
7 providing some definitions, but I'm not sure if
8 that's relevant here. But I know that part of the
9 claim construction here, in this declaration had
10 to do with definition of terms.
11 Q And how did you define those terms in
12 this declaration?
13 MS. PARTRIDGE: Objection. Form.
14 I just don't know what declaration
15 you're talking about, Ms. Osman.
16 MS. OSMAN: Ms. Partridge, Dr. Begault
17 knows what declaration I'm talking about. And so,
18 I'd really appreciate it if you could confine your
19 speaking objections. The only proper objections
20 are, really, objection. Form.
21 MS. PARTRIDGE: That's not true. I've
22 read the rules again. I just want to know, for

1 the record, what declaration you're talking about.
2 If you're talking about the District Court
3 declaration, then we're not going to talk about
4 here. If you're talking about his declaration
5 that he's given in the IPR, then I'll let him
6 answer questions on it. I'm just asking the
7 question.
8 MS. OSMAN: This is really improper.
9 You're wasting my time on the record. The only
10 declaration we're discussing here is the
11 supplemental declaration that we've been
12 discussing all day.
13 MS. PARTRIDGE: Okay. Thank you for
14 that clarification. I really appreciate it,
15 Ms. Osman.
16 BY MS. OSMAN:
17 Q Dr. Begault, could you, please, answer
18 my question.
19 MS. PARTRIDGE: Objection. Form.
20 A So, please, restate it.
21 Q How did you define the terms in your
22 declaration? You proposed two claim constructions

1 in your declaration; how did you come to the
2 definitions that you proposed?
3 MS. PARTRIDGE: Objection. Form.
4 A Okay. So in my supplemental
5 declaration, under claim construction, there is a
6 definition of the word "environment." I came to
7 that based both on my understanding as an expert.
8 I also consulted some of the etymology of that
9 word and found that there's a consistent meaning
10 for what the word environment means.
11 Q So --
12 A So that was part of my process, if you
13 will, was to look at the etymology of the word and
14 also just combined with my own understanding of
15 what that word meant.
16 Q Okay. So you say that was part of your
17 process. What else did you do to understand what
18 the word "environment" meant?
19 MS. PARTRIDGE: Objection. Form.
20 A Well, I guess I could look at exactly
21 what I wrote in the declaration, if you'd like me
22 to explain it more specifically for you.

1 Q Dr. Begault, I'm not asking about what
2 definition you're proposing. I'm just trying to
3 understand what process you used to come up with
4 the definition of the words that you proposed
5 definitions for.
6 Do you understand my question?
7 MS. PARTRIDGE: Objection. Form.
8 A Sure. So these words are defined by
9 my, as I gave you a process of understanding the
10 root meaning of the words, and then looking at
11 their usage in the '179 and '184, and to make
12 clear what those words meant in those two patents.
13 Q Okay. So you looked at how the terms
14 were used in the patents; is that right?
15 A I did.
16 Q Okay. In your declaration, I don't
17 know if you have your declaration open to you, in
18 paragraph 20 you say you have applied the plain
19 and ordinary meanings of the claim terms.
20 Do you see that?
21 A I do.
22 Q What do you mean by "plain and ordinary

1 meanings"?
2 A The layperson definition of it, meaning
3 that these are ordinary meanings that I have
4 applied.
5 Q Okay. What does -- what does the term
6 "environment" mean?
7 MS. PARTRIDGE: Objection. Form.
8 Q Strike that. Let me re-ask that
9 question. It was a bad question.
10 What is an environment?
11 A Well, as I've written in my declaration
12 here, it's the circumstances, objects, and
13 conditions by which one is surrounded. And that
14 seems to be consistent with the etymology of the
15 word.
16 And so, in terms of the patents, ones
17 [sic] can be surrounded by circumstances, objects,
18 or conditions that are either real, virtual, or
19 both, simultaneously.
20 Q Okay. And you're reading from the
21 bottom of paragraph 21; is that right?
22 A Yeah. That seemed to be the most

1 accurate way to answer your question.
2 Q So an environment, under your
3 understanding, could be a virtual environment; is
4 that right?
5 A That's --
6 MS. PARTRIDGE: Objection. Form.
7 Q So it could be a physical environment?
8 MS. PARTRIDGE: Objection. Form.
9 A It's that which surrounds us either
10 virtually or in reality.
11 Q Okay.
12 A Or both, simultaneously.
13 Q Right. So could it be an augmented --
14 augmented environment?
15 A Yes, since that's a condition where you
16 could be surrounded -- we're not -- well, you
17 can't -- you could be surrounded in -- yes, it
18 could be within an augmented environment, period.
19 Q And is that what you would say is the
20 plain and ordinary meaning of environment --
21 MS. PARTRIDGE: Objection.
22 Q -- an environment can be physical or

1 virtual.
2 MS. PARTRIDGE: Objection. Form.
3 A That's what I said here and that's what
4 I believe.
5 Q Just so the record is clear. You're
6 saying, yes, the plain and ordinary meaning of
7 environment is that it could be either physical or
8 virtual; is that right?
9 MS. PARTRIDGE: Objection. Form.
10 A Well, I guess I could imagine other
11 things that an environment might be for somebody.
12 Somebody could have an imaginary environment in
13 one's dream. You know, I could think of a lot of
14 different hypotheticals in which things that
15 surround somebody comes under different types of
16 conditions or displays, et cetera.
17 But, I wanted to make it specific to
18 the patents here, so that's what I gave a
19 definition for.
20 Q Okay. Just to be clear, it sounds like
21 your response to me was emphasizing that
22 environment is not necessarily limited to either

1 virtual or physical. It could be a virtual or
2 physical environment and could be other types of
3 environments as well; is that correct?
4 MS. PARTRIDGE: Objection. Form.
5 A Well, outside of the scope of this
6 patent discussion and outside of the scope of my
7 deposition, I gave you a hypothetical because I
8 was trying to imagine other ways that there could
9 be an environment. So I went to the concept of an
10 imaginary environment or a dreamed environment.
11 So, I don't think that falls in either category.
12 But I believe what I was talking about
13 here, in the deposition, was real, virtual, or
14 both, simultaneously, types of environments of
15 things that surround us.
16 Q Okay. So in the next paragraph, I'm
17 looking at paragraph 22 in your declaration, and
18 that's Exhibit 2012, you say a person of ordinary
19 skill would have understood the term environment,
20 as used in claim 7 and 14 of the '179 and '184
21 patents to mean the physical surroundings in which
22 a user operates.

1 Do you see that there? Did I read that
2 correctly?
3 A Yes, you did, that first sentence.
4 Q Is this definition different than the
5 one we were just discussing?
6 MS. PARTRIDGE: Objection. Form.
7 A No. It's a subset.
8 Q Okay. So, are you proposing that
9 environment means just physical environments?
10 A No. I'm saying here that we can talk
11 about the position of a person in a physical
12 environment, but they might be interacting with
13 virtual or real objects.
14 Q So, the definition that you propose
15 here, and you say this is the definition in the
16 context of the claims, is that environment means
17 physical surroundings in which a user operates; is
18 that right?
19 A I can't think of any other place that a
20 user could operate.
21 Q Could a user operate in a virtual
22 environment?

1 A The user is physical in this particular
2 matter that we're speaking about. We're talking
3 about a user who's a person perceiving things.
4 Q Can a user be in a virtual environment?
5 A Well, the physical user can be
6 experiencing a real environment, a virtual
7 environment, or both.
8 Q Okay. So an environment can be real or
9 virtual, or both?
10 A That's correct.
11 Q Okay. But then help me understand what
12 this definition of environment means if it says
13 "physical surroundings in which a user operates."
14 Does that exclude virtual environments?
15 MS. PARTRIDGE: Objection. Form.
16 A No, not at all. I tried to clarify
17 that a little earlier.
18 The user is a physical person and
19 they're operating in a physical environment,
20 right? And so, I clarify that a little bit
21 further in number 22, paragraph 22, refers to the
22 position of the user and physical space while they

1 interact with virtual and real objects or
2 components, I perhaps should have said, to clarify
3 that, in an environment of the virtual rendering
4 system.
5 So, in other words, you have a system,
6 some sort of virtual rendering system, a human is
7 physical. They're obviously sitting in a physical
8 space. And that person, that human, that person
9 in physical space, is interacting with both,
10 possibly, as I should say, possibly interacting
11 with both virtual and real objects, sensations,
12 sounds, around them.
13 Q Okay. So, the word "environment,"
14 according to your construction, refers to only the
15 physical, even if the user is also in a virtual
16 environment; is that right?
17 MS. PARTRIDGE: Objection. Form.
18 Q Does environment also refer to the
19 virtual surroundings around a user?
20 A Wait a minute. I shook my head but I
21 wanted to answer your question. So do you want --
22 Q Please.

1 A -- those two questions combined or do
2 you --
3 Q No, let me re-ask the question because
4 I want to make sure I understand this.
5 The word "environment," according to
6 your construction, seems to refer to only the
7 physical surroundings, and that seems to be what
8 you're saying, even if the user's also in a
9 virtual environment.
10 Is that correct?
11 MS. PARTRIDGE: Objection. Form.
12 A No. You completely transposed the
13 concepts.
14 The user, themselves, is in a physical
15 environment because a user cannot be -- you know,
16 when I say "user," I'm talking about a human
17 being. So a physical person that's perceiving
18 either a virtual world or a real world, right?
19 So, when we say the world "environment," and we're
20 talking about the physical surroundings in which a
21 user operates, that refers to the reality of the
22 fact that humans are operating in some sort of

1 real environment. They can't be -- only in the
2 virtual world can we imagine them to be somewhere
3 else, or can the user imagine themselves to be
4 somewhere else. But, ultimately, there's a user
5 in physical space. So you see a transposed
6 concept.
7 Whereas, the person in -- experiencing
8 an environment through a virtual system, a virtual
9 rendering system, might be experiencing both a
10 virtual environment and they can also be
11 interacting or sensing things about the physical
12 environment.
13 Q So why, then, if a person could be in a
14 virtual environment and interacting in both a
15 virtual and physical environment, why, then,
16 should we construe environment to be limited to
17 the physical surroundings of a user?
18 MS. PARTRIDGE: Objection. Form.
19 A Why should we what to?
20 Q Why should we construe, which means
21 understand or interpret, environment to be limited
22 to the physical surroundings in which a user

1 operates?
2 A Well, we shouldn't. I never said that.
3 Again, I will restate that the environment can be
4 virtual, real, or both, simultaneously, when we're
5 speaking generically about the term environment
6 and, also, in terms of the claim construction
7 here.
8 So, if you take the first sentence of
9 22 out of context, what can be easily
10 misunderstood that I'm saying the word environment
11 only refers to the physical world. And what I was
12 saying here, really, is that the user is operating
13 in a physical world and they are a physical
14 person. But the displays, the virtual rendering
15 system is going to include both aspects of the
16 real world and the virtual world, and sometimes
17 both, simultaneously.
18 Q Okay. How do you distinguish between
19 different physical environments?
20 MS. PARTRIDGE: Objection. Form.
21 A Can you be more specific? Because I
22 mean, I could give you a very high-level answer,

1 but --
2 Q Let me ask you this: Is a house a
3 physical environment?
4 A Yes. I'd say a house is a physical
5 environment.
6 Q What about a floor in a house? Is that
7 a physical environment?
8 A Yes, it is a physical environment.
9 Q What about a room in a house? Is that
10 a physical environment?
11 A Yes, it could be -- yeah, sure.
12 Q How about a corner in a room? Is that
13 a physical environment?
14 A It could be, sure.
15 Q How about if I stand in a room and I
16 draw a circle around myself? Is that a physical
17 environment?
18 MS. PARTRIDGE: Objection. Form.
19 A Draw a circle? How would you be
20 drawing that circle?
21 Q I took out a piece of chalk and drew a
22 circle around myself.

1 A So the chalk, itself, is a physical
2 substance. Obviously, people are taller than the
3 chalk. So we might use that physical substance to
4 imagine a virtual or kind of limit, if you will.
5 Q What if I didn't have the chalk? What
6 if I just imagined a circle around myself? Is
7 that a physical environment?
8 MS. PARTRIDGE: Objection. Form.
9 A Well, it would depend on what that
10 imagination involved, I guess. I mean, can you
11 tell me a little more?
12 Q I'm just standing in the middle of my
13 living room and I imagine there's a circle around
14 myself, and let's say that circle is no more
15 bigger than my two feet.
16 Am I in a physical environment?
17 MS. PARTRIDGE: Objection. Form.
18 A Well, you are in a physical environment
19 because you're standing there and you're
20 imagining, perhaps, something that that circle
21 represents, and I guess that would be a virtual
22 environment, kind of depends on how you imagine

1 that -- what that circle means to you.
2 Q Let me adjust the hypothetical. I'm
3 standing in my living room and I've drawn a circle
4 around my feet, it's an imaginary circle, and I
5 don't have any imagination or any construction of
6 what that is.
7 Am I in a physical environment?
8 MS. PARTRIDGE: Objection. Form.
9 Sorry. Objection. Form.
10 A Well, you just said you're in a living
11 room, and I think I said earlier that all humans
12 are occupying some sort of physical environment,
13 by definition.
14 Q Yes.
15 A So you are in a physical environment.
16 Q But the physical environment I'm in is
17 my living room, not the circle around my feet; is
18 that right?
19 MS. PARTRIDGE: Objection. Form.
20 A Well, you're surrounded by a circle.
21 Q It's not a real circle.
22 A You are surrounding yourself by a

circle in a physical environment.

Q Let me ask this question in a different way.

If I imagine a circle around my feet in my living room and then I step out of that imaginary circle, have I left my physical environment?

MS. PARTRIDGE: Objection. Form.

A Well, I guess it would be how we would define that.

I could see that, for instance, if you had an unruly child and you drew a circle in the corner and said, "go stand in the circle," that might appear to that child as a very, you know, physical location that, you know, they're not supposed to step out of until punishment time is over.

I don't know if parents do that anymore, I don't know, but anyway, my point is that we're -- you know, there's certainly a kind of imagination that somebody's going to bring to some of these things. Excuse me. And I -- so I

1 don't know if I'm answering your question or not.
2 Q Well, you gave me an example of a case
3 where you think there could be a physical
4 environment, just based on the circle. But you
5 didn't answer my question. Which is, if I have an
6 imaginary circle around myself in my living room,
7 if I step out of that imaginary circle, have I
8 left a physical environment?
9 MS. PARTRIDGE: Objection. Form.
10 Objection. Asked and answered.
11 A I'd have to know more about that
12 particular physical environment. I mean, you
13 know, there could be damage on the floor where you
14 put that circle and the floor has caved in. So
15 you could say, well, that's one kind of physical
16 environment. Now you're on the part of the floor
17 that works, that's got support. So you're in
18 another physical environment.
19 Another person might say, oh, no that's
20 all in the living room. In just the same way, you
21 could say, well, I left the living room and went
22 to the dining room. And if I left the physical

environment, well, yeah, I left the physical environment of the living room to the dining room. Well, did I leave the physical environment of the house? No.

So it's really kind of a question of context and specifics of what you're asking. So there's no clear one answer I can give you to these things.

Q But is it possible, like, let's say I'm in my living room, I'm on a rug, there are no changes, there are no patterns, and I've drawn this imaginary circle around my feet, is it possible that I've left the circle and am still in the same environment?

MS. PARTRIDGE: Objection. Asked and answered.

A Anything's possible.

Q So, yes? Your answer's yes?

MS. PARTRIDGE: Objection. Form.

A I'm sorry, I didn't let my -- go ahead. I didn't hear the objection.

MS. PARTRIDGE: Objection. Form.

1 THE WITNESS: Okay.
2 A I don't know. I'd have to know more.
3 But there's certainly -- if you define what you
4 talked about as a living room, you know, I don't
5 know. I'm trying to -- I'm grasping for a little
6 more context.
7 Q Okay. And what more would you need to
8 know?
9 A I guess I'd need more details about
10 these physical environments you're describing.
11 Q Can you tell me what kinds of details?
12 Like, what things would change your answer here?
13 What information would matter?
14 A Well, the physical environment would
15 change, let's say, if over the top of the circle
16 there was an air conditioner blowing cold air and
17 you moved to a different location in the same room
18 and suddenly there isn't cold air blowing on top
19 of you.
20 So, are we talking about the physical
21 environment in terms of the temperature gradient
22 between, you know, one location and another, or

1 are we talking about the walls of the room that
2 surround a person in that particular physical
3 environment?
4 I mean, again, it kind of matters how
5 it's defined in a particular context.
6 Q Okay. So, what is a 3-D virtual
7 environment?
8 A Three dimensions, meaning that we're
9 not in a flat space. We have both elevation and
10 we have distance and we have height. So it's
11 three-dimensional. And it's an environment that
12 could potentially have either, I guess, visual,
13 but definitely auditory images anywhere in that.
14 Q Why do you say a 3-D virtual
15 environment is an environment that could
16 potentially have visual but definitely auditory
17 images? What is an auditory image?
18 A What is an auditory, what, I'm sorry?
19 Q What is an auditory image?
20 A Oh. An auditory image can be all kinds
21 of things. But you had two parts to your
22 question.

1 Why did I say -- can I -- do you mind
2 if I do both questions separate?
3 Q Yeah, let me ask again. I didn't do
4 that well.
5 Why do you say that a 3-D virtual
6 environment is an environment that potentially
7 could have visual images, but definitely auditory?
8 A Well, you know, I might have misstated
9 that answer. I should have said -- because I gave
10 you some examples earlier where you could have
11 virtual haptics, for instance, and no visual
12 information. You could have virtual. You could
13 have all these combination of sensations that are
14 virtual, right? So, there are many things like
15 that.
16 So, what I really should have said, to
17 clarify that question, is you could be in a
18 virtual auditory world without being in a virtual
19 visual world, right? So you can create
20 experiences that are completely auditory, that are
21 in three dimensions. I think I give some examples
22 in my declaration, for instance.

1 So that's the first question, I think,
2 answered.
3 Q Why do you say that auditory -- that
4 the audio component is necessary but that the
5 images are not?
6 A Well, that's what I --
7 MS. PARTRIDGE: Objection. Form.
8 THE WITNESS: Objection to form.
9 A That's what I was just clarifying for
10 you. That, no, I was correcting my answer, right?
11 I was just giving you an example. There could be
12 just purely haptic virtual. There could be just
13 purely visual virtual, right? But generally
14 speaking, you know, since the 1990s, there's
15 usually some combination of auditory and visual,
16 but not in all cases, there's been variations, you
17 know, the way that people have implemented things.
18 Q Okay. And then my other question for
19 you is, you said that there could be an auditory
20 image.
21 What is an auditory image?
22 A Right. Thank you.

1 Well, that's a very generic term. I am
2 just talking about all of the images or cognitive
3 realizations that one might make based on auditory
4 stimuli, so that could include, for instance, the
5 location of specific sounds. It could be the
6 sounds of different environments. It could be
7 images, meaning, renderings, if you will, of
8 acoustic components that reach the ears.
9 Q Renderings is not necessarily an image,
10 a visual image.
11 MS. PARTRIDGE: Objection. Form.
12 A I was speaking of acoustic imagery,
13 because that was your question.
14 Q And how do you play an acoustic image?
15 MS. PARTRIDGE: Objection. Form.
16 A Usually with a -- well, the way I like
17 to do it is with a digital audio file, and I
18 usually play it back over headphones.
19 MS. OSMAN: Can we pull up
20 Exhibit 1038.
21 (Exhibit 1038 previously marked for
22 identification and attached to the transcript.)

1 A I'm looking at that OneDrive now.
2 Q Yes. You should have that.
3 MS. OSMAN: Erin, would you mind
4 putting Exhibit 1038 in that exhibit folder so
5 that we can pull it up.
6 A So this should appear -- oh, okay. So
7 now this is appearing not on that document thing,
8 it's now appearing as -- on the Zoom page.
9 Is that what you intended?
10 PLANET DEPOS TECHNICIAN: It's in both.
11 MS. OSMAN: It should be both. Erin, I
12 think you probably don't need to share, we can
13 just download. So, no need to have you pull it up
14 that way.
15 A That appears to be the NASA version of
16 my book. I mean, I could bring that up, too, if
17 you want.
18 But you probably want to show me
19 exactly what you've got.
20 Q So, you recognize this document,
21 Exhibit 1038? You've seen this before.
22 A First page. Oh, here it is. Let me

1 bring up the exhibit. Okay. There I have. Yes,
2 that is the 2000 version of my book, yes.
3 Q Okay. Can you turn to the bottom of
4 page 7 of the book and page 17 of the PDF?
5 A Okay. Page 7 of the book. Yes.
6 Q My finger's moving a little bit more
7 slowly than yours.
8 So if you see the bottom there, there's
9 a section that says "Application Types."
10 "Within the applications of virtual
11 reality and multimedia lies a wealth of confusing
12 or even contradictory terminology that is inherent
13 in any young technology." And you say virtual
14 reality systems would be better described as
15 virtual environment systems.
16 Do you see that there?
17 A I do.
18 Q We talked a little bit about this
19 earlier, where you told me these virtual reality
20 systems were often called virtual environment
21 systems; is that right?
22 A Well, again, that was our bias at NASA

1 because we were trying to be accurate for the
2 exact reason that I wrote here.
3 Q Okay. And if you'll, please, turn,
4 now, to page 19 of the same PDF and page 9 of the
5 book. I'd like you to take a look at Figure 1.7.
6 A Sure. Okay. Let me study it a bit, if
7 you don't mind. And let me zoom in so I can see
8 what I wrote.
9 Does this allow zooming? It doesn't --
10 oh, yeah, there we go. So you'd like me to look
11 at Figure 1.7?
12 Q 1.7, please.
13 A Yes, okay.
14 Q This figure's called -- let me know
15 when you're ready.
16 A Okay. Okay. Yeah, I see it and ready.
17 Q The figure's entitled "Components of
18 Virtual Reality or Multimedia System"; is that
19 right?
20 A That's what the first sentence says.
21 Q And then, we just looked at this book,
22 equates virtual reality with virtual environments,

1 right?
2 MS. PARTRIDGE: Objection. Form.
3 A Equates, meaning that -- yeah, that --
4 if I understand what equates means, yeah, sure.
5 Q Okay. And then this figure shows that
6 this virtual environment includes visual graphic
7 generation, as well as audio generation; is that
8 right?
9 A This figure shows components. And
10 let's take a look at the way that that figure is
11 referred to in the text, just to be accurate here.
12 All right. So, you will see there, on
13 page 8, virtual reality and multimedia systems can
14 be described in terms of a diagrammatic
15 representation. It usually involves the following
16 elements, okay? So, then, it's talking about what
17 things might usually include. And so, you can see
18 that there's visual graphic generation and audio
19 generation being shown as what things might
20 usually include. They might include other kinds
21 of input to a user as well.
22 Q Okay.

1 MS. OSMAN: Can we pull up -- Erin,
2 would you mind pulling up another exhibit. This
3 is going to be called Begault Exhibit 1. This
4 exhibit is entitled "Headphone and Head-Mounted
5 Virtual Displays for Virtual Environments."
6 (Begault Exhibit 1 marked for
7 identification and attached to the transcript.)
8 A Oh, shoot. Did I lose that page?
9 Q Dr. Begault, let me know when you have
10 access to that document.
11 A I do. I'm bringing it up. So this
12 seems to be from long ago. This must be in the
13 early 1990s or something. Oh, I don't know. I
14 haven't seen this in a long time.
15 Q Do you recognize this document?
16 A Well, it's got my name on it, so I
17 guess, yeah, I was working for San Jose State
18 University Foundation at NASA, so this would have
19 dated it prior to 1999, and it appears to be a
20 co-authored paper between myself, Stephen Ellis,
21 and Elizabeth Wenzel, so I see all those things.
22 Q Okay.

1 A But I haven't looked at this paper in
2 many, many years. So I'm happy to refamiliarize
3 myself with it as necessary.
4 Q Thank you.
5 Can you, please, turn to page 2 in this
6 paper, 2 of the PDF, and I think, also, the paper.
7 No, 3 of the PDF. Sorry, 3 of the PDF and page 2
8 of the paper.
9 A Sure. Okay.
10 Q It's entitled "Levels of Fidelity."
11 A Levels of Fidelity. Yes, okay. Let me
12 zoom it in here a little bit. All right. Very
13 good.
14 Q Okay. Can you take a look at that
15 paragraph and let me know when you're ready?
16 A The first paragraph, Levels of
17 Fidelity, and everything that follows it.
18 Q If you could just read that one
19 paragraph that's entitled Levels of Fidelity.
20 A Okay. Okay. I might need to look at
21 Figure 2 to understand it.
22 Q That's fine. You can look at Figure 2

1 as well.
2 A All right. All right. Let me go over
3 here to Figure 2, Hierarchies.
4 Right. I think I'm familiar.
5 Refreshed my memory about these. So, go ahead.
6 Q Okay. So this paragraph, what did you
7 mean by the first sentence in the paragraph on
8 page 3 of the PDF, it says -- and I'll read it for
9 you. It says "At a minimum, virtual reality
10 systems usually involved visual interaction on a
11 variable level of complexity."
12 What does that mean?
13 A Oh, what that means is what you see on
14 the left side of Figure 2.
15 So, that was a paper that my co-author,
16 Ellis, had written, and he created these various
17 hierarchies, if you will. So in the paragraph
18 that we're referring to here, if you look at that,
19 where it says "At a minimum, virtual reality
20 systems usually involve visual interactions on a
21 variable level of complexity." The second
22 sentence there refers to the increasing levels of

1 simulation that one might use in a visual display.
2 Q All right. And then in, I think it's
3 the third paragraph -- third sentence in that same
4 paragraph, it says "note that the level of visual
5 information contained within the display drives
6 the hierarchy. Audio only appears at the virtual
7 environment level."
8 What does that mean?
9 A First, let's see, I'm going to say
10 here. Look at this again. So if I can remember.
11 By the way, Ellis was a visual
12 perceptual scientist, so, he was primarily
13 concerned with vision and its dominance. We know
14 that vision can be very dominant over audio, in
15 terms of certain tasks or percepts that we might
16 have in the real world, as well as, perhaps, in a
17 virtual world.
18 So, what was meant by this third
19 sentence, that you asked me there, let's see,
20 where does it have the third level? That's what
21 I'm looking for. You know, it's kind of maybe a
22 mistake. I'm looking for the word "virtual audio"

1 on the left side of Figure 2, and I don't even
2 think he put it there. So, I think his point was,
3 basically, even though I don't see it in the
4 figure the way that it's described here, audio
5 only appears at the virtual environment level.
6 Let me see if that's true. Okay. Yeah, there it
7 is.
8 Okay. At the top it says "coordinated
9 multisensory display."
10 So I think that's where Ellis'
11 hierarchy here, when he says the word
12 "multisensory," that would include audio as part
13 of that.
14 So, in a sentence here, it says "Audio
15 only appears at the virtual environment level."
16 That's just pointing out that he didn't
17 really even talk about anything with audio just up
18 at the top, except the top hierarchy in that
19 diagram.
20 And so, this was his way of saying that
21 vision, you know, visual dominance, you know, is
22 very important. And you can read the rest of the

1 paragraph. Talking about virtual realities, ties
2 to things like an aircraft and flight, and things
3 of that sort.
4 Q Okay. And you're framing this as
5 Ellis' writing, but your name, I think, is the
6 first one on this paper; is that right?
7 A Oh, I stand by this. I stand by
8 everything here. But it's co-authored. I don't
9 know who wrote what in these. When we write a
10 manuscript like this and we're all co-authors,
11 we're all checking each other's statements and
12 modifying them.
13 Q So, are you -- this seems to suggest
14 that visual images are the minimum and that
15 audio's only added after, if there are visual
16 images.
17 Is that incorrect?
18 MS. PARTRIDGE: Objection. Form.
19 A Well, virtual audio had been known for
20 many years, primarily, through the use of dummy
21 head recordings.
22 So, before virtual reality became a

1 kind of commercial concept and was being explored
2 at NASA, early 1990s, you know, well before that,
3 you would have binaural sound recordings of, let's
4 say, nature environments, for instance. And so,
5 you would have a virtual audio environment that's
6 purely audio, right? And it could transport you
7 to different locations. And these were even sold
8 commercially, as means of relaxation tapes and
9 things of this sort, in the '80s, I think, and
10 even earlier than that. And binaural recordings
11 with virtual auditory simulations, then, I think
12 they were broadcast in Germany in the 1950s, at
13 least.
14 So, when virtual reality came into a
15 commercial idea, then, of course, what people were
16 excited about was not the audio, they were excited
17 about this idea of visual representation.
18 So, you know, we're a visually
19 dominated world, and that's what excited people in
20 the commercial world.
21 So that's why you can see this emphasis
22 here.

1 But it doesn't rule out virtual
2 auditory environments at all.
3 Q No, it absolutely doesn't. It just
4 says the virtual audio is only added once you have
5 a -- once you have enough visual images at that
6 virtual environment level; is that right?
7 MS. PARTRIDGE: Objection. Form.
8 A Well, again, this is talking about a
9 specific, you know, specific time and a specific
10 topic here.
11 So, we were talking about, here, the
12 use of audio and how audio can complement the
13 virtual visual displays, okay?
14 So, the -- if I recall what the overall
15 concept was, that there had been a lot of
16 attention, at that time, to virtual displays using
17 virtual information. And so, our purpose was to
18 show or to emphasize how audio could enrich that
19 model of using, primarily, a visually dominated
20 system.
21 If I recall, some of these early
22 virtual visual displays would have audio that

1 wasn't binaural, they would just have very
2 primitive kinds of audio.
3 Q You're saying you disagree with this?
4 This seems to suggest that you need images for a
5 virtual environment and then you can add audio.
6 Are you disagreeing with that
7 statement?
8 MS. PARTRIDGE: Objection. Form.
9 A Absolutely. And you can't characterize
10 this paper saying that it requires audio to have
11 virtual visual images. That's not the point of
12 this paper at all.
13 What the point of this paper is, is
14 that you can improve a virtual visual display by
15 including virtual audio. So the idea here was
16 that there's an argument, if you will, that we can
17 take a virtual visual display and improve it by
18 using virtual audio. But that doesn't negate the
19 possibility, nor does this paper ever argue that
20 one must have that. If anything, it was saying
21 that, well, if you'd like -- the fundamental
22 argument, if I recall, is that -- what we mean to

1 do is improve virtual visual imagery by the use of
2 an existing technology, which was 3-D audio.
3 Q But it describes a virtual environment
4 as including both virtual imagery and audio; is
5 that right?
6 MS. PARTRIDGE: Objection. Form.
7 A Well, this particular paper does. This
8 was the emphasis of this, was a virtual
9 environment system that was at NASA, so that
10 started off being visually -- well, through visual
11 simulation, I think, was the earliest efforts that
12 were made in that technology, and, then, other
13 researchers, including myself, were brought in to
14 work on the virtual audio imagery because it was
15 known that, oh, this will help improve, you know,
16 these virtual visual simulations, or potentially
17 could. We didn't know, at the time, how much it
18 could improve it.
19 Q What does determining, with the WED,
20 when the user is leaving the environment mean?
21 MS. PARTRIDGE: Objection. Form.
22 A Can you show me where that -- the

1 context of where that's said.
2 Q Sure.
3 MS. OSMAN: Let's pull up Exhibit 1001,
4 please. And that is the '179 patent.
5 (Exhibit 1001 previously marked for
6 identification and attached to the transcript.)
7 A Oh, I lost the page again, sorry.
8 Exhibit -- I'm not there yet. And,
9 again, you would prefer I don't use the Google
10 Patent version?
11 Q Yes. Please use the PDF.
12 A Okay.
13 PLANET DEPOS TECHNICIAN: It should be
14 up.
15 A I don't see it yet. Hold on. Oh,
16 '179 patent?
17 Q Yeah, '179.
18 A Okay. Got it. It's up now, and it's
19 teeny tiny so I've got to try to zoom it. It's
20 blurry, too.
21 Q And then, once you have that open,
22 please, turn to the very last page of the

1 document, it's page 39.
2 A Hang on. I'm having problems.
3 Q Sure.
4 A The search window's open by accident.
5 I'm trying to get out of it. So let me reload the
6 page.
7 It's funny, the first time, it was
8 interacting very quickly, and I have really fast
9 downloads. So, now, this is not interacting so
10 well.
11 So you would like me to go to the last
12 page of the patent?
13 Q Page 39, correct.
14 A Page 39. I'm there. It's very blurry
15 so I'm going to do my best.
16 Where are you?
17 Q So the very last page of the patent,
18 claim 14, and it's in column 48, starting at
19 line 10.
20 A I've got to blow this up somehow.
21 I think I see it. "Determining, with
22 the WED, when the user is leaving the

environment."

Is that the sentence you're talking about?

Q That's the sentence.

A Okay.

Q So --

A Okay.

Q Do you want me to repeat my question to you?

A Stand by. I want to read this in context.

Okay. Yeah, go ahead and read the question.

Q What does determining, with the WED, when the user is leaving the environment mean?

MS. PARTRIDGE: Objection. Form.

A Well, it could mean leaving either a virtual or a real environment by means of a wearable electronic device.

Q Okay. And what does the "determining, with the WED" part of that statement mean?

MS. PARTRIDGE: Objection. Form.

1 A Depends on what type of WED we're
2 talking about. Could depend on, you know, any
3 number of possible formations of what that WED
4 might be.
5 Q Well, Dr. Begault, you provided an
6 opinion about this claim; isn't that right?
7 MS. PARTRIDGE: Objection. Form.
8 A Well, you'd have to refresh me by
9 taking me to that page of my declaration. I'm not
10 recalling specifics about that. I'm pretty sure
11 you did, but I just need to be -- I'd like to see
12 it.
13 Q Well, my question for you is, did you
14 provide an opinion about the validity of this
15 claim, claim 14 in the '179 patent?
16 MS. PARTRIDGE: Objection. Form.
17 A Yes, I'm pretty sure I did.
18 Q To do that, I assume you must have
19 understood what this claim means?
20 A Yes, whatever I wrote in the
21 declaration, I understood what I was saying.
22 Q Okay. So then, all I'm asking you is

1 to just explain to me what this limitation means,
2 what does "determining, with the WED, when this
3 user is leaving the environment," what does that
4 mean?
5 MS. PARTRIDGE: Objection. Form.
6 A And I'd like to go to my declaration to
7 address it from that.
8 Do you want me to do it from memory or
9 to just give you some hypothetical?
10 Q You're welcome to go to your
11 declaration. My question's the same.
12 A Fine. Well, I'd like to look at that,
13 then, if you would give me a moment here.
14 This was claim 14; is that correct?
15 Q Claim 14.
16 A Yeah, okay. All right.
17 Let's see. Well, I am not finding my
18 description of it, unfortunately. Stand by here.
19 Is this the '179. Oh, that's the
20 '179 patent. I see, I was -- I see the problem.
21 I was looking at the wrong document.
22 Okay. So, I don't recall saying

1 anything specific about the WED itself, I rather
2 commented on what occurs when a system determines
3 someone's leaving an environment.
4 Q Okay. So my question to you is, what
5 does that limitation mean? What does it mean,
6 determining, with the WED, when the user is
7 leaving the environment?
8 MS. PARTRIDGE: Objection. Form.
9 A Well, it means exactly what it says. I
10 mean, there's some sort of electronic device
11 that's worn that can, thus, determine when
12 somebody's leaving the environment. We can think
13 of many different ways that that might occur.
14 Q Would the WED determine when the user
15 is leaving the environment if it's using external
16 sensors?
17 MS. PARTRIDGE: Objection. Form.
18 A It could. So I guess that's one
19 possibility.
20 Q What about if the WED is using external
21 reference points?
22 MS. PARTRIDGE: Objection. Form.

1 A Maybe.
2 Q Is the WED determining when the user is
3 leaving the environment if it's using an external
4 camera?
5 MS. PARTRIDGE: Objection. Form.
6 Objection. Outside scope.
7 A I would need to know more, I guess,
8 about this external camera, if it's somehow tied
9 in with the WED or not.
10 Q If the WED is incorporating the
11 information from the camera to determine when the
12 user is leaving the environment, is the WED
13 determining when the user is leaving the
14 environment?
15 MS. PARTRIDGE: Objection. Form.
16 Objection. Outside the scope.
17 A It might be. Might not be. I don't
18 know. I mean, it might be other ways.
19 Q Why do you say it might not be? When
20 would it not be determining when the user is
21 leaving the environment?
22 MS. PARTRIDGE: Objection. Form.

1 Objection. Outside the scope.
2 A Well, wait a minute, you gave me a
3 specific example, I thought, of WEDs with a camera
4 talking to the --
5 Q Right. A WED is receiving information
6 from a camera and using that to determine when the
7 user is leaving the environment.
8 Does that fit this claim limitation?
9 MS. PARTRIDGE: Objection. Form.
10 Objection. Outside the scope.
11 A I mean, I'm not an expert on these sort
12 of camera systems or, you know, tracking systems
13 in general, and how they might interact with a
14 WED, I don't know, necessarily, how that would
15 work. I just know that this is a device that can
16 determine when somebody's leaving an environment
17 and the specifics I don't have. I don't think I
18 indicate anything of that in my declaration.
19 Q So you don't know how this would work?
20 You don't know how you would use a WED to
21 determine when a user is leaving an environment?
22 MS. PARTRIDGE: Objection. Form.

1 A There are many possibilities for how
2 that might work.
3 Q Is one of them using a camera, an
4 external camera?
5 MS. PARTRIDGE: Objection. Asked and
6 answered.
7 A One of many possibilities.
8 Q Is one of them using an external
9 tracking device?
10 MS. PARTRIDGE: Objection. Form.
11 Objection. Outside scope.
12 A It could possibly be.
13 Q And would a person of ordinary skill,
14 in 2014 or 2015, know how to determine, with a
15 WED, when the user is leaving an environment?
16 MS. PARTRIDGE: Objection. Form.
17 Objection. Outside scope.
18 A We went over that earlier, I believe,
19 and this was my answer to that general question:
20 Person of skill in the art in audio and audio
21 signal processing, 3-D audio, and things of that
22 sort, would know how to manipulate audio and audio

1 cues and the audio digital signal processing.
2 They might not be a person of skill in the art of
3 knowing how to communicate tracking information or
4 other kinds of information to that WED. They
5 might not know how it works, in other words.
6 They might have a layperson's notion
7 that somehow a WED can add some idea of some
8 components of position. They might be very
9 primitive. It might be six degrees of freedom.
10 Who knows? But I don't think it would go, you
11 know, beyond that. You would need a person of
12 skill in the art who was an expert in WEDs.
13 Q So, a person of ordinary skill in the
14 art would need quite a lot of detail to try to
15 figure out how to determine, with the WED, when
16 the user's leaving the environment?
17 MS. PARTRIDGE: Objection. Form.
18 A I think the way it works is that an
19 expert in audio gets together with an expert in
20 other areas and says, let's form a system.
21 Q Uh-huh. But I'm asking you,
22 specifically, about the person of ordinary skill

1 in the art that you've identified in your
2 declaration. That person would need quite a lot
3 of guidance or help from a VR expert to figure out
4 how to determine, with the WED, when the user is
5 leaving the environment.
6 Is that correct?
7 MS. PARTRIDGE: Objection. Form.
8 A No. That kind of -- that's too fuzzy.
9 I think what would happen is that there
10 would be somebody who would have the requisite
11 expertise in determining positional information,
12 but that the person of skill in the art, by my
13 definition, would know what to do with that
14 information once it was in a form that they could
15 utilize, in order to manipulate the audio.
16 Q Can we agree that a person of ordinary
17 skill in the art would need either detailed
18 information or help form somebody with this
19 specific expertise in order to determine, with the
20 WED, that the user is leaving the environment?
21 MS. PARTRIDGE: Objection. Form.
22 A Well, maybe not. Perhaps, for

1 instance, that information that I said that the
2 audio expert would need to manipulate sound, could
3 be easily accessed through some sort of easy
4 computer interface, right?
5 So, for instance, there are systems
6 that can tell you, you know, give you data
7 streams, let's say, of positional information.
8 And so, once the person skilled in the art in
9 audio has that positional information, then they
10 can, then, take that information and, you know, it
11 doesn't take -- your characterization was that
12 they would be very complicated. Well, sometimes
13 it's not so complicated, it's just a matter of
14 getting that information in a way that's, I guess
15 I'll put it this way: POSA readable, by a
16 person -- as I've explained it.
17 Now, if you wanted to go, though, into
18 the more subtleties of the things with the WED,
19 its electronics, its, you know, programming, other
20 than things like that, that would be out of the
21 scope of the POSA.
22 Q Okay. So, if you were going to design

1 a WED that was able to determine when the user is
2 leaving an environment, that's out of the skill of
3 a person of ordinary skill in the art?
4 MS. PARTRIDGE: Objection. Scope --
5 objection. Form. Sorry.
6 A No. Because you could take that
7 positional information and then the audio expert
8 can have an idea of environmental boundaries,
9 right? So that's the other thing that, if you
10 will, it's sort of a common language, if you will,
11 we have interfacing information. So I can have a
12 model of the virtual or real-world environment
13 that I'm using in my audio world, and that model
14 of the world, in my audio environment, right, I
15 have a model of it, and I know what to do, based
16 on the information that I'm getting from some sort
17 of WED. And then I can, you know, interact -- I
18 can do things that reflect interactivity with that
19 environment.
20 Q Okay.
21 A But, again, I'm forming my own
22 environment, if you will, that is to support the

1 model that's being used in the visual world, but
2 the audio person can certainly build a model of a
3 virtual environment so as to know how to
4 manipulate the audio.
5 Q Okay.
6 MS. PARTRIDGE: So we're getting close
7 to the an hour on the record -- or getting past an
8 hour on the record. So when you get to a good
9 stopping place, we'll take a break.
10 MS. OSMAN: Great, thanks.
11 Q So, Dr. Begault, it sounds like what
12 you're saying is, if the audio person designs the
13 environment they may be able to, then, determine,
14 with the WED, when the person is leaving the
15 environment.
16 Is that right?
17 MS. PARTRIDGE: Objection. Form.
18 A As I gave you an example where if I
19 build a model of an environment, right, that's
20 trackable to me, right, that I know, for instance,
21 the distance of a sound object, right -- a
22 sounding object. So let's say that's a very

1 simple example. We might also know the position
2 of that object, and we might get that information
3 from a data stream, okay? And that data stream
4 probably comes from a WED, okay? So, if that
5 information is coming to me, then I can, then,
6 create a model of a virtual world that supports
7 or, should I say, reflects the conditions of the
8 virtual environment to be simulated. And I could
9 do things that are different, even, as well. It
10 really kind of depends, you know, on the
11 particular way or goal of the person doing the
12 audio model.
13 Q How would this person get this
14 positional data stream that seems like it's
15 necessary? Where would that come?
16 A Well, in the old days, we would use
17 a -- what was it called? I think it was an RS232
18 card that was connected to a computer. And that
19 was connected via a serial interface to a device
20 called a Polhemus magnetic tracker. And so, the
21 data stream would arrive as a separate piece of
22 software. And, so, what the person building a

1 virtual audio world would do is take that
2 streaming information and then create audio
3 software models -- well, I should say audio
4 software to create a, I would say, audio-centric
5 model, is the way I would say that.
6 Q Okay. So using that stream
7 information, which it sounds like you're saying a
8 POSA would know how to get, a POSA would know how
9 to determine, with the WED, when the user is
10 leaving the environment?
11 MS. PARTRIDGE: Objection. Form.
12 A A POSA could potentially understand how
13 to make their model of the virtual audio world
14 correspond, in some way, to the either physical or
15 virtual world that is part of the virtual reality
16 system, which comprises a display of visual
17 information and probably comprises other kinds of
18 effecters and sensors.
19 Q So it sounds like -- and I'll repeat my
20 question. And if you can just answer it, I'd
21 appreciate it, just to make the record clearer.
22 A POSA would know how to determine,

1 with the WED, when the user is leaving the
2 environment?
3 MS. PARTRIDGE: Objection. Form.
4 Objection. Outside the scope.
5 A A POSA would know or could model how
6 that would occur if they were able to obtain the
7 information in a way that that POSA would know how
8 to work with, is the way it's done.
9 Q And you're -- you were telling me,
10 earlier, that a POSA would know how to obtain that
11 information, the positional information?
12 MS. PARTRIDGE: Objection. Form.
13 A Possibly. So, I mean, the Polhemus
14 tracker I mentioned earlier may or may not have
15 been known to a POSA. That probably should have
16 been known to a POSA, since it was commonly used
17 in virtual reality systems. So it was a way of
18 maintaining streaming data.
19 A more simple example is a POSA could
20 use a joystick, let's say, and put it on their arm
21 and then that constitutes a wearable electronic
22 device of some sort, right? And so, that could be

1 something that, you know, potentially could
2 manipulate audio in the audio world.
3 So it's potentially possible that data
4 could be obtained in a format that would be usable
5 by a POSA to manipulate audio information, yes.
6 Q Okay.
7 MS. OSMAN: Thank you. I think this is
8 a good time for a break, if that works for you,
9 Dr. Begault.
10 THE WITNESS: Please.
11 PLANET DEPOS TECHNICIAN: Off the
12 record. The time is 15:43.
13 (Recess taken.)
14 PLANET DEPOS TECHNICIAN: Back on the
15 record. The time is 16:01.
16 BY MS. OSMAN:
17 Q Welcome back, Dr. Begault.
18 How are you?
19 A Give me one moment. Just let me grab a
20 glass of water.
21 MS. OSMAN: Sure. Let's go back off
22 the record.

1 PLANET DEPOS TECHNICIAN: Off the
2 record. 16:01.
3 (Off the record.)
4 PLANET DEPOS TECHNICIAN: Back on the
5 record. The time is 16:02.
6 BY MS. OSMAN:
7 Q Okay. Welcome back, again,
8 Dr. Begault.
9 A Can you hear me?
10 Q I can hear you.
11 MS. OSMAN: Can everybody hear him?
12 A I see. I don't have my volume up. I
13 think we're communicating now. Test 2, 3, 4.
14 We're good. Okay. Sorry about that. I always
15 turn my volume back.
16 PLANET DEPOS TECHNICIAN: Back on the
17 record. 16:02.
18 Q Welcome back, Dr. Begault.
19 A Thank you.
20 Q Did you talk to your attorney, any of
21 your attorneys, during the break?
22 A I'm waiting for any objection, but --

1 MS. PARTRIDGE: I'm sorry. You can
2 answer the question yes or no. Thank you for
3 being a very good deponent there.
4 I object on attorney-client privilege.
5 But you may answer that question yes or
6 no.
7 THE WITNESS: I'm still learning.
8 A No.
9 Q Thank you.
10 Dr. Begault, I understand you provided
11 an opinion on written description in your
12 declaration; is that right?
13 A I probably did. I'm trying to recall,
14 written description, if that was a section.
15 I probably did. I'm just not recalling
16 what that is exactly. I guess I could try to find
17 that.
18 Q Well, my next question was going to be
19 what your opinion was. So, perhaps, find the
20 opinion and then I will ask you.
21 A I think that makes sense.
22 Q Okay.

A Are you looking at any particular part of my declaration?
Q Not at the moment, no.
A So you said "written description."
I'm not playing dumb. I'm really just not sure what that means. There's written descriptions of all kinds of things.
Q I understand, yeah.
A Sorry I'm being difficult.
Q No, it's okay.
Okay. So I can rephrase my question.
Is it fair to say you don't know what the legal term "written description" is?
MS. PARTRIDGE: Objection. Form.
A I'm not an attorney, so I don't presume to give you a definition of anything that's a legal term.
Q So did you provide an opinion about whether the '179 and '184 patents have adequate written description?
MS. PARTRIDGE: Objection. Form. Objection. Outside scope.

1 A You know, I believe I did with regards
2 to a specific context.
3 Q And what was that context?
4 A Well, again, I'm going to do this by
5 recollection, so maybe I ought to take a look at
6 my declaration.
7 Q Dr. Begault, I just searched your
8 declaration, I think paragraph 49 might be what
9 you're looking for.
10 A Okay. Let's take a look here because I
11 was thinking of something else, but that's all
12 right.
13 49. Right. That's exactly what I was
14 thinking about as well.
15 Q Okay. Well, so did you provide an
16 opinion about written description?
17 A Yes, I did. I believe my opinion was
18 that the '140 application, which we haven't
19 defined formally here, but for the record, we'll
20 say that that is the precedent to the two patents
21 here. I don't know a better word for it. That I
22 opined that it did provide sufficient written

1 description so that a POSA would understand the
2 subject matter at hand.
3 Q Okay. And I wanted to understand a
4 little bit. What do you mean by "written
5 description" there?
6 A Well, I believe what that means is that
7 a POSA would understand that the writer of this
8 specific application had possession of that claim
9 subject matter.
10 Q Okay. And what does it mean to have
11 possession of the claim subject matter?
12 A Well, I believe that the claim subject
13 matter are the statements that are made in the
14 application about claims and specifications.
15 Q So when you were assessing the '140
16 application to see if it provided written
17 description support, were you looking for the
18 words of the claim in the '140 application?
19 A Yes, I think I was. I think I was
20 looking at everything in these.
21 Q What do you mean by "everything"?
22 A I mean the specifications and the

1 claims, right?
2 I think that the claims are slightly
3 different, but I believe the specifications are
4 the same between the '140 and the patent.
5 Am I correct about that?
6 Q You are correct. I think my question
7 was a little bit different.
8 I was asking you, when you were
9 assessing the '140 application to see if it
10 provided written description support for the
11 claims of the '184 and '179 patents, did you look
12 for the exact words of the claims in the '140
13 application?
14 A I was looking at the entire '140
15 patent -- application to come up with my opinion.
16 Specifically, that, I believe, that a POSA would
17 know how to implement the methods that are
18 described and -- yeah, I think that's what I was
19 getting at with that.
20 Q So, you were looking at the '140
21 application to try to determine if a person of
22 ordinary skill, reading it, would know how to

1 implement the methods?
2 A Yes, that's right. I think so.
3 THE WITNESS: You're muted.
4 MS. PARTRIDGE: Sorry. I was coughing.
5 Objection. Form.
6 I was wondering why she wasn't writing
7 that down. Sorry.
8 THE WITNESS: Your volume is about
9 three times louder than everybody else, too.
10 MS. PARTRIDGE: That's because I'm deaf
11 and my stupid hearing aids just stopped working.
12 Sorry, I'll turn them down.
13 I'm a disabled person.
14 Q So, Dr. Begault --
15 A Sorry.
16 Q That's okay.
17 Dr. Begault, were you looking for the
18 exact words of the claim or were you just looking
19 in the '140 application for something that would
20 have told a person of ordinary skill in the art
21 how to implement the claim?
22 MS. PARTRIDGE: Objection. Form.

1 A Well, there's a number of methods that
2 are brought out in the '140 application, and those
3 are also in the '179 and the '184. So you recall,
4 I was testifying earlier that I tried to describe
5 to a layperson what these methods might be in my
6 declaration.
7 And so, in my opinion, the '140
8 application was describing things a person of
9 skill in the art would know what to do.
10 Q Okay. That's helpful.
11 And then, in reaching your opinion, did
12 you look at the '140 application and combine
13 different disclosures or were you focused on one
14 particular disclosure in that application?
15 MS. PARTRIDGE: Objection. Form.
16 A I was looking at all of the disclosures
17 in it.
18 Q Okay. And when you say there's
19 sufficient written description support, is there
20 one particular disclosure that you think provides
21 sufficient support for the inventions or is it a
22 combination of disclosures?

1 MS. PARTRIDGE: Objection. Form.
2 A Did either of your possibilities
3 include each and every? Because I think each and
4 every disclosure counts. I mean, right, would be
5 something that could be implemented by a POSA.
6 Q Okay. So you combined all of the
7 disclosures?
8 MS. PARTRIDGE: Objection. Form.
9 A I didn't combine them. I basically
10 have opined that if you were to look at the
11 examples that are given, for instance, that are
12 disclosed, as means by which to accomplish certain
13 things, that those would have been known to a
14 POSA.
15 Q Okay.
16 A Excuse me.
17 Q So, are you saying the different
18 examples would have been known to a POSA and that
19 a POSA would have been able to use those examples
20 to implement the claims?
21 A No.
22 MS. PARTRIDGE: Objection. Form.

1 Q Okay.
2 A Let me answer your question.
3 Q Okay.
4 A Your question was, would they be known
5 to a POSA? What I was saying was, a POSA would
6 know -- would read the application, would read
7 these methodologies, right, and know, oh, I
8 understand the -- what's being described here, how
9 I would implement that.
10 But it's a different question of, well,
11 would a POSA know -- have known to implement those
12 for a specific purpose in the claims? And I don't
13 believe that that would have been true, the notion
14 of using these methodologies, for instance, as an
15 alerting system would not have been known. They
16 weren't known to me at that time. I don't think a
17 POSA would have known to use these techniques in a
18 way they're described here.
19 Q And when you say "the way they're
20 described" you mean the way they're described in
21 the claims?
22 A In particular, yeah --

1 MS. PARTRIDGE: Objection. Form.
2 A -- in the claims.
3 Q Okay. And they wouldn't have known to
4 use alerts the way that they're described in the
5 claims, even after reading the '140 application?
6 MS. PARTRIDGE: Objection. Form.
7 A No. I think that's mischaracterizing
8 it. I think they would look at the claims,
9 then -- I mean, if I were reading the patent, I
10 would go, here's some claims, here's an idea,
11 here's a concept. How would I go about
12 implementing that? I'd look at specification, I'd
13 look at the claims, then I'd combine them
14 together, you know, mentally and say, oh, would I
15 know how to do that in order to create this -- you
16 know, to accomplish this goal, for instance, this
17 goal of alerting. And so, that goal could be
18 understood.
19 Q You're saying that a POSA, reading both
20 the specification and the claims, would be able to
21 accomplish the goal of alerting?
22 A In the -- according to the alerting

1 methods that are called out in the claims, okay,
2 the claims that we have been discussing, I'm
3 saying that by reading the specification and
4 reading the examples in the specification, and
5 the -- then we would know, oh, this is -- there's,
6 obviously, a way to do this particular action in
7 order to achieve the claim.
8 Q Would a POSA reading just the
9 specification have known -- have had reason to
10 alert the using that they were leaving -- to use
11 the alert -- strike that.
12 Let me ask this again.
13 Would a POSA, just reading this
14 specification, have had reason to use alerts the
15 way that they're disclosed or claimed?
16 A I don't know the answer to that
17 question.
18 Q Why do you say you don't know?
19 A Well, I'm trying to figure out the
20 question here. Would a POSA know -- why would a
21 POSA read the patent and only -- or the
22 application and only read the specification and

1 not the claims? I mean, you would read it all,
2 right? So you would --
3 Q If we're reading the '140 application,
4 it's before the claims. So if we're just looking
5 at the '140 application, would a POSA have
6 known -- or -- strike that.
7 Just looking at the '140 application,
8 would a POSA have had a reason to use an alert as
9 in the claims?
10 MS. PARTRIDGE: Objection. Form.
11 A I don't know what a particular POSA's
12 reasons might be.
13 Q So, a POSA reading the '140 application
14 would have used an alert as disclosed in the
15 claims?
16 MS. PARTRIDGE: Objection. Form.
17 A Well, to be specific, there's a number
18 of people that qualify as a POSA that would never
19 want to make an alert for whatever reason, right?
20 I mean, so, I'm a little kind of out in left field
21 here. I'm not sure what we're talking about.
22 We've got POSAs. We've got POSAs that

1 might read this. They might read part of it. I'm
2 trying to figure out where we're going here.
3 Q Well, I think we're -- hopefully I can
4 clarify. Let me try this differently.
5 So you were providing an opinion on
6 what a person of ordinary skill in the art would
7 have understood; isn't that right?
8 A I was, yes.
9 Q And so, you took a look at the '140
10 application; is that right?
11 MS. PARTRIDGE: Objection.
12 A Right.
13 THE WITNESS: Sorry. I interrupted.
14 MS. PARTRIDGE: Objection. Form.
15 Q Reading the '140 application, would a
16 person of ordinary skill in the art have had
17 reason to use an alert, as claimed?
18 MS. PARTRIDGE: Objection. Form.
19 A I can't know what that particular
20 POSA's reasons or what brought them to that
21 particular application.
22 Q Okay. So you have no opinion about

1 whether or not a POSA would have known to use an
2 alert, as claimed, based on the '140 application?
3 MS. PARTRIDGE: Objection. Form.
4 A Well, I'm trying to figure out who this
5 POSA is. So, for instance, I'm a person of skill
6 in the art, I read all kinds of patents and
7 applications. And I can understand what they're
8 saying and I've got no reason to use it because
9 it's out of the -- out of my world, let's say, or
10 it's a field that I'm not really particularly
11 interested in.
12 So, that's my answer to you there, is I
13 don't know what this POSA's interests are, what
14 their application is, et cetera.
15 Q You've provided a definition of what a
16 POSA is, right? You've defined who this POSA is;
17 is that right?
18 A Yes, I have.
19 Q So using your definition, would a
20 person of ordinary skill in the art reading the
21 '140 application have used an alert as taught --
22 as claimed in the challenged claims?

1 MS. PARTRIDGE: Objection. Form.
2 A There may be people who are POSAs that
3 would have no need to use an alert in their
4 particular application field. That's the answer I
5 was trying to give you. Just as I have read many
6 a patent that, as a POSA, where I can have an
7 understanding of it and I would have no need to
8 use it.
9 Q Would it have been obvious to change
10 binaural sound as an alert, based on the '140
11 application?
12 MS. PARTRIDGE: Objection. Form.
13 Objection. Legal conclusion.
14 A I think these are novel ideas, the idea
15 of degrading the binaural sound in the various
16 ways that are described as a means of an alert.
17 Q So, degrading binaural sound as an
18 alert is a novel idea; is that right?
19 A That was -- you know, means, methods by
20 which are described specifically in the patents,
21 yes.
22 Q Does the '140 application disclose

1 degrading binaural sound as an alert?
2 MS. PARTRIDGE: Objection. Form.
3 A Yes, I believe that some of those
4 methods involve a degradation with quotes around
5 the word "degradation" because that could mean
6 several things, of -- what we could maybe use
7 instead of degradation, we could say modifying
8 binaural sound. Maybe that's a gentler term. But
9 it certainly is -- it seems to encompass a lot of
10 the teachings, if you will, of that application.
11 Q Can you point me to where the '140
12 application discloses using modifying binaural
13 sound as an alert or warning?
14 A Sure. Give me a moment. I'll have to
15 refer to my declaration.
16 Okay. I don't have the '140 in front
17 of me, so I can't tell you particularly where. If
18 you want me to bring it up, I'll be happy to.
19 Q Dr. Begault, let me put that exhibit in
20 the record so you can look through it.
21 It is Exhibit 1028.
22 (Exhibit 1028 previously marked for

1 identification and attached to the transcript.)
2 A Great. Give me a moment. It's not up
3 yet.
4 PLANET DEPOS TECHNICIAN: Currently
5 uploading.
6 A Sounds good.
7 Q It's done.
8 A All right. Let me try. Not yet. I
9 see 1038. I see 1001. And I see my paper and I
10 see test. Try again.
11 Oh, 1028. There it is. Okay. Great.
12 Okay. Again, we have a fair amount of
13 blur here, lots of printed matter. So if you'd
14 like me to find for you what you call where a
15 modification of binaural sound is called out; is
16 that correct?
17 Q Is called out as an alert. So I can
18 read my question for you again. I said, can you
19 point me to where the '140 application discloses
20 using modified binaural sound as an alert or
21 warning?
22 A Okay.

1 MS. PARTRIDGE: Objection. Form.
2 A Okay. All right. All right.
3 Let's see. So I don't have if I'm --
4 I'm looking at amendments now, on page 28. I
5 think you want me to look, actually, in the
6 application itself, right? I don't know what
7 constitutes the application versus these
8 amendments, right?
9 Q Well, you just opined that the '140
10 application discloses modifying binaural sound as
11 an alert or a warning.
12 So my question to you is, where is that
13 disclosed?
14 A Sure. All right. So if you look at
15 Figure 2, for instance, of the description of the
16 drawings, I'll just read it out loud, is that
17 okay?
18 Q Could you tell me where you're reading,
19 please?
20 A Yeah. The first place I discovered it
21 is on page 48 of 195, but then there's another
22 thing here that says 93 of 196. So I don't know

which page I'm really on because these are -- oh, wait. The exhibit, it's page -- it's blurry. I think it's 93 of Exhibit 1028, if you could go there.

Q Okay.

A All right. Are you ready?

Q I'm on page 93 and the title is "Brief Description of the Drawings."

Is that the correct page?

A Right, right. So this is one location. Figure 2 is a method to change between providing sound at a sound localization point and binaural sound to a person to providing the sound in stereo sound, mono sound, or altered binaural sound to the person, in accordance with the example embodiment.

Q What does that disclose?

A Well, that discloses a modification of binaural sound.

Q Does it disclose using a modification of binaural sound as an alert or a warning?

MS. PARTRIDGE: Objection. Form.

1 A That specific -- I think that was the
2 context in which that is discussed and that is --
3 maybe I can find you a more specific example.
4 It's -- I believe it's in the examples that are
5 given, multiple examples of transitioning between
6 different environments. I think I've itemized a
7 number of those in my declaration that you can go
8 to that should be parallel in the application.
9 So, you know, these are the things that
10 start with the words "consider an example
11 embodiment," for instance.
12 So, it's easier for me to give you
13 specific examples from my declaration, but if you
14 want, I could cross-reference it back to this
15 other document, and we could take the time to do
16 that.
17 Q Well, we can go through your
18 declaration, but my question for you is, is there
19 a specific example that discloses using a change
20 in binaural sound as either an alert or a warning?
21 MS. PARTRIDGE: Objection. Form.
22 Objection. Asked and answered.

1 A Yes. It's basically alerting a person
2 that they have changed their environment.
3 Q And where is that disclosed in the '140
4 application?
5 MS. PARTRIDGE: Objection. Form.
6 A I'll point it to you.
7 All right. I will find here -- I do
8 recall there's a section specifically -- and I
9 don't know if I put this in as one of the
10 examples, but I do believe there's an example
11 having to do with just a change in the data rate,
12 right, the ability of the system to simulate
13 binaural sound. I think there's a kind of example
14 of that.
15 But the examples that I'm looking at,
16 that are in my declaration, we talk about a change
17 in audio rendering from one kind of binaural sound
18 to another. We talk about transitioning from
19 stereo sound to binaural sound. And these are all
20 concurrent with a way of informing the listener
21 that they are moving between different
22 environments and could also be informing the other

1 participant that they're switching between those
2 things.
3 Q So, sitting here today, can you point
4 me to any example in the '140 application of
5 degrading or changing binaural sound as an alert
6 or a warning to a user?
7 MS. PARTRIDGE: Objection. Form.
8 Objection. Asked and answered.
9 A I can give you several examples because
10 the specifications match between the patents and
11 the '140 application, if we can agree that the
12 specifications are the same.
13 Q I'd like to focus on the '140
14 application. That's what we're focused on for
15 this discussion.
16 A That's fine. I guess I'm
17 questioning -- I'm asking this because it's far
18 easier for me to hunt through the examples to
19 answer your question by looking at my declaration
20 because they parallel the '140. If you want me to
21 find the equivalent spot in this document using
22 these very tiny representations on the SharePoint,

1 I'm more than happy to do that, but it's going to
2 take me a little while.
3 Q It's fine for you to use your
4 declaration, if that's helpful.
5 A It is helpful.
6 So if you go to my declaration and you
7 will see on pages 21 through 24, and you'll see
8 Table 1, transition in physical environments and
9 transitions in 3-D virtual environments.
10 Q Okay. And so, these are, in your
11 opinion, the examples of using a change in
12 binaural sound as an alert or warning?
13 A Amongst other ways.
14 Q What do you mean when you say "other
15 ways"?
16 A Well, not just changing binaural sound
17 from one type to another type. But, also,
18 changing binaural sound to monaural sound, for
19 instance, or to stereo sound. And then the
20 specific ways that these occur are outlined in
21 later sections, in terms of the methodologies that
22 I had talked about earlier.

1 Q Okay.
2 A So, for instance, creating situations
3 where the sound is heard inside of the head
4 instead of externalized.
5 Q Can you look back, please, at
6 Exhibit 1028 and turn to page 102 in that exhibit.
7 A 1028, file history. That's what we
8 were just on, right? Is this the one?
9 Q That file history of the '140
10 application. And I'm asking you to turn to
11 page 102 of the PDF.
12 A 102, okay.
13 So, just to make sure we're on the same
14 page, so to speak, yes, 102, it says page 11 at
15 the bottom. Yes.
16 Q Okay. Perfect.
17 So I'd like you to take a look at
18 line -- the paragraph that starts at line 16. The
19 first words are "in scenario 110 a, a user 120
20 wears electronic earphones 122."
21 Do you see that there?
22 A I do.

1 Q Can you read that paragraph and let me
2 know when you're ready?
3 A Oh, sure.
4 All right. I think I'm done.
5 Q Okay. In your opinion, does this
6 paragraph, the description of this invention in
7 this paragraph, does that match the claimed
8 inventions?
9 MS. PARTRIDGE: Objection. Form.
10 A Yeah, I believe it does.
11 Q Okay. Is there an HMD in this example?
12 MS. PARTRIDGE: Objection. Form.
13 A Well, there are earphones and there's a
14 laptop display, I believe, here.
15 Q Is there an HMD?
16 A The word HMD is not here.
17 Q Okay. Is there an HMD that displays a
18 virtual image?
19 MS. PARTRIDGE: Objection. Form.
20 A There are HMDs that display virtual
21 images.
22 Q In this specific example, is there an

1 HMD that displays a virtual image?
2 MS. PARTRIDGE: Objection. Form.
3 A It does not show an HMD in this
4 particular paragraph.
5 Q How about a WED? Is there a WED in
6 this example?
7 MS. PARTRIDGE: Objection. Form.
8 A Let's see here. I don't see the word
9 "WED" in here.
10 Q Okay. And so you agree, also, that
11 there's no WED that displays a virtual image?
12 MS. PARTRIDGE: Objection. Form.
13 A You know, to be accurate here, I think
14 what I would need to do is take a look at the
15 figure. Isn't there a figure that this is
16 referring to? So that way we could maybe --
17 Figure 1. So maybe we ought to look at Figure 1
18 to be able to more accurately answer your
19 question.
20 Q Figure 1 is on page 178 of this same
21 document, if you want to take a look.
22 A Yeah, let's take a look. All right.

1 All right. Then we would need to
2 determine if some of these things are HMDs or not.
3 It's a little hard for me to tell. 160, for
4 instance. So let's see here. I guess I could
5 search.
6 Okay. I see -- I'm sorry, what page
7 were we on? You gave me the page.
8 Q We were on page 102.
9 A 102. Yeah, this is very difficult for
10 me to tell. Now, we were talking about figure --
11 what was it, Figure 2, was it? Figure -- what was
12 it?
13 Q Figure 1 --
14 A Figure 1.
15 Q -- and the scenario in Figure 1.
16 A What page is Figure 1?
17 Q Figure 1 is on page 178.
18 A 178, okay.
19 So, honestly speaking, looking at this,
20 I can't tell if there's an HMD or not that's
21 associated with the device identified as either
22 '160 or '162 there, SLP moves into object with

1 '116.
2 Also, there's a question of, I don't
3 recall, at 124 there, which is some sort of
4 virtual person that somebody's communicating with,
5 if they're wearing an HMD. Maybe it's not
6 specific in these examples. I just -- I don't
7 recall exactly.
8 Q Okay. So the paragraph that we are
9 looking at is scenario 110. Which is that box on
10 the top of Figure 1.
11 Do you agree with that?
12 A I don't know. 110?
13 Q You don't know. Why don't you look at
14 the paragraph.
15 A Let's go back to the paragraph. Is it
16 talking about 110?
17 Q It says "in scenario 110."
18 A Oh, okay. Okay. Well, then, yes, this
19 looks to be like a person wearing a binaural --
20 somebody wearing headphones. I think that's what
21 122 is. And it looks like they are working -- I'm
22 not sure, what is 127? Do you know what that is,

1 or 129?
2 Q 127 is a cup, designated as an SLP and
3 a stapler as designated as another SLP, 129.
4 A Okay.
5 Q I'm just looking at page 102, that's
6 lines 28 through 30.
7 A Okay. Let me go to 102. 102, 102.
8 196. All right. And, okay. All right.
9 So this doesn't talk about 102 here, in
10 that paragraph that we've been discussing. We
11 were on 102, the paragraph beginning "in scenario
12 110," right?
13 Q That's what we're looking at.
14 A Right.
15 So I don't see HMD here. But I
16 would -- might need to know more about that
17 particular -- all of the things that are there
18 that are described for scenario 110, all right?
19 Q Sitting here today, you don't see a
20 disclosure of an HMD?
21 MS. PARTRIDGE: Objection. Form.
22 A I don't see --

1 THE WITNESS: Sorry.
2 A Between lines 16 and 26, there is
3 the -- the word HMD does not appear.
4 Q And sitting here today, you also didn't
5 see a disclosure of a WED in this scenario; is
6 that correct?
7 MS. PARTRIDGE: Objection. Form.
8 A Only if we exclude electronic
9 earphones. And I don't know if this is specific
10 to whether or not the electronic headphones are
11 otherwise called out to have a tracking device
12 connected to them or not.
13 Q So those electronic earphones that
14 exist in this scenario, they don't display a
15 virtual image in this scenario, do they?
16 MS. PARTRIDGE: Objection. Form.
17 A No. They do describe a display, visual
18 acoustic images.
19 Q The electronic earphones display a
20 virtual image?
21 A A virtual acoustic image.
22 Q What is that virtual acoustic image?

1 A The voice of an intelligent personal
2 assistant to a sound localization point, the voice
3 of a friend to a second sound localization point.
4 Q What environment is the user initially
5 in, in this scenario?
6 MS. PARTRIDGE: Objection. Form.
7 A As pictured there, the user of this,
8 the physical user appears to be sitting at a
9 physical desk.
10 Q And how does the environment change?
11 MS. PARTRIDGE: Objection. Form.
12 A How does which environment change? The
13 virtual environment or the physical environment?
14 Q I'd like you to answer that question.
15 You said he is sitting at a physical desk. During
16 this scenario, does his environment change?
17 MS. PARTRIDGE: Objection. Form.
18 A Well, there appears to be changes in
19 the imagery on the laptop. There appears to be
20 changes to the virtual acoustic imagery. And,
21 let's see, anything else?
22 Yeah, so, there's changes, definitely,

1 to the sound localization, imagery, sound imagery.
2 And let's see. There also seems to be a change of
3 imagery, visual imagery.
4 Q Does the user leave any environment
5 during the course of the scenario?
6 MS. PARTRIDGE: Objection. Form.
7 A There's a change in the environment.
8 Q Does the user leave an environment?
9 MS. PARTRIDGE: Objection. Form.
10 A It's possible to say that any change in
11 an environment is transitioning or leaving one
12 environment and -- to another.
13 By the way, I will need a brief break,
14 maybe for five minutes, but I can answer another
15 question, if you're in the middle of a stream.
16 Q Sure. I'd just like you to answer my
17 pending question, which is, is any change in the
18 environment, does that constitute leaving an
19 environment?
20 MS. PARTRIDGE: Objection. Form.
21 Objection. Asked and answered.
22 A Yes. I believe that when you change an

1 environment, you're leaving one condition, one
2 arrangement, one set of circumstances and objects
3 and things that surround a person, and you're
4 going to another circumstance.
5 MS. OSMAN: All right. Well, let's
6 take -- let's take a break.
7 THE WITNESS: Great.
8 MS. PARTRIDGE: Dr. Begault, do you
9 need to eat?
10 THE WITNESS: No, I'm fine. I just
11 need five minutes. I'll be back in five minutes.
12 PLANET DEPOS TECHNICIAN: We are going
13 off the record. 16:45.
14 (Recess taken.)
15 PLANET DEPOS TECHNICIAN: Yes. Back on
16 the record. 16:50.
17 BY MS. OSMAN:
18 Q Dr. Begault, did you talk to anyone
19 during your break?
20 MS. PARTRIDGE: Objection. I'll allow
21 you to answer that question yes or no. Please
22 don't reveal any privileged information,

1 Dr. Begault.
2 A No.
3 Q Before we went on break, I asked you
4 whether a change in -- strike that.
5 Before we went on break, I asked you
6 whether any change in an environment constitutes
7 leaving an environment.
8 I'm not sure I got your answer.
9 A Oh.
10 MS. PARTRIDGE: Objection. Form.
11 Asked and answered.
12 A Sure. So, if you change an
13 environment, you have now officially left one
14 version of an environment and you are entering
15 another version of an environment.
16 Q If I'm sitting in my office and my
17 associate comes in, have I left my environment?
18 MS. PARTRIDGE: Objection. Form.
19 A Your environment has changed, so, if we
20 were thinking about it in terms of, for instance,
21 a model of kind of a virtual world, or let's say
22 we're in the film world, right, where we would be

1 talking about different scenes, so we've suddenly
2 left a scene with one person in it to a scene with
3 two people in it. If your assistant came in and
4 took your coffee cup and took it from the right
5 side of the desk and put it on the left side of
6 the desk and then left, then your environment has
7 changed.
8 Q So I didn't ask you if my environment
9 changed. I asked you, have I left my environment?
10 MS. PARTRIDGE: Objection. Form.
11 Q So have I left my environment if an
12 assistant walks in the door?
13 MS. PARTRIDGE: Objection. Form.
14 A It could be understood if we phrase it
15 the following way: You have left an environment
16 that had one set of conditions and now you have
17 entered another environment with another set of
18 conditions.
19 Q And that occurred even though I did not
20 move from my chair, I have left one environment
21 and entered into another?
22 MS. PARTRIDGE: Objection. Form.

1 A Well, again, this talks about how we
2 define environment. And so, I defined environment
3 to you, and in my declaration, earlier, as a
4 change in the circumstances and the surroundings
5 that are around a person. I gave a better --
6 better definition in the declaration.
7 But, anyway, so, yeah, if your
8 assistant walks in, that's a change, right? So
9 you've left one environment which had a certain
10 set of conditions. And in the case that you're
11 just describing there, we're talking about an
12 office with one person in it, hypothetically, and
13 now we're talking about, oh, now you've moved to a
14 new environment that includes two people.
15 Q And what if the lights flicker off, the
16 lights in my office flicker off if I sit too long,
17 which happens more often than it should, does that
18 mean I've left my environment?
19 MS. PARTRIDGE: Objection. Form.
20 A Well, yes, because now what's occurred
21 is that there's been a significant change in the
22 luminosity and, you know, there would be a

1 significant change to your percept of the objects
2 and things that surround you. So you have left a
3 lit environment and now you've entered a darkened
4 environment. It might be in the same physical
5 space, but, you know, in terms of the way that
6 environments and manipulation of environments is
7 understood, that's a transition. And that
8 transition is a movement, if you will.
9 Q But is a transition always leaving an
10 environment?
11 MS. PARTRIDGE: Objection. Form.
12 A Okay. I don't want to get wrapped
13 around the axle here, so I want to make sure I'm
14 answering correctly.
15 We are leaving one environment and
16 we're entering another environment, under the
17 definitions I gave you earlier for what an
18 environment is.
19 So when we make a change in the
20 surroundings or circumstances, and I don't
21 remember my exact wording, so maybe I should pull
22 that up so that I can be precise here. Stand by.

1 I'm just going through my declaration. That's all
2 I'm going through.
3 Okay. The term "environment" means the
4 circumstances, objects, or conditions by which one
5 is surrounded. So, if the circumstances, objects,
6 or conditions by which one is surrounded change,
7 then you have left one environment and you've gone
8 to another environment.
9 Q So, if I move my coffee cup from the
10 right side of my desk to the left side of my desk,
11 have I left my environment?
12 MS. PARTRIDGE: Objection. Form.
13 A Your environment has changed. Your
14 prior environment, where your coffee cup was on
15 the left side now is on the right side, in some
16 people's worlds, would cause great terror and
17 objection to whoever moved your coffee cup because
18 you always like your coffee cup on one side. So,
19 you've changed my environment. You've moved me
20 out of my comfort zone into a new comfort zone,
21 which might be one way that some people may refer
22 to that.

1 So change in the circumstances,
2 objects, or conditions by which one is surrounded.
3 Q And your testimony here today is that
4 any change in the circumstances or conditions or
5 objects around you is leaving one environment and
6 getting into a new environment; is that correct?
7 MS. PARTRIDGE: Objection. Form.
8 A That is the way that we are operatively
9 speaking about that, yes. This is a change in
10 those things. If you think about it in terms of
11 the timeline, right, I'm here in time zero, and
12 here are the circumstances and objects and things
13 that are around me, and now I'm here at another
14 future point in time or another past point in
15 time, and those circumstances differ, then we have
16 left one set of conditions and percepts and
17 surroundings and objects and whatever and model,
18 things that are in our model, and we are now in
19 another version of it.
20 Q Does a user in a 3-D virtual
21 environment leave an environment every time sound
22 is changing?

1 MS. PARTRIDGE: Objection. Form.
2 A No.
3 Q Okay. When would they not be leaving
4 an environment?
5 A Under the example that you gave. So
6 we're talking about -- let's try to give it a
7 little context here. What is the context? We're
8 talking about a user -- I'm sorry.
9 Q I'm trying to understand. So from your
10 testimony, what it seems to be that you're saying,
11 is that anytime there's a change in an
12 environment, you have left the original
13 environment. And so I'm trying to understand, if
14 the user is in a 3-D virtual environment and
15 something about the sound changes, does that mean
16 they've left an environment?
17 MS. PARTRIDGE: Objection. Form.
18 Objection. Asked and answered.
19 A Not always. It can and it can't.
20 Q When would the user not be leaving an
21 environment even though sound has changed?
22 MS. PARTRIDGE: Objection. Form.

1 A They could be in a concert hall
2 environment and the environment is of musical
3 performance, let's say, and the music is changing
4 over time. And so, that music is changing all the
5 time, but from that context, we're in a virtual
6 environment listening to a Beethoven string
7 quartet, perhaps, and if they switch to a
8 different, let's say, a Haydn string quartet, we
9 are still in that concert hall environment and the
10 circumstances haven't changed because we're
11 listening to a string quartet.
12 Q Have the conditions changed because the
13 music is different?
14 MS. PARTRIDGE: Objection. Form.
15 A Well, again, this depends on what --
16 yeah, how fine of a point you want to put on this.
17 I think the conditions there have not changed from
18 the perspective of the fact that we have musicians
19 playing music.
20 Now, the environment would have changed
21 if, suddenly, the string quartet, there's a tuba
22 trio that comes out and plays some music. So that

1 is a change in the environment because now we have
2 different sound sources in that environment.
3 Q So if a tuba quartet comes out, then
4 you are in a new environment. You have left your
5 original environment; is that right?
6 MS. PARTRIDGE: Objection. Form.
7 A I'm going to give you the same
8 definition I gave you earlier, which is that
9 there's been a change in the circumstances and the
10 objects that are surrounding you when the tuba
11 quartet comes out. Some things have changed, some
12 things have not. If I were, let's say, scripting
13 a movie, then this would be thought of as a
14 transition in scenes.
15 Q But we're not scripting a movie, we're
16 talking about -- you explained to me that an
17 environment can be a physical real environment.
18 So in a physical, real environment, are you saying
19 a change in an environment means that you have
20 left an environment?
21 MS. PARTRIDGE: Objection. Form.
22 Objection. Asked and answered.

1 A Well, that depends. I mean, so if we
2 were -- yeah, it really depends on what level and
3 what we're talking about. I mean, if somebody
4 went to the concert hall to hear a string quartet
5 and then went to hear the tuba quartet, that
6 layperson would say, well, I'm in the environment
7 of a concert hall, if they were just speaking
8 about the room they were in, right? So that's one
9 level of talking about it.
10 But in the environments that we're
11 talking about here, in the patent, we're talking
12 specifically about changes to the circumstances
13 and objects, particularly, those that would
14 precipitate some type of alert.
15 So, for instance, if I were a TV
16 producer, I might make a change, a scene change
17 between the tuba and the string quartet, and that
18 would be produced to give the illusion of two
19 different environments because we've now -- it
20 might be different ways of representing it
21 virtually, for instance. So it depends on the
22 levels we're talking about. But in terms of the

1 patents and what I'm talking about here, is that
2 when you have something, like a situation where
3 one person is present in a virtual simulation and
4 then suddenly there's two people present in a
5 simulation, that is definitely a change in the
6 environment.
7 Was that your light?
8 Q That was my light. Sitting too long.
9 A Yeah, well, I hope you can recognize
10 that as a change in your environment.
11 Q So you keep using the word "change,"
12 but I'm really not asking about a change in
13 environment. I'm asking, have you left one
14 environment and entered another?
15 And I'd bring you back to the example
16 of me sitting in my office. I'm sitting in my
17 office and somebody walks in the door or I move my
18 coffee cup.
19 Have I left an environment and entered
20 into a new environment?
21 MS. PARTRIDGE: Objection. Form.
22 Objection. Asked and answered.

1 A Once again, I'm going to come back to
2 paragraph 21, and I'm going to say that you have
3 left the conditions by which you were surrounded
4 by, which is you have left a condition where you
5 had illumination and now you are in a condition
6 where you have less illumination. So that is a
7 different type of environment.
8 You might have your heat on, one part
9 of your day, and then the heater breaks and you're
10 freezing in your office. You're sitting right
11 there, but that's a change in your environment.
12 Q So, in paragraph 21, you relied on
13 general-purpose dictionaries for the definition of
14 environment; is that fair?
15 A Not completely.
16 Q Okay. Are there dictionaries there
17 that are not general-purpose dictionaries?
18 A Well, as you can see, I did search the
19 etymology of the word. I also looked at its Greek
20 root.
21 Q Okay. But you didn't rely on
22 dictionaries that were specific to VR or to 3-D

1 audio; is that right?
2 MS. PARTRIDGE: Objection. Form.
3 A I relied on, for instance, my own book
4 on this. So, I relied on my own experience,
5 particularly, of leaving one virtual environment
6 and going to another virtual environment with
7 audio simulations. I think I gave a number of
8 examples.
9 Q Okay. So this definition you proposed,
10 you don't think is sort of a layperson definition,
11 this is a definition that is specific to the 3-D
12 audio realm; is that right?
13 MS. PARTRIDGE: Objection. Form.
14 Objection. Asked and answered.
15 A No, I gave you a definition that came
16 from Webster's dictionary, so I think that's a
17 layperson's definition.
18 Q Yep.
19 A So, you know, but as an expert, I'm
20 citing it, I'm applying it to the questions that
21 are here. Excuse me. I've got to cough.
22 Q Okay. And if we could turn back to

1 scenario 110, that we were looking at, and
2 page 102 of Exhibit 1028.
3 In this scenario, is there any alert or
4 warning?
5 MS. PARTRIDGE: Objection. Form.
6 A Effectively, yes, there is.
7 Q How do you know that?
8 A Because there's a very salient change
9 in the auditory presentation.
10 Q And is a salient change in the auditory
11 presentation always going to be an alert or a
12 warning to a user?
13 MS. PARTRIDGE: Objection. Form.
14 A If we define an alert and a warning as
15 some sort of noticeable change, yes.
16 Q Does it say alert or warning in this
17 specification?
18 MS. PARTRIDGE: Objection. Form.
19 A Line 16 to 26, I don't see the word
20 "alert" or "warning."
21 Q How is this change in sound being used
22 as an alert or warning?

1 MS. PARTRIDGE: Objection. Form.
2 A Oh, how does it work?
3 Q How is it being used as an alert or
4 warning?
5 A Let's see if I can answer that
6 specifically.
7 MS. PARTRIDGE: Objection. Form.
8 A Okay. Let's see. It's blurry, so I'm
9 having a little problem here. Hang on.
10 So, there's a conversation, I guess,
11 with a voice of a friend. And that person, see if
12 I understand this correctly, see, I'm not -- I
13 don't have a figure in front of me, transition box
14 128 to 2020B, but the -- what occurs is that
15 somebody leaves the sound localization system and
16 then another sound localization point moves to a
17 different location.
18 I think I have that correct.
19 Q And so that change in sound
20 localization is a warning to the user?
21 MS. PARTRIDGE: Objection. Form.
22 A It's a change in condition that is

1 alerted to a user by a salient change in the audio
2 cuing.
3 Q I don't think I understand your answer.
4 Can you explain that?
5 A Well --
6 MS. PARTRIDGE: Objection. Form.
7 A Sure. Give me a second.
8 Okay. So the salient change here has
9 to do with an intelligent personal assistant and a
10 friend who calls. And in this scenario, there's a
11 change in the environment between when there is a
12 communication with a friend and then there's the
13 intelligent personal assistant located somewhere
14 else.
15 So what this describes is that when the
16 telephone conversation ends, the salient audio cue
17 is that there's a change in the position of the
18 localization of the intelligent personal
19 assistant.
20 Q And where's the alert or warning to the
21 user?
22 A The change in position.

1 Q And the change in position is also the
2 change or leaving an environment --
3 MS. PARTRIDGE: Objection.
4 Q -- the user leaving one environment and
5 entering another?
6 MS. PARTRIDGE: Objection. Form.
7 A It's a change in the virtual -- the
8 environment -- it's a change between two virtual
9 environments. Yes, virtual acoustic environments.
10 Q The word "alert" or "warning" does not
11 appear in this passage, does it?
12 MS. PARTRIDGE: Objection. Form.
13 A Literally, those words do not appear.
14 Q Okay. Is changing binaural sound
15 always an alert to a user?
16 MS. PARTRIDGE: Objection. Form.
17 A It depends on how we talk about how
18 that change might occur.
19 Q So is that -- is that a no? I'm
20 asking, is change in binaural sound always an
21 alert to a user?
22 MS. PARTRIDGE: Objection. Form.

1 Objection. Asked and answered.
2 A It depends. It can't -- it doesn't
3 always have to be an alert. It's usually when
4 it's a change that acts as a salic cue.
5 Q Does this scenario disclose reducing
6 the volume of sound?
7 A No, this is changing the position of a
8 sound.
9 Q Does it disclose determining, with the
10 WED, when the user is leaving an environment?
11 MS. PARTRIDGE: Objection. Form.
12 A The word "WED" is not present here.
13 Q Can you please turn to page 109 of this
14 same exhibit.
15 A Sure.
16 Q I'd like you to look at a passage that
17 starts at line 29, on page 109, and continues on
18 to page 110, up to line 4.
19 Starts with "consider an example."
20 A Okay. That's line number 8; is that
21 correct?
22 Q Line number 29 --

1 A Oh, 29 at the bottom of page.
2 "Consider an example in which a user listens to
3 audio drama"?
4 Q Yes.
5 A So just that whole paragraph there?
6 Q Just that paragraph, please.
7 A Okay. Great, great, great, okay.
8 Okay. I'm very familiar with this
9 example.
10 Q Okay. Is there an HMD in this example?
11 MS. PARTRIDGE: Objection. Form.
12 A That is not specified in this
13 particular example. I'd have to know if there's a
14 context to this, where a HMD is called out. But I
15 don't see it called out here necessarily.
16 Q Okay. So that's, no, there's no HMD in
17 this passage?
18 A Well, it says binaural sound. I don't
19 think that a person would be driving, they're
20 listening over car speakers, they don't have an
21 HMD out. And then it mentions putting on
22 headphones.

1 So an HMD is not mentioned here.
2 Q Okay. And so there is -- what about a
3 WED? Is there a WED in this example?
4 MS. PARTRIDGE: Objection. Form.
5 A Specifically, the word "WED" is not
6 listed here.
7 Q Is there a virtual image?
8 MS. PARTRIDGE: Objection. Form.
9 A Oh, go back to your last question.
10 "The system knows," you'll see that clause there,
11 that might include a WED, I don't know. But, you
12 know, it's the last sentence there. At this time,
13 the system knows, right? And so, that's, maybe,
14 elsewhere, more specifically designed -- defined
15 to include a WED or not. I don't recall at this
16 very moment.
17 So I just wanted to clarify that on my
18 previous answer. And now you can go to your next
19 question, if you'd like.
20 Q But do you agree this paragraph does
21 not disclose a WED?
22 MS. PARTRIDGE: Objection. Form.

1 Mischaracterizes testimony.
2 A What I was trying to say there was when
3 it says "the system knows," I'm not clear, at this
4 point, without doing some more digging here, how
5 "the system" is defined. If that system does
6 include an WED or not.
7 So, it may infer a WED by context, but
8 right now, what we're doing is we're looking at
9 one paragraph. And, so, I'm not sure exactly
10 everything that's included in the phrase "a
11 system."
12 Q Okay. This paragraph, the word -- in
13 this paragraph, the words "WED" don't exist; is
14 that right?
15 MS. PARTRIDGE: Objection. Form.
16 Objection. Asked and answered.
17 A The literal letters WED, as an acronym,
18 do not appear in this paragraph.
19 Q Okay. Aside from going back to find
20 out what's concluded in the system, there's no
21 WED; is that right?
22 MS. PARTRIDGE: Objection. Form.

1 A Again, my answer is, the system,
2 whatever that system encompasses, may or may not
3 include a WED. I don't recall.
4 Q Okay. Is there a virtual image in this
5 paragraph?
6 MS. PARTRIDGE: Objection. Form.
7 A There's a virtual auditory image.
8 Q Is there a visual image in this
9 paragraph?
10 MS. PARTRIDGE: Objection. Form.
11 A No. This is a display of audio
12 information in this example because it's an audio
13 drama.
14 Q Okay. And the headphones don't display
15 a visual image, do they?
16 MS. PARTRIDGE: Objection. Form.
17 A I don't see that culled out here.
18 Q And in this example, the sound starts
19 out monaural; is that correct?
20 A Correct.
21 Q And then it switches to binaural?
22 A Yes.

1 Q So this does the opposite of what the
2 claims teach or the claims describe; is that
3 correct?
4 MS. PARTRIDGE: Objection. Form.
5 A No.
6 Q Do the claims recite switching sound
7 from monaural to binaural?
8 MS. PARTRIDGE: Objection. Form.
9 A Well, I'm not recalling exactly the
10 monaural-to-binaural transition culled in the
11 claims. But, certainly, you know, in that order.
12 But the general concept of the fact that we've
13 made a salient change in the audio representation,
14 it could be looked at, in this example, and a POSA
15 would immediately see this, that, oh, well, the
16 person could be walking towards their car,
17 listening to a binaural audio radio drama, and
18 they got in the car, and then it switches to
19 monaural sound. So there's a binaural-to-monaural
20 transition, and everything that's true of that is
21 true of a monaural-to-binaural transition.
22 Q So you're saying it would have been

1 obvious to a POSA that they could sort of do the
2 opposite of what's disclosed in this passage?
3 MS. PARTRIDGE: Objection. Form.
4 A This passage is giving an example so
5 that a POSA can best understand how the concept
6 works, what the concept is. And it would seem
7 clear to a POSA that what is being described here
8 is a transition from binaural to monaural or
9 monaural to binaural sound, depending on whether
10 or not you wanted to wear headphones or whether or
11 not you were in a car, where it's illegal to wear
12 headphones.
13 Q Okay. But that passage doesn't
14 describe binaural to monaural, it only describes
15 monaural to binaural; is that right?
16 MS. PARTRIDGE: Objection. Form.
17 A Well, it knows that the signal is
18 originally binaural and it's been transformed to
19 monaural to play it in the car.
20 Q Uh-huh.
21 A And then it -- and because it's
22 inherently a binaural signal that it switches to

1 binaural when the person gets out of car, so it's
2 back to its original form. So, in a way, there's
3 actually two transformations that are occurring
4 here, right, because, originally, the audio drama
5 is in binaural and some transition to that to
6 monaural inside the car. Then they go the
7 opposite -- you get the opposite condition when
8 the person leaves the car.
9 Q So a person of ordinary skill would
10 have understood that you could do the opposite,
11 you could have switched from binaural to monaural;
12 is that right?
13 MS. PARTRIDGE: Objection. Form.
14 Objection. Asked and answered.
15 A Yeah. There may be other examples of
16 that. I'm not recalling exactly.
17 Q Well, let's focus on this one for now.
18 Does this example disclose altering
19 binaural sound as an alert or a warning to the
20 user?
21 MS. PARTRIDGE: Objection. Form.
22 A It describes a transition in sound

1 that, through the use of a salient cue, that the
2 headphones are now operating, and, so, there's a
3 change in the audio presentation that would be
4 perceived fairly significantly because the sound
5 would be very different.
6 Q So, is there altering, does it disclose
7 altering binaural sound as an alert to the user?
8 MS. PARTRIDGE: Objection. Form.
9 A Well, here it's describing switching
10 the audio drama to binaural sound when you put on
11 headphones after you left the car.
12 So, it's a form of information, if you
13 will, to the degree that it's an alert, that, oh,
14 okay, I'm now listening to a binaural recording in
15 binaural. And so, I'm now hearing a successful
16 presentation of my binaural audio drama that,
17 previously, I wasn't able to hear.
18 So in a way, that's an alert. It's an
19 alert that, well, okay, we've changed our
20 condition.
21 Q What is it alerting the user of? The
22 user puts the headphones on his head when he

1 leaves the car in this scenario; is that right?
2 MS. PARTRIDGE: Objection. Form.
3 A Yes, it does say that.
4 Q So what is the user being alerted of?
5 MS. PARTRIDGE: Objection. Form.
6 A Well, first, that the system is
7 operating properly. So if they put the headphones
8 on and didn't hearing anything, then they would
9 know, oh, that something's wrong in the
10 communication system. If they put the headphones
11 on and they heard things in monaural, then they
12 might be alerted to the fact that I'm not
13 listening to a -- something that I intended to be
14 an audio drama occurring in binaural.
15 Q When the user is driving the car and
16 the audio is in monaural, is that spatial audio
17 rendering?
18 MS. PARTRIDGE: Objection. Form.
19 A I wouldn't call it spatial audio, no.
20 I would think monaural sound, one channel sound.
21 I mean, a loudspeaker can interact with the
22 acoustics of the car and things might sound

1 different spatially, but it's not by the intention
2 of the person who produced the sound.
3 So, it -- you know, fundamentally and
4 theoretically, it's not spatial sound. But, of
5 course, the loudspeaker, the monaural loudspeaker
6 exists in space, if you will.
7 So it might be to the right of the
8 listener. So it has a spatial property from the
9 perspective of the listener, but the radio drama,
10 itself, is not being transmitted with any spatial
11 information.
12 Q Okay. Does this scenario disclose
13 reducing the volume of sound?
14 MS. PARTRIDGE: Objection. Form.
15 A No. There's no reduction of the volume
16 of sound in this example.
17 Q Does it disclose determining, with the
18 WED, when the user is leaving the environment?
19 MS. PARTRIDGE: Objection. Form.
20 A We discussed, earlier, the phrase "the
21 system knows." So that could very well be a WED.
22 Q It says the system knows the audio

1 drama is a binaural signal.
2 MS. PARTRIDGE: Objection. Form.
3 Q Does the -- does this scenario disclose
4 determining, with the WED, when the user is
5 leaving the environment?
6 MS. PARTRIDGE: Objection. Form.
7 A Well, this could read that the system
8 knows to switch the audio drama to binaural sound.
9 Q In this scenario, when is the audio
10 switched?
11 A When the person leaves the car.
12 Q And what does the person have to do?
13 MS. PARTRIDGE: Objection. Form.
14 Objection. Form.
15 A What does the person have to do? Well,
16 I think they have to put some headphones on.
17 Q Yes, they put headphones on their head.
18 Is the system -- is the WED determining
19 when the user is leaving the environment?
20 MS. PARTRIDGE: Objection. Form.
21 Objection. Mischaracterizes testimony.
22 A Well, it could be that the headphones,

1 themselves, are a form of WED. We've talked about
2 the fact that wearable electronic device could be
3 considered, from one standpoint, the electric
4 transducers of the headphone speakers themselves.
5 There's obviously some sort of electronic device
6 that senses when the person has put the headphones
7 on, so that could possibly be a wearable
8 electronic device.
9 So, again, "the system" probably
10 encompasses some of these features.
11 Q Let's turn to page 117 in the same
12 document, please.
13 A Sure.
14 Q I'd like you to look at line 28, again,
15 onto the next page, ending at page 118 at line 4?
16 A Okay. Should I study it?
17 Q Yes, please. Just take a look at the
18 paragraph.
19 A Okay, I think I'm ready.
20 Q Okay. Is there an HMD in this example?
21 MS. PARTRIDGE: Objection. Form.
22 A It could be other type of sensor, you

1 see that phrase there, in the second sentence.
2 Q Could you read --
3 A Wait, wait a minute, I'm sorry. I
4 misspoke. Scratch that last answer.
5 No, there's no HMD mentioned here.
6 Q Is there a WED mentioned here?
7 MS. PARTRIDGE: Objection. Form.
8 A Yes. That could be included here. The
9 electronic device includes a sensor such as a
10 camera or other type of sensor. So that may or
11 may not include WED.
12 Q Okay. Is there a visual image in this
13 example?
14 MS. PARTRIDGE: Objection. Form.
15 A There is an object that is mentioned,
16 which it could be real or it could be virtual.
17 And so, that real or virtual object is -- could
18 possibly be visual, or visually acquired.
19 Q What environment is the user initially
20 in this scenario?
21 A Well, it doesn't really say what
22 environment the person is in.

1 Q Does the user leave any environment in
2 the scenario?
3 A Actually, there are characteristics of
4 an environment. Let me rephrase that a little bit
5 there.
6 So they're in an environment where they
7 have an intelligent personal assistant three feet
8 in front of them. So that's one scenario --
9 that's one aspect of the scene, okay?
10 And then, apparently, there is an
11 object that's involved as well.
12 So what was your question, I'm sorry?
13 Q I said, did the user leave any
14 environment in this scenario, or in this example?
15 MS. PARTRIDGE: Objection. Form.
16 A Give me a second.
17 They may have.
18 Q Why do you say "they may have"?
19 A Well, they've changed their distance to
20 an object.
21 Q Okay. Is there a possibility that they
22 have not left an environment?

1 MS. PARTRIDGE: Objection. Form.
2 A Well, I'm trying to read this literally
3 here.
4 So it's not explicitly said here, but,
5 apparently, there's a change in distances, right,
6 there's some sort of ongoing change in the
7 circumstances and surroundings for this person
8 because they're moving. That's what's inferred
9 here.
10 Q And so, you think that means the user
11 has left an environment?
12 MS. PARTRIDGE: Objection. Form.
13 A They've left one set of circumstances
14 and surroundings into another set of circumstances
15 and surroundings where an object has become closer
16 to them, is the way I read this.
17 Q Is there any change in binaural sound
18 that's used as an alert or warning in this
19 scenario?
20 MS. PARTRIDGE: Objection. Form.
21 A Yes.
22 Q What is the change in binaural sounds

1 that's used as an alert or warning?
2 A Well, as indicated here, moving the
3 sound localization point. Removing the sound
4 localization point, switching or changing to
5 stereo or monaural sound.
6 Q And how does this act as an alert or
7 warning?
8 MS. PARTRIDGE: Objection. Form.
9 A Well, the warning is that a person is
10 getting within a predescribed -- or a
11 pre-prescribed distance to an object.
12 Q It doesn't say alert or warning here,
13 does it?
14 MS. PARTRIDGE: Objection. Form.
15 A The literal words "alert" or "warning"
16 don't occur here. But what would happen is a very
17 salient change in auditory cuing would occur,
18 which is, effectively, an alert or a change that
19 is significant to a listener.
20 Q Is there a -- does this scenario
21 disclose reducing the volume of sound?
22 MS. PARTRIDGE: Objection. Form.

1 A It may.
2 Q Where does it teach reducing the volume
3 of sound?
4 A The word such as moving the SLP. So
5 that can be a movement in distance which would
6 correspond to a change in its volume.
7 Q So under certain circumstances, maybe
8 you would understand this to include a change in
9 volume, is that what you're saying?
10 MS. PARTRIDGE: Objection. Form.
11 A Reading this as a POSA, I know that
12 when I move the sound localization point of a
13 virtual object, one of the things that can occur
14 is that there would be a change to its volume.
15 Q Okay. Does it teach reducing the
16 volume of sound as an alert?
17 MS. PARTRIDGE: Objection. Form.
18 A Exactly within the way that I was
19 describing it earlier, it's an alert that you are
20 within a prescribed distance of an object. And
21 so, it's certainly alerting somebody that, oh, now
22 you're within this prescribed distance. And so --

1 Q Doesn't that mean the object is getting
2 closer and not farther away?
3 MS. PARTRIDGE: Objection. Form.
4 A I'm sorry, could you restate that
5 question?
6 Q Wouldn't that suggest that you were
7 getting closer to the object and not farther away
8 from the object?
9 MS. PARTRIDGE: Objection. Form.
10 A Well, I don't know if it necessarily
11 means that you're getting closer to the object.
12 It could mean, maybe, that this predetermined
13 distance, that's mentioned here, might be that
14 you're getting too far away from that object. I
15 don't know. I mean, it's not -- it's not
16 specified here. It just only says a predetermined
17 distance. So that's some criteria that's tested.
18 If the criteria's met, then the alert is given.
19 Q And when you're saying "alert," you're
20 saying it's an alert because you were moving the
21 SLP or removing the SLP and that is an alert?
22 MS. PARTRIDGE: Objection. Form.

1 A Moving the SLP is one of several ways
2 that are indicated here that would produce a
3 salient audio cue. It would be a noticeable
4 change. And a noticeable change acts as an alert,
5 auditorially.
6 Q Is a noticeable change always an alert?
7 Is it necessarily an alert?
8 MS. PARTRIDGE: Objection. Form.
9 A Hypothetically, I can think of examples
10 where a noticeable change wouldn't be an alert.
11 But in the context of the patents and in the
12 context of these disclosures and the context of
13 all of that methodologies that are outlined, these
14 are producing salient cues, these are noticeable
15 transition in the type of audio rendering.
16 Q Okay. Does the scenario disclose
17 determining, in the WED, when the user is leaving
18 an environment?
19 MS. PARTRIDGE: Objection. Form.
20 A I thought we discussed that earlier
21 when I gave you an answer regarding "other type of
22 sensor."

1 Q Maybe you could remind me what your
2 answer was.
3 Does it disclose determining, with the
4 WED, when the user is leaving the environment?
5 MS. PARTRIDGE: Objection. Form.
6 A Should we look at my prior answers or
7 do you want me to just try to --
8 Q Please repeat your answer.
9 A Oh, okay.
10 Okay. So ask -- sorry. Repeat your
11 question.
12 Q I asked you, does this scenario or this
13 example disclose determining, with the WED, when
14 the user is leaving the environment?
15 MS. PARTRIDGE: Objection. Form.
16 Asked and answered.
17 A Okay. So, it discloses a sensor, okay?
18 And that device determines a distance between the
19 electronic device and/or a listener to an object,
20 okay?
21 So, that would be, potentially, a
22 change in the environment because it would be a

1 change in the environmental conditions, and so, it
2 would be leaving, let's say, one type of
3 environment to another type of environment, the
4 environmental change being that you are now closer
5 to something than you were before, or farther away
6 from something, according to some predetermined
7 distance.
8 Q Let's turn to page 119. I think it's
9 the very next page.
10 A Yep.
11 Q And look at line 18.
12 A Okay.
13 Q This is Figure 6. I'd like you to look
14 at line 18 through the next page, line 27.
15 A The following page, 27?
16 Q Yeah, the following page, 27?
17 A So we're talking about several
18 paragraphs?
19 Q Sorry, apologies. So, page 119,
20 line 18, through page 120, line 27. We are
21 talking about a few paragraphs.
22 A Okay. And then there's a Figure 6.

1 Can you direct me to where Figure 6 is?
2 Q Sure. Figure 6 is on page 182.
3 A 182. Got it.
4 So right now we're on page 160, right?
5 So --
6 Q We're on page 119, we should be.
7 A 119. I'm sorry. I was looking at the
8 wrong number.
9 All right. So let me switch back and
10 forth. It's going to take me a little time
11 because --
12 Q And, actually, maybe I can just have
13 you read line 18 on page 118 -- 19, excuse me, up
14 to line 11 on page 120.
15 A Oh, okay. So let me -- give me a
16 moment then, here.
17 Q Okay.
18 A I'm sorry, the line numbers again, I'm
19 going to write them down.
20 Q So from page 119, line 18?
21 A Uh-huh.
22 Q Through page 120, line 11.

A Okay. Line 11. Let me look.
Page 119, line 18. Messed up on that. Starting "Figure 6 is a method"?
Q Correct.
A Got it.
Talking about a flowchart.
Okay. Let me go, now, to the figure, completing the paragraph. I'm now going to the figure.
That was page 182; is that correct?
Sorry, I didn't take a clear note.
Q Yes, that's correct. Page 182.
A Okay. Figure 6. Got it.
Okay. I think I've got that. I'm just going to copy and paste that figure so that I can look at it simultaneously. I'm going to just paste it into a blank Word document.
Do you have any objection to that?
Q You know what, I have a pretty straightforward question about this, so I'd rather you not open Word or open another application.
A Okay. Let me go back to 119.

1 Q Yeah.
2 A Just that I might need to go back to
3 the figure.
4 Q That's okay. I'd rather you not open
5 any --
6 A Okay. Okay. So I'm on page 119, I'm
7 at --
8 Q So --
9 A Figure 6 is a method to determine. I'm
10 there, go ahead.
11 Q Okay. So I'm going to ask you,
12 actually, about a passage that is on the beginning
13 of page 120, it's the one that goes 1 through 11.
14 My question for you is, all of the examples of
15 restricted areas listed here are physical
16 locations, are physical areas; is that right?
17 MS. PARTRIDGE: Objection. Form.
18 A No. Not true.
19 Q So these are not physical locations?
20 A Yes, that's correct. It seems to
21 include both virtual locations as well as physical
22 locations.

1 Q Where is there a virtual location?
2 A If you look at line 8, restricted areas
3 can also include areas where a person or object is
4 located in areas where another SLP is located. So
5 that sound localization point could be a virtual
6 object. And so, the model of the virtual world
7 might have restricted areas that have nothing to
8 do with the real physical world. And so, there's
9 an example there.
10 Also, these restricted areas that are
11 called out here could be some part of a model of a
12 virtual world, right? So there could be virtual
13 construction zones, or something of that sort, in
14 a virtual world. So, let's say you're going
15 through some sort of virtual world and there's a
16 necessity to provide alerts about restricted
17 areas. And so, the -- so I don't think these are
18 necessarily physical.
19 Q Okay. If you'll look at the same page,
20 down to line 20, I want you to take a look at the
21 example that starts with consider the example
22 above in which "Alice wears earphones."

A Yeah.
Q Just read through that paragraph.
A Uh-huh, yes. Okay. Hang on.
Can you remind me of the acronym HPED?
Q I think it's -- hang on. Let me find out. I think it's -- let me just be sure. One second.
The specification defines it as handheld portable electronic device.
A Handheld portable electronic device, okay. So a kind of wearable electronic device, except this one is handheld and it's --
Q Handheld.
A Got it. Okay. All right. Thank you.
So, reading it now.
All right. I've read it.
Q In this example is there an HMD?
MS. PARTRIDGE: Objection. Form.
A If this example is all in a physical world, then, no.
Q And is there --
A I guess I can imagine a situation where

1 all of these things are occurring and, you know,
2 virtual world or something, virtual cars and
3 things of that. But I sort of think it's physical
4 environment is what we're referring to here.
5 Q Yeah, let's restrict ourselves to what
6 is actually taught and disclosed.
7 So it says Alice is wearing earphones;
8 is that right?
9 A It says that she's wearing earphones,
10 yes.
11 Q Right. So there's no WED either?
12 A Well, no. I think we went on to
13 discuss that an HPED, you know, handheld portable
14 electronic device, is a form of wearable
15 electronic device. Hey, we just --
16 MS. OSMAN: We lost your attorney.
17 THE WITNESS: I've got to stop.
18 MS. OSMAN: Let's stop.
19 THE WITNESS: I'm going to take a
20 break. I'll be back in five minutes.
21 MS. OSMAN: Okay. That's fine. Erin,
22 we're off the record.

1 PLANET DEPOS TECHNICIAN: Off the
2 record at 17:48.
3 (Recess taken.)
4 PLANET DEPOS TECHNICIAN: Back on the
5 record at 18:11.
6 BY MS. OSMAN:
7 Q Welcome back, Dr. Begault.
8 Did you speak to anyone during -- did
9 you speak to your counsel during the break?
10 MS. PARTRIDGE: I'll object to the
11 extent I would like you not to reveal any
12 attorney-client privilege information. Yeah, we
13 did talk. He told me to turn off my Wi-Fi and
14 turn off my Bluetooth.
15 Q Dr. Begault, can you answer the
16 question, please.
17 MS. PARTRIDGE: You can answer yes or
18 no.
19 A Yes.
20 Q Did you discuss the substance of this
21 deposition during the break with your counsel?
22 MS. PARTRIDGE: Object as to

1 attorney-client privileged information and
2 instruct you not to answer.
3 Q Dr. Begault, are you going to follow
4 that instruction?
5 A My understanding is I'm supposed to
6 follow whatever attorneys are telling me to do. I
7 don't know, I mean, I could -- so, somebody has to
8 tell me what to do here.
9 I've been instructed not to answer the
10 question. So until such time, I know that there
11 was something about turning her Bluetooth off,
12 she's already mentioned.
13 Q Dr. Begault, did you discuss the
14 substance of your deposition with your counsel
15 during the break?
16 THE WITNESS: Jayme, are you
17 instructing me to not answer that or what?
18 MS. PARTRIDGE: You can answer it.
19 THE WITNESS: Okay.
20 A No. The only discussion I had was over
21 Zoom while we were off record. I wasn't sure why
22 Jayme had disappeared off the line and Patrick

1 Dunn came on and told me that she had lost her
2 power. And so, that was the only conversation
3 I've had with the attorneys.
4 Q Thank you.
5 Before we took our break, Dr. Begault,
6 do you recall that we were talking about page 120
7 of Exhibit 1028 and we were looking at lines 20
8 through 27, specifically?
9 Do you recall that?
10 A I do, yes.
11 Q Okay. And I had asked you if, in this
12 example, there is a WED.
13 Do you remember that question?
14 A Yes.
15 MS. PARTRIDGE: Objection. Form.
16 Q Is there a WED in this example?
17 MS. PARTRIDGE: Objection. Form.
18 A Okay. Your question is, is there a WED
19 in this example?
20 Q Yes, that's right.
21 A Right.
22 MS. PARTRIDGE: Objection. Form.

1 You've got to slow down while I'm on
2 the phone.
3 THE WITNESS: Very good.
4 A So, I believe I had described to you
5 earlier, we had a discussion that an HPED is a
6 form of WED, except that it's specifically
7 something held in the hand.
8 Q Doesn't the '140 patent application
9 distinguish between an HPED and a WED?
10 MS. PARTRIDGE: Objection. Form.
11 A I don't recall the details of it. But,
12 obviously, if the '140 is describing both of those
13 and probably defining the acronyms, the
14 distinction could be, let's say, between one being
15 handheld and the other not.
16 Q Okay. So an HPED is not a WED, is it?
17 MS. PARTRIDGE: Objection. Form.
18 A No, I said that my understanding of an
19 HPED is that it's a form of a wearable electronic
20 device, except where I'm wearing it in inside my
21 hand.
22 Now, if there's a different definition

1 of that, that I'm forgetting, that you want to
2 point me to, I'm happy to look at that.
3 Q I'm asking you how the '140 application
4 treats HPED and WED.
5 It does not equate them as the same,
6 does it?
7 MS. PARTRIDGE: Objection. Form.
8 A I honestly don't recall exactly.
9 Q Okay. This passage does not literally
10 disclose a WED, does it?
11 MS. PARTRIDGE: Objection. Form.
12 A It does not literally have the word --
13 or the letters WED.
14 Q Is it your opinion that a person of
15 ordinary skill would have understood that a HPED
16 is similar to a WED?
17 MS. PARTRIDGE: Objection. Form.
18 A They can both provide similar
19 functionality.
20 Q So, it's your opinion that a person of
21 ordinary skill would have known that they could
22 substitute a WED for the HPED in this example.

1 Is that what you're trying to explain?
2 MS. PARTRIDGE: Objection. Form.
3 A Let me look at it a little more
4 carefully.
5 Well, the common root here is
6 electronic device. So it's probably less relevant
7 to a POSITA whether it's handheld or, you know,
8 what part of the body is holding it, you know, or
9 how it is worn or held, et cetera. But what a
10 POSA would look at this and see is that we have
11 something instructing an electronic device to
12 perform an action.
13 Q Okay. And it would have been obvious
14 that you could use another electronic device?
15 MS. PARTRIDGE: Objection. Form.
16 A Well, I believe that the electronic
17 device has to be, in some way, collocated with a
18 human, as far as I can see from this example.
19 Q And what I'm trying to understand is,
20 are you saying it would have been obvious, from
21 this disclosure, to a person of ordinary skill,
22 that they could use a different electronic device

1 than what's disclosed?
2 MS. PARTRIDGE: Objection. Form.
3 Objection. Asked and answered.
4 A There are a lot of different devices
5 described in this paragraph, as you'll see.
6 There's a GPS device, which could be put in your
7 hand as part of a telephone, could be on top of
8 your headphones, you know, on the band. We have
9 cameras with object recognition software. So it
10 seems to include all types of sensors and
11 electronic devices here.
12 So, reading the whole paragraph in
13 context, basically, what it's speaking about is
14 sensors, and electronic devices that initiate some
15 sort of action.
16 Q Okay. So you're saying it recites or
17 it talks about specific electronic devices, that
18 HPED and GPS device, and you're saying based on
19 that disclosure, a person of ordinary skill in the
20 art would have known -- understood that they could
21 use other devices?
22 I'm just trying to understand. Is that

1 what you're saying?
2 MS. PARTRIDGE: Objection. Form.
3 Objection. Mischaracterizes testimony.
4 A What I'm saying is, is that the POSA
5 would read this and see examples of different
6 types of electronic devices so, you know, there's
7 an example that starts off with an HPED and then
8 we go to, as another example, a GPS device, you
9 know, or object recognition device, so these are
10 very general terms, they're not being very
11 specific. They are basically talking about
12 something that could act in conjunction with a
13 device that would both sense and communicate the
14 need to make a change.
15 Q Okay. There isn't any disclosure of a
16 WED in this passage, though; isn't that right?
17 MS. PARTRIDGE: Objection. Asked and
18 answered.
19 A My answer was that there's no literal
20 recitation of the letters W-E-D. But I did answer
21 you to say that it could be understood that it
22 might include a WED because, again, the root is an

1 electronic device, and that's the primary message
2 here. There might be devices in the future that
3 are worn internally, who knows.
4 Q Okay. And there isn't WED or an HPED
5 that discloses or that displays a visual image, is
6 there?
7 MS. PARTRIDGE: Objection. Form.
8 A You're referring to this paragraph,
9 right?
10 Q In this paragraph, right.
11 A Yeah, in this paragraph.
12 MS. PARTRIDGE: Objection. Form.
13 Q Are there any virtual images or visual
14 images at all in this example?
15 MS. PARTRIDGE: Objection. Form.
16 A Well, there is a camera that's doing
17 object recognition, but I don't know if that's
18 really being used as part of a display. That's
19 really for recognition, it says here.
20 Q Okay. So is your answer, no, there are
21 no visual images in this example?
22 MS. PARTRIDGE: Objection. Form.

1 A Incorrect. I mean, there are visual
2 images because there's an object recognition
3 device. There's a camera, so that infers that
4 some sort of visual component is being analyzed.
5 Q Is there an HMD or WED that displays a
6 visual image in this example?
7 MS. PARTRIDGE: Objection. Form.
8 Objection. Asked and answered.
9 A I don't see HMD in this paragraph that
10 presents a -- well, the letters H-M-D are not
11 here.
12 Q And so, I assume you'd agree there's
13 also no WED, in this example, that determines that
14 Alice is leaving a virtual environment?
15 MS. PARTRIDGE: Objection. Form.
16 Objection. Foundation.
17 A Well, I have to answer that in
18 conjunction with the way I answered you before,
19 which is with the root word "electronic device,"
20 and HP is one form of that, HP can be a form of
21 wearable electronic device, so that is part of the
22 system. So it doesn't say WED literally, we can

1 agree on that. But it gives a number of examples
2 here and they're not specific about what part of
3 the body they're worn on, so...
4 Q Does the HPED, in this example,
5 determine that Alice is leaving a virtual
6 environment?
7 MS. PARTRIDGE: Objection. Form.
8 A In this paragraph, it seems that the
9 HPED is doing the transitioning, or, you know,
10 doing something with the signal itself.
11 There's a more generic term here,
12 sensor, and other devices.
13 The sensor is -- are talking -- you
14 know, it's talking about sensors separately from
15 HPED. It's not clear if they're conjoined or not.
16 Q The HPED does not determine when Alice
17 is leaving a virtual environment; is that right?
18 MS. PARTRIDGE: Objection. Form.
19 A It may be part of a system.
20 Q I'm not sure I understand.
21 What may be part of what system?
22 A The system determining Alice is on a

1 binaural call, for instance, there's a sensor.
2 So there's a system here and we have,
3 for instance, a GPS device or object recognition
4 device, right? And so that's part of a system
5 that provides a signal to the HPED. So these
6 things are working together to, you know,
7 determine a location of Alice in this particular
8 example, and it's providing some sort of
9 instruction. But they're not necessarily
10 separated.
11 Q The HPED is not doing the determining,
12 itself, it's receiving information from the GPS
13 device or a sensor; is that right?
14 MS. PARTRIDGE: Objection. Form.
15 Mischaracterizes testimony.
16 A Sometimes a sensor can be part of HPED.
17 For instance, GPS devices are part of handheld
18 personal electronic devices. I have a GPS device
19 on my cell phone.
20 Q I'm not asking you in general. I'm
21 asking you about the specific passage.
22 In this specific passage, is the HPED

1 doing the determining that Alice is leaving an
2 environment?
3 MS. PARTRIDGE: Objection. Form.
4 Mischaracterizes testimony.
5 A It's --
6 THE WITNESS: You know, your last
7 objection didn't come all the way through. Can
8 you just repeat it, Jayme.
9 MS. PARTRIDGE: Objection.
10 Mischaracterizes testimony.
11 A What I was saying was that the
12 center -- the sensor is interacting, most likely,
13 with the HPED, as it's described here. So, for
14 instance, I mean, I can imagine a system where the
15 sensor is nothing more than something capable of
16 transmitting a voltage.
17 So, that voltage might refer to
18 something, like, how bright is it outside? Like a
19 photo sensor or something like that.
20 So, the photo sensor has to work with
21 something else to be able to know what to do, like
22 the lights in your office, you know, we could talk

1 about the sensor being the, you know, the photo
2 sensor above your light switch, and that's just
3 conveying a voltage to some other system that,
4 then, decides what to do. But you'd have to look
5 at the two as a, you know, a conjoined system; one
6 can't do one thing without the other.
7 Q In this passage, it says "a car has a
8 sensor that determines that Alice is on a binaural
9 call and instructs an HPED of Alice to switch the
10 call to mono."
11 In that system, is the sensor
12 determining or is the HPED determining?
13 MS. PARTRIDGE: Objection. Form.
14 A In my understanding, a sensor, on its
15 own, works in conjunction with some sort of
16 system, as part of a system, I should say. So
17 just like the example that I gave you about your
18 photo sensor in your office, here, the sensor
19 might be nothing more than is it a binaural call
20 or is it not a binaural call? But the
21 instructions that are carried out on the basis of
22 that trigger, which might be as simple as a 1 or a

1 0, are going to be carrying out what those -- that
2 1 or that 0 means. In other words, the meaning of
3 an instruction.
4 So, you know, a POSA would read this
5 and know well, of course the sensor is not going
6 to, quote, unquote, instruct everything that HPED
7 is going to do, the sensor typically just reads
8 out a voltage based on some condition.
9 Q So, your reading of this is that even
10 though it says a sensor determines that Alice is
11 on a binaural call and instructs the HPED, that,
12 you would understand that to mean that the HPED is
13 determining that Alice is on a binaural call.
14 Is that right?
15 MS. PARTRIDGE: Objection. Form.
16 Objection. Mischaracterizes testimony.
17 A I was separating out the part of the
18 phrase that says "instructs."
19 Q Uh-huh.
20 A So the sensor may put out a 1 if you're
21 on a binaural call; this car may put out a 0 that
22 that shows you're not on a binaural call. But the

1 instruction part, you know, what do you do with
2 that 1 and that 0, that's part of a system.
3 Q And so, what system is determining that
4 Alice is leaving a virtual environment, or any
5 environment?
6 A Well, see, in this example here?
7 Q Is there -- if it exists, yes.
8 A If it exists.
9 Q Uh-huh.
10 A Well, I suppose we could look at
11 another example there. So she enters the car,
12 right, and there's a system in the car that pairs
13 with the HPED, so that's a kind of trigger, if you
14 will, there and then the system, itself, which
15 includes the HPED, more than likely, switches the
16 call from binaural to monaural.
17 Q Okay. And does that HPED do the
18 determining? Does it determine that Alice has
19 left an environment?
20 MS. PARTRIDGE: Objection. Form.
21 A All the HPED does is respond to some
22 sort of sensor or instruction about a change in

1 condition. What you do with that information,
2 like, switching -- causing a significant switch in
3 the auditory presentation mode, is something that
4 is done by a system which is, in this example,
5 most likely contained on the HPED because that's
6 concurrent with the prior sentence because the
7 HPED switches the call to mono.
8 Q Okay. Does this example disclose
9 lowering the volume of sound?
10 MS. PARTRIDGE: Objection. Form.
11 A This refers to switching the mode of
12 spatial presentation from binaural to monaural.
13 Q All right. So it does not disclose
14 lowering the volume of sound?
15 MS. PARTRIDGE: Objection. Form.
16 A Not necessarily, no.
17 Q Okay. And then, does this example
18 disclose switching sound from binaural to mono, as
19 an alert or warning that Alice is leaving an
20 environment?
21 MS. PARTRIDGE: Objection. Form.
22 A In the same context we were discussing

1 it in an earlier example, yes. It's a --
2 immediately salient audio cue that our system has
3 now gone through a transition and has paired. So
4 it's an alert, if you will.
5 Q Why does Alice need an alert to know
6 that she is in a car or leaving a car?
7 MS. PARTRIDGE: Objection. Form.
8 A The alert isn't about the -- whether or
9 not she's leaving or entering a car. The alert
10 has to do with the fact that now you are
11 confirming that your audio is coming to you in
12 monaural, for instance, because you are in a car.
13 If it didn't do that, then there would be some
14 problem with the system.
15 Q Okay. And how do you know it's an
16 alert or warning?
17 A It's a salient change in the auditory
18 presentation that would be immediately recognized
19 by the user. So there would be a significant
20 change.
21 Q Let's look at the bottom of this page
22 and it starts at -- it's the last paragraph on

1 this page, that carries on to the next one, starts
2 at line 29, beginning with "consider an example in
3 which Glenn is on a phone call with Alice."
4 Could you read that paragraph?
5 A Sure.
6 Q To yourself, please.
7 A Sorry to interrupt. I'll read it now.
8 Okay. Go ahead.
9 Q Okay. Is there an HMD in this example?
10 MS. PARTRIDGE: Objection. Form.
11 A Yes, that's -- here it's referred to as
12 a heads-up display. So, those terms are used
13 interchangeably because one is donning a head-up
14 display. So the act of donning usually putting
15 something on and, you know, historically, donning
16 a head-up display would be the equivalent of a
17 head-mounted display.
18 Q Okay. In this example, sound is
19 switched from stereo to binaural; is that right?
20 A That's correct.
21 Q Is there any disclosure of altering or
22 degrading binaural sound here?

1 MS. PARTRIDGE: Objection. Form.
2 A We've made a significant change to the
3 audio presentation, so this is concurrent with the
4 answer I gave you earlier about going from
5 binaural to mono inside the car. We can also look
6 at leaving the car and going mono to binaural.
7 Well, in the same way here, he goes to the chat
8 room and he's switching from stereo to binaural,
9 it certainly could also tell a POSA, oh, well, the
10 person might leave this chat room and go back out
11 and talk to Glenn in a less-private environment
12 and then switch back to stereo.
13 So, you know, the transition -- the
14 direction of the transition, if you will, from
15 scenario A to scenario B is easily understood to
16 be reversible.
17 Q So it would be obvious that you could
18 do it the other way, is what you're saying?
19 MS. PARTRIDGE: Objection.
20 THE WITNESS: I'm sorry, Jayme.
21 MS. PARTRIDGE: Objection.
22 Mischaracterizes the testimony.

1 A What I'm trying to say is that the
2 salience of the auditory cue that occurs when you
3 switch from stereo to binaural would be equally as
4 salient to go from binaural to stereo.
5 Q Okay. Is there any disclosure of
6 changing binaural sound as an alert when the user
7 is leaving an environment?
8 A You're speaking about this particular
9 paragraph?
10 Q In this exact example that we're
11 looking at.
12 A Exact example that we're talking about.
13 Is there any disclosure of going from
14 binaural to stereo, is your question?
15 Q No, I'm asking you, is there any
16 disclosure of changing binaural sound as an alert
17 when the user is leaving an environment?
18 MS. PARTRIDGE: Objection. Form.
19 A Well, there's no change in the -- from
20 binaural to binaural, as I describe it in my
21 declaration. There's, instead, a change from
22 stereo to binaural. And as I just explained

1 earlier, the reverse of that could also apply.
2 Q Okay. Is there any disclosure of
3 reducing the volume of sound here?
4 A No. There's no disclosure about that
5 form of audio alerting.
6 Q And is there any WED that determines
7 when the user is leaving an environment?
8 MS. PARTRIDGE: Objection. Form.
9 A Well, there is a description of an
10 HPED, so as I testified earlier, the root part of
11 that acronym is electronic device. In this
12 example, we're talking about an HPED that he
13 holds, but it might be something else that's held
14 in a different manner or attached to the arm or
15 attached to the head. That would be obvious
16 that -- what the functionality of this is being in
17 a handheld device, probably can be functional in a
18 device worn anywhere.
19 Q So my question for you was, is there a
20 WED that determines when a user is leaving the
21 environment?
22 MS. PARTRIDGE: Objection. Form.

1 A The literal letters, WED, are not
2 present in this paragraph.
3 Q So your answer is, no, there's no WED
4 that determines when the user is leaving an
5 environment?
6 MS. PARTRIDGE: Objection. Form.
7 Mischaracterizes testimony.
8 A What I said was that an HPED could be
9 considered a form of wearable electronic device,
10 except that we're wearing it in our hand, we're
11 grasping it.
12 Q Dr. Begault, I don't think you answered
13 my question. I'm asking you, is there a WED in
14 this example that determines when the user is
15 leaving an environment?
16 Can you answer my question?
17 MS. PARTRIDGE: Objection. Form.
18 Mischaracterizes testimony.
19 A Yes. From the standpoint of the answer
20 I just gave you. So, the head-up display, HUD,
21 couples with the HPED, which I've already said is
22 a form of WED. And so, that is a transition in

environments.

Q Does the -- is there a WED that determines that the user is leaving an environment?

A The action --

MS. PARTRIDGE: Objection. Form.

THE WITNESS: Sorry, go ahead, Jayme.

MS. PARTRIDGE: Objection. Form.

A The donning of the head-up display, for instance.

Q That's not the WED, is it?

MS. PARTRIDGE: Objection. Form.

A It couples with the WED, if we consider an HPED to be a form of a WED.

Q The HPED is distinct -- or discussed distinctly in the '184 and '179 patents from the WED; isn't that right?

MS. PARTRIDGE: Objection. Form.

A Well, I answered you earlier about that. I don't recall exactly how they're distinguished between those, so I'm giving you my POSA answer, at this point, that, yes, we think of

1 an HPED as something held in the hand, but the
2 root idea of an ED is common to both, and who
3 knows, we might be wearing internal devices that
4 are electronic.
5 Q So your answer to me is, while you can
6 modify what's in this example, you -- instead of
7 the HPED you could have a WED; is that right?
8 A No.
9 MS. PARTRIDGE: Objection.
10 Mischaracterizes testimony.
11 Q You agree with me, it does not say WED,
12 does it?
13 MS. PARTRIDGE: Objection. Form.
14 Objection. Mischaracterizes testimony.
15 THE WITNESS: We missed your prior
16 objection, Jayme. I apologize for speaking too
17 quickly.
18 Q We did not miss it. It's on the
19 record. We can keep going.
20 MS. PARTRIDGE: Objection. Form.
21 Objection. Mischaracterizes testimony.
22 A Okay. So I'll need the question

1 reread.
2 Q The passage does not say WED, does it?
3 MS. PARTRIDGE: Objection. Form.
4 A The literal letters W-E-D are not
5 present here.
6 Q Okay. But you can't answer my
7 question, which is, is there a WED that determines
8 that the user is leaving an environment; is that
9 right?
10 MS. PARTRIDGE: Objection.
11 Mischaracterizes testimony. Objection. Form.
12 A I believe I answered that earlier.
13 That we have the donning of a head-up display that
14 couples with an HPED. And if that HP --
15 Q Apologies. Go ahead.
16 A If that HPED, if we consider it a form
17 of WED, okay, so it's an electronic device, then
18 it's sensing the change in environment.
19 Q And you're saying it's sensing a change
20 in environment by coupling with the heads-up
21 display?
22 MS. PARTRIDGE: Objection. Form.

1 A By the act of donning the head-up
2 display, there is a signal, if you will, to the
3 system that there's now a change in environments
4 that concurrently activate a change in the form of
5 audio presentation as a cue or as an alert.
6 Q Is the HPED the one doing that
7 determining? Is that determining coming from the
8 HPED?
9 MS. PARTRIDGE: Objection. Form.
10 A No. It's a combination of things.
11 Similar to our discussion about sensors and
12 devices, here, we're talking about a head-up
13 display that couples, that coupling is indicative
14 of a system by which you need both devices to
15 accomplish the goal.
16 Q Okay. Can you turn to the page 161 of
17 Exhibit 1028, please.
18 A Yes.
19 Q Lines 15 through 20.
20 A Okay. I've read it.
21 Q Is there an HMD or WED in this example?
22 MS. PARTRIDGE: Objection. Form.

1 A There is an electronic device. I don't
2 know how it's worn.
3 Q Okay. Is there an HMD or a WED?
4 MS. PARTRIDGE: Objection. Form.
5 A Same answer. I mean, there is a sensor
6 and it's something detecting something.
7 Q Okay. So you don't know, based on this
8 passage, you don't know if there's an HMD or WED.
9 MS. PARTRIDGE: Objection. Form.
10 Objection. Mischaracterizes testimony.
11 A That's incorrect.
12 So, there's an electronic device,
13 right, that's doing the changing or the switching
14 of the binaural sound in response to a change in
15 the activity of the user.
16 Q Is there an HMD or a WED in this
17 paragraph?
18 A There might be.
19 MS. PARTRIDGE: Objection. Form.
20 A There might be.
21 Q Okay. And how would you know if there
22 is or is not?

A A POSA, including myself, would read this and say, well, certainly an electronic device of some sort is used. In fact, the words "electronic device" are spelled out here.

Q Is there a visual image in this example?

MS. PARTRIDGE: Objection. Form.

A There is no visual image other than the visual image that's described here. But I think you're referring to a visual display.

Q Correct.

A Yeah, there's no visual display mentioned in this paragraph.

Q Does the user leave any environment in this paragraph?

A Well --

MS. PARTRIDGE: Objection. Form.

A Yes.

Q What environment does the user leave?

A The environment that they have been walking in and the environment in which they are walking quickly or running.

1 Q What environment does the user enter?
2 A It's not stated here, but it could be,
3 you know, we could say that it could be an
4 environment where one would want to run or walk
5 quickly.
6 Q And how do you know the user has left
7 one environment to enter another?
8 A Well, I think you get an auditory cue.
9 Q And what is the auditory cue?
10 A Changes or switches of binaural sound.
11 Q Does this disclose an alert upon the
12 user leaving an environment?
13 MS. PARTRIDGE: Objection. Form.
14 A Well, given that the change in, you
15 know, it's talking about walking quickly or
16 running, that could be concurrent with, let's say,
17 locations where walking quickly or running might
18 be appropriate, so, like, you're walking to the
19 track, or something like that, and then you want
20 to go running. And so, those are two different
21 kinds of physical environments. I'm just kind of
22 making that up as I go.

1 But, certainly that's a change in
2 environment, so it certainly could refer to a
3 change in environment.
4 Q I think my question is different. My
5 question was, is there any disclosure of an alert
6 upon the user leaving an environment?
7 MS. PARTRIDGE: Objection. Form.
8 Objection. Asked and answered.
9 A Yes. I gave you an answer. I said
10 that it changes or switches binaural sound.
11 Q Okay. So you said the change in
12 binaural sound is the alert.
13 A The change is switch.
14 Q And how do you know it's an alert or a
15 warning?
16 MS. PARTRIDGE: Objection. Form.
17 A It would be a salient and noticeable
18 auditory cue.
19 Q Why does the user need to be alerted or
20 warned that they're commencing to walk quickly or
21 run?
22 A Well, I could speculate it could be

1 motivational. It could be something of that sort.
2 It could be based on, let's say, number of
3 calories burned, distance walked, something of
4 that sort.
5 Q Is there any disclosure of decreasing
6 the volume of sound in this example?
7 A It may include that, since it says a
8 changed binaural sound. So, for instance, the
9 binaural sound may change from a more distant SLP
10 to a near SLP. And if that were the change in
11 binaural sound, then concurrent with that would be
12 a change in the volume of sound.
13 Q Okay. But it doesn't disclose that,
14 does it?
15 MS. PARTRIDGE: Objection. Form.
16 Objection. Mischaracterizes testimony.
17 A I think a POSA would look at this and
18 give you the same answer I just gave you.
19 So, it doesn't say, specifically, the
20 words "change in volume." But when a POSA sees
21 the word "changes binaural sound," right, then
22 that could mean a change in the sound localization

1 point to a different distance. And so, oh, that
2 usually means reduction or change in volume.
3 Q But does it have to mean reduction?
4 Could it mean that the SLP is actually -- that the
5 volume's actually increasing or changing --
6 MS. PARTRIDGE: Objection. Form.
7 A Yes, it could mean that.
8 Q Okay. Can we turn to, I'd like to turn
9 back to your declaration and look at paragraph 29.
10 A Sure.
11 Yes.
12 Q In this paragraph you say "prior to the
13 advent of virtual reality, cuing a transition
14 between visual and auditory environments through
15 the use of sound is a familiar concept as old as
16 the history of scene changes."
17 What do you mean?
18 Why are you saying it's a "familiar
19 concept"?
20 A Because there's a whole history of
21 scene changes in the dramatic stage arts, such as
22 operative theater.

1 Q What do you mean by cuing? What is
2 cuing?
3 A Well, for instance, a very simple
4 example is in theater, you can cue the fact that
5 we are in a daylight environment and now we've
6 moved to a nighttime environment by lowering the
7 lights.
8 Q So is cuing the same as warning or
9 alerting?
10 A It's a --
11 MS. PARTRIDGE: Objection. Form.
12 A It's alerting somebody that there, now,
13 is a change in the circumstances and surroundings
14 of a person in an environment that is being
15 represented in a theatrical stage environment.
16 Q So these audio warnings about leaving
17 an environment were known by 2015?
18 MS. PARTRIDGE: Objection. Form.
19 A The use of audio to cue a change in
20 environment has been known for a long time, yes.
21 Q What about changing binaural sound as
22 an alert or warning? Was that known by 2015?

1 MS. PARTRIDGE: Objection. Form.
2 Asked and answered.
3 A You could, basically, cue somebody to
4 the fact that there's been a change in a virtual
5 acoustic environment by changing the form of
6 binaural presentation.
7 Q What about using a reduction in volume?
8 Could you use a reduction in volume as a cue or a
9 larger warning by 2015? Was that known?
10 MS. PARTRIDGE: Objection. Form.
11 A Well, you could use it to cue somebody
12 that, let's say, you've got a binaural
13 representation in a theater -- I'm sorry, in a
14 radio drama and somebody is walking away from the
15 scene. And so, there would be a reduction in
16 volume in that particular audio radio drama that's
17 being heard binaurally and, so, that sound would
18 be reduced and cue the person, who was listening
19 to this radio drama, that the environment was
20 changing.
21 Q Okay. And what about users leaving an
22 environment? Was it known to lower the volume of

1 sound as an alert that the user was leaving an
2 environment?
3 MS. PARTRIDGE: Objection. Form.
4 A Well, there's always been a simulation
5 of auditory distance in a sort of theatrical
6 manner. So unlike in the patent, which is
7 referring to using it as a more salient cue, like
8 a dramatic change probably -- possibly, in the
9 volume of the sound. What was known is that you
10 could do, for instance, the example I just gave
11 you, the idea of somebody moving off into the
12 distance, or something appearing in the distance.
13 So this has been unknown.
14 Q So it wasn't known, at the time of the
15 patent, to reduce the volume of sound as an alert
16 that a user was leaving an environment?
17 MS. PARTRIDGE: Objection. Form.
18 A Not in the same way as in the patent.
19 Q Okay. Would that have been obvious to
20 a person of ordinary skill? Would they have known
21 that you could reduce the volume of sound as an
22 alert?

1 MS. PARTRIDGE: Objection. Form.
2 A They would have known about reducing
3 the volume of a sound to create an illusion of
4 auditory distance for a particular sound object.
5 Q But they wouldn't have thought that you
6 could reduce the volume of sound to alert or warn
7 a user that they were leaving an environment?
8 MS. PARTRIDGE: Objection. Form.
9 Mischaracterizes testimony.
10 A Not in a virtual environment. I've
11 never seen that used as a cue, or kind of, let's
12 say, significant change in volume based on some
13 sort of interaction that the person is doing,
14 like, moving between environments where the
15 listener, themselves, is moving and precipitating
16 that change or the circumstances around them are
17 changing as a function of something in the
18 modeling of the environment. So it's very
19 different in a virtual environment context.
20 Q What about in a physical environment
21 context? Would that have been obvious in a
22 physical environment context? And let me pose my

1 question for the record.
2 So would it have been obvious to a
3 person of ordinary skill, at the time of the
4 inventions, to reduce the volume of sound as an
5 alert or warning to a user that the user was
6 leaving an environment?
7 MS. PARTRIDGE: Objection. Form.
8 A Okay. I'm lost on what context we're
9 in. I need a little more context. So we're in a
10 physical environment with a listener, right? A
11 listener? Any listener? What kind of listener
12 are we talking about?
13 Q It could be any listener. Any kind of
14 listener. We're in a physical environment. The
15 user could be in a physical environment listening
16 to some virtual audio.
17 Was it known to reduce the sound of --
18 reduce the volume of sound as alert or warning
19 that the user was leaving an environment?
20 MS. PARTRIDGE: Objection. Form.
21 A So what am I listening to in your
22 example? I'm sorry, am I listening to a virtual

1 simulation of sound?
2 Q You could just be listening to the
3 radio. Virtual simulation or just the radio. Is
4 (indiscernible) the audio an example known to be
5 used as an alert or cue to the user that the user
6 is leaving an environment.
7 MS. PARTRIDGE: Objection. Form.
8 A So, again, when you will say "leaving
9 an environment," I'm thinking back to virtual
10 environments. But if I'm listening to a radio
11 here in my living room, I don't think it was ever
12 conceived of to certainly reduce the volume of my
13 radio because I wouldn't be thinking about
14 switching environments in that context. There's a
15 dim button, for instance, that reduces the sound
16 of my stereo by 20 decibels. If I push that dim
17 button, I'm not using that as a cue to change --
18 as a cue to me from a system, like, a virtual
19 reality system, that I'm changing environments.
20 It's very different.
21 Q So if you are sitting in -- like, let's
22 take any example of me in my office, I'm sitting

in my office, I'm listening to the radio. If I turn off the radio, have I left my environment?

MS. PARTRIDGE: Objection. Form. Objection. Asked and answered.

A You have changed your environment and, so, in the way we were discussing before, we could be thinking of that as a cue, if you wanted to, as a change in -- from one environment to another. You had a noisy environment because they had a radio on. You've now changed your environment to a quiet environment.

And so, for proposes unknown to me, you may wish to distinguish between those two environments and consider that to be a cue.

Q Okay. And so, under those circumstances, would you say a person of ordinary skill in the art, before the time of invention, would you have known to lower the volume of sound as an alert or warning to the user that they were leaving the environment?

A No.

MS. PARTRIDGE: Objection. Form.

1 Object. Asked and answered.
2 Q Why not?
3 A Well, prior to the --
4 MS. PARTRIDGE: Objection. Form --
5 objection. Asked and answered.
6 THE WITNESS: Okay.
7 A So, one more time on your question.
8 THE WITNESS: I apologize. I
9 interrupted, Jayme.
10 Q At the time of the alleged inventions,
11 would a person of ordinary skill in the art know
12 to lower the volume of sound as an alert or
13 warning to the user that they were leaving an
14 environment?
15 MS. PARTRIDGE: Objection. Form.
16 Objection. Asked and answered.
17 A I recall, from one of the prior art
18 patents, that there's a fade-out of sound where
19 real sound is provided from a microphone in the
20 ambient. And so, I don't know how well-known that
21 was. I had never heard of that idea myself. But
22 I don't believe that that's the form of volume

1 reduction that's described here in my declaration.
2 Q What form of volume reduction are you
3 describing in your declaration?
4 A One that would provide -- well, one
5 that reflects what my interpretation of the patent
6 is, which is not a gradual fade-out but, rather, a
7 reduction in volume, which infers, to me, an
8 instantaneous reduction in volume, not the same
9 thing as a fade-out.
10 Q Where does it say instantaneous
11 reduction in volume in the patent?
12 A I don't know if the word -- I'm sorry.
13 I don't know if the --
14 MS. PARTRIDGE: Objection. Form.
15 A I don't know if the word
16 "instantaneous" is used, but there's certainly the
17 word "reduction." And if we looked at it in
18 context, I think we would see that that word
19 reduction is never connected to the idea of
20 fade-out or fade-in. So reduction, to me, means
21 an abrupt game change.
22 Q How about lowering? Does lowering also

1 mean an instantaneous change in volume?
2 MS. PARTRIDGE: Objection. Form.
3 A In my interpretation, yes.
4 Q Okay. So, your position is the patent
5 teaches an instantaneous reduction or lowering in
6 volume as an alert to the users?
7 MS. PARTRIDGE: Objection. Form.
8 Objection. Mischaracterizes testimony.
9 A I believe the only way that that word
10 is used, and we can go back and look so I can
11 confirm, because I don't recall exactly, the
12 context of the word -- the use of the word
13 reduction. But it could be change in volume or
14 reduction in volume. But, to me, since this is
15 acting as an alert or a cue, the best way to do
16 that would be to do a fairly rapid change in
17 volume without a gradual fade-out or fade-in.
18 Q So do I understand your testimony as
19 being the only way to have an alert or cue is to
20 have an instantaneous change of volume?
21 MS. PARTRIDGE: Objection.
22 Mischaracterizes testimony.

1 A No. First off, my testimony is talking
2 about a lot of different ways to cue a change
3 in -- in environments, other than volume. And
4 then when I say "instantaneous," that's got a
5 technical definition. That's probably overly
6 concise. I meant to say that it's a rapid change
7 that's not a fade-out or a fade-in, a gradual
8 fade-in or fade-out. So it's a, maybe rather than
9 saying instantaneous, I should say immediate or
10 something -- I don't know. I'm not sure of the
11 word because instantaneous has a technical
12 definition, which is as fast as possible. It
13 doesn't necessarily have to be as fast as
14 possible.
15 But it would not correspond to, like we
16 were talking about, real-world examples, where
17 somebody might walk away and do a gradual fade-out
18 on somebody's sound simulation to make them sound
19 as if they're moving off into the distance.
20 That's a fade-out, or you're doing a fade-in,
21 fade-out with sound between two scenes. That
22 would act less as a cue. What acts as a cue is,

1 oh, there's been a big change in the volume.
2 Q So as of the time of the alleged
3 inventions, would a person of ordinary skill in
4 the art known they could reduce the volume of
5 sound as an alert or a warning?
6 MS. PARTRIDGE: Objection. Form.
7 THE WITNESS: Go ahead.
8 MS. PARTRIDGE: Objection. Form.
9 A I wasn't aware of anybody doing that in
10 2015.
11 Q Okay.
12 MS. PARTRIDGE: When you come to a good
13 stopping point, let's go off the record, please,
14 for a break.
15 MS. OSMAN: We can take a break now,
16 this is fine.
17 MS. PARTRIDGE: Okay. Can you give us
18 the time, please, the total amount of time. I
19 know what time it is.
20 PLANET DEPOS TECHNICIAN: Off the
21 record. 19:06.
22 (Recess taken.)

1 PLANET DEPOS TECHNICIAN: Back on the
2 record. The time is 19:26.
3 BY MS. OSMAN:
4 A Inge, I have a question for you. Did I
5 pronounce that?
6 Q Inge, yeah.
7 A I have a friend named Inge Bach from
8 Sweden.
9 Inge, I have a question. You said, at
10 the beginning, that I could clarify or make a
11 statement about some prior answer I gave you. So
12 I have some information that might be helpful.
13 Q Sure.
14 A Okay. I wanted to clarify. We had a
15 discussion about instantaneous volume changes for
16 rapid volume changes.
17 Q Right.
18 A And what I should have done was to
19 connect, really, what I think a POSA and myself
20 would interpret those volume changes to mean. And
21 I meant those to be interpreted as a significant
22 change in the perception of auditory distance.

1 So, it would -- I think it would help
2 clarify my answer if I had said a change -- a
3 rapid change in volume, such as to effect a
4 perceptual change in auditory distance of a sound
5 object.
6 So, that is consistent with my
7 declaration and that is consistent with what I
8 feel a POSA would have interpreted when the patent
9 talks about a reduction or a change in volume as
10 and alert.
11 Q So, a reduction or lowering of volume
12 in the claim, you believe, means an instantaneous
13 or, I think you said immediate, significant volume
14 change; is that correct?
15 MS. PARTRIDGE: Objection. Form.
16 A Well, I want to make sure that that's
17 related to a change in perceived auditory
18 distance.
19 Q Is there any way to reduce volume
20 without changing perceived auditory distance?
21 A Well, for instance, if I begin to
22 whisper, when I might seem like a person at the

1 same distance who's whispering or just changing
2 the volume of my voice. But if you change the
3 volume enough and I indicated in my declaration a
4 kind of graph that shows how there's a 6 dB change
5 is related to a doubling of perceived distance.
6 So that's kind of the thing that I am referring
7 to, is a change in volume such as to effect a
8 significant change in perceived distance of the
9 sound source.
10 So that's the kind of cue that's
11 salient. So instantaneous change of one decibel
12 wouldn't be noticed by anybody and it wouldn't
13 seem to be a change in perceived distance.
14 But if you change the volume enough to
15 create a change in perceived distance, then that
16 becomes very salient because, suddenly, things
17 that are at one distance away from you are now at
18 a farther distance, like, double the distance or
19 something.
20 So that's -- I wanted to just get that
21 on the record, to clarify that, because I felt
22 like in retrospect, just saying what I did didn't

1 give you the complete picture of volume -- my
2 interpretation of what a POSA would interpret a
3 change in volume or reduction in volume.
4 Q Would reducing the volume so that
5 there's no longer any sound, reducing the volume
6 to zero, would that be a significant enough
7 change?
8 MS. PARTRIDGE: Objection. Form.
9 A I don't think that's culled out in the
10 patent anywhere.
11 Q I'm not asking about the patent.
12 You're defining what reducing or lowering the
13 volume is, and I'm trying to understand your
14 definition.
15 Would reducing the volume to zero meet
16 the claims, under your understanding?
17 MS. PARTRIDGE: Objection. Form.
18 A No, I don't think so because that would
19 be reducing it to a perceived distance that was
20 imperceptible, and that's a contradiction in
21 terms. I meant to say that I feel that the patent
22 is discussing reducing the volume of the sound so

1 that its perceived distance is still audible but
2 it's at a lower volume.
3 Q And so, how many decibels would you say
4 you have to reduce the sound to, to make the claim
5 limitations?
6 A Well, minimally, 6 decibels, which is
7 equivalent to a doubling of distance. I don't
8 know, there might be, instead of a double
9 distance, some reduced version of that, so maybe
10 the reduction isn't as far as that. But I think
11 it would be -- I think the limit would be
12 minimally, whatever would cause a person in a
13 psychoacoustic study to say, oh, yeah, that's an
14 unambiguous change in distance for, let's say,
15 95 percent of your test subjects.
16 Q What if the volume that you were
17 reducing in sound is only 6 decibels? How do you
18 reduce or lower the sound or can you not reduce or
19 lower the sound?
20 MS. PARTRIDGE: Objection. Form.
21 A You reduce the sound decibels by
22 6 decibels -- I'm sorry, you can reduce the level

1 of a sound by 6 decibels by changing its voltage
2 to 50 percent of what it was.
3 Q What if the sound that you started at
4 is only 6 decibels? How do you reduce it by
5 6 decibels?
6 A There is no sound system I know of,
7 commercially available, that can reproduce a sound
8 at 6 decibels.
9 Q Let's imagine a system that reproduces
10 a sound at 6 decibels. Can you reduce it by
11 6 decibels and still be within the lowering the
12 volume and reducing the volume claim limitation?
13 MS. PARTRIDGE: Objection. Foundation.
14 Objection. Form.
15 A Well, that hypothetical is absurd
16 because there's very few sounds that we experience
17 except, perhaps, in the most extreme anechoic
18 chambers, that can produce the sound of
19 6 decibels.
20 So, you can actually measure a sound of
21 0 decibels because all a decibel is a measured
22 relative to 0 decibels, which is a sound pressure

1 of 20 micropascals.
2 So, it is possible to actually measure,
3 under the most ideal circumstances, something less
4 than 0 decibels. But now I'm talking about
5 specialized microphones and instrumentation.
6 Q I'm trying to understand your claim
7 construction. You're telling me that lowering the
8 volume of sound and reducing the volume of sound
9 requires a reduction of at least 6 decibels; is
10 that right?
11 MS. PARTRIDGE: Objection. Form.
12 A What I said in my claim construction is
13 lowering the sound by 6 decibels would be
14 equivalent, in a free field, to reducing -- I'm
15 sorry, to increasing the distance of a sound to
16 double its distance.
17 So that's physical property of sound in
18 a free field.
19 Q Could you have a noticeable cue without
20 changing the sound by 6-decibel?
21 A Possibly. Again, I gave you a criteria
22 there that I personally, and I think a POSA would

1 apply, which is maybe your most sensitive
2 listeners could hear a reduction in, let's say,
3 3 decibels. But it probably wouldn't be effective
4 for the vast population. So you have to think,
5 statistically, about, you know, when are most
6 people going to sense this?
7 So, as another example, half loudness,
8 which is sometimes interpreted by people to be
9 double the distance, even though it's farther away
10 in terms in physical property, is 10 decibels.
11 Q What about reducing the volume of sound
12 to zero? Would that be -- provide a cue to users?
13 MS. PARTRIDGE: Objection. Form.
14 Objection. Asked and answered.
15 A Well, I think that would produce an
16 illusion that the sound had disappeared.
17 So I don't think that's the same thing
18 as we're talking about here because we're not
19 talking about sounds disappearing out of the scene
20 in the context of the patent. Would it act as a
21 cue, it might cue you, the fact that somehow I've
22 been disconnected from the system or something.

1 Q So is lowering or reducing the volume a
2 cue? Could that be an indicator?
3 A Well, again, to the patent, in the
4 context of the patent, there are many descriptions
5 or at least several descriptions of reducing or
6 lowering the volume of a sound. And this is
7 sometimes done in conjunction with other binaural
8 processing, I believe.
9 The point is, is that what you want to
10 do is create, psychoacoustically, an impression of
11 a significant change in auditory distance.
12 Q Where does it say that in the patent?
13 Where does it say lowering or reducing the volume
14 requires psychoacoustically creating a change in
15 acoustics?
16 MS. PARTRIDGE: Objection. Form.
17 A That is the way that I interpreted and
18 a POSA would interpret the use of reducing volume
19 as a cue. You wouldn't reduce the volume of a
20 cue, or that is to say of a virtual -- you're
21 simulating, let's say, the sound of something.
22 And you want it to be effective, as a cue, that

1 there's been a change in the environment. If --
2 so that concept of significance has its roots in
3 psychoacoustics and the ability to detect that
4 change. And so, it doesn't say explicitly that,
5 but the patent says reducing the volume of a sound
6 so as to -- I mean, I can read the literal words
7 for you. But it's clear, from the context, that
8 it has to be something that somebody can perceive.
9 Q Does the patent disclose this 6-decibel
10 reduction that you're proposing?
11 A It does not --
12 THE WITNESS: Sorry, Jayme, go ahead.
13 MS. PARTRIDGE: Objection. Form.
14 A It does not specifically say the words
15 6 decibels, no, it says reducing the sound or
16 changing the volume of a sound.
17 Q Dr. Begault, before we move too far
18 into our questions. During the break, did you
19 talk to your attorneys?
20 MS. PARTRIDGE: I'll let you answer
21 that question yes or no, Dr. Begault.
22 A No.

1 Q Thank you.
2 Can you, unless you have anything else
3 to say about the reduction or lowering of sound,
4 can we turn to paragraph 60 in your declaration,
5 please.
6 A Sure. I have nothing more to say about
7 that. I just wanted to clarify that on the
8 record.
9 Q Thank you.
10 A Uh-huh.
11 So, paragraph 60.
12 Q This is a paragraph about the '140
13 application discussion of alerts and warnings; is
14 that right?
15 A Yes. May I read it?
16 Q Please.
17 A Okay. I've read it.
18 Q All right. Thanks.
19 So, I noticed there are a couple of
20 questions I have about this, the first -- second
21 sentence says "The '140 application states at
22 page 115, lines 31, through page 116 line 6," and

1 then it lists a number of example actions, which
2 includes switching sound from binaural sound to
3 stereo, et cetera, and then, at the end, lower a
4 volume of the sound, provide a sound or audio
5 alert or provide a visual alert.
6 Do you see that?
7 A I do.
8 Q Okay. When it says "provide a sound or
9 audio alert," is there any disclosure or
10 discussion of what that sound or audio alert is?
11 MS. PARTRIDGE: Objection. Form.
12 THE WITNESS: I didn't hear the
13 objection.
14 MS. PARTRIDGE: Objection. Form.
15 A I don't recall a specific description
16 of a particular sound or audio alert, but it's
17 certainly disclosed here.
18 Q Okay. And then, the next paragraph,
19 not the next paragraph, but part of the same
20 paragraph, it says "At page 136, the application
21 says, for example, the alert is an audible alert
22 and/or a visual alert to a person, and then, by

way of example, such alerts include," and then it lists a number of alerts.

Noticeably not included in this list of alerts is change of binaural sound; is that right?

MS. PARTRIDGE: Objection. Form.

A That's not included in this list of examples. By way of example, such alerts include but are not limited to.

Q Okay.

A Yes.

Q Okay. And then, in the last part of this paragraph you say "At page 138 of the '140 application, lines 24 through 27, it states 'consider an example where a child runs behind a car when it is backing up. A camera at the back of car provides a video and audio alert in stereo to the driver. The driver, however, does not see or hear the alert, so the car switches the alert to binaural sound that emanates a sound alert from the location of the child'."

Did I read that correctly?

A I believe you did.

1 Q That's not the same as what's claimed
2 in the patents, is it?
3 A I think it's consistent.
4 Q Does the patent disclose adding
5 binaural sound as an alert -- excuse me, do the
6 claims recite adding binaural sound as an alert?
7 A The claims talk about switching an
8 alert from one mode of audio, such as stereo, to
9 binaural.
10 Q Let's look at the claims. Where do the
11 claims recite that? I think you might have the
12 '179 patent already open in front of you; is that
13 right?
14 A Open? I could try to open it from
15 here.
16 PLANET DEPOS TECHNICIAN: Counsel,
17 sorry to interrupt. It looks like Counsel
18 Partridge is having some connection issues.
19 MS. OSMAN: Jayme, are you still here.
20 MS. PARTRIDGE: Can you hear me?
21 MS. OSMAN: Yes, we can.
22 MS. PARTRIDGE: I went out. So if

1 y'all got a couple questions in, that's fine. I
2 assume they were fine. I don't know what's going
3 on with everything.
4 A All right. Maybe we should back up a
5 question or two, just to get us all on the same
6 page.
7 Can you back up a question?
8 Q Well, let me repeat my question.
9 A Okay.
10 Q I said -- we said let's look at the
11 claims to see what they recite. So I asked you to
12 pull up the '179 patent, which I think is already
13 in front of you and hopefully open on your
14 computer.
15 A Okay.
16 Q Okay. So I think your testimony was
17 that the patent recites switching from stereo to
18 binaural.
19 Can you look at the claims and tell me
20 is that disclosed -- or is that claimed somewhere?
21 MS. PARTRIDGE: Objection. Form.
22 A Frankly, I'm looking at the claims in

1 my declaration because I can read it more easily
2 because I do recite them between paragraphs --
3 Section 5, so hopefully that's okay with you. So
4 I'm looking at my hard copy just to enable me.
5 Q Sure.
6 A Thanks. Okay, great.
7 So your question is, where does it
8 parallel, the statements that -- in this example,
9 so that we have switched from stereo sound to
10 binaural sound. In other words, where does this
11 connection occur between the specification and the
12 claim; is that correct?
13 Q That's correct.
14 A Okay. Great. Let's make that
15 connection.
16 So, let me see. And you want to know
17 specifically for '179; is that right?
18 Q Dr. Begault, I just want to know if
19 there are any claims that recite changing sound
20 from stereo to binaural. To my recollection, the
21 claims all discuss altering binaural sound.
22 MS. PARTRIDGE: Objection. Foundation.

1 Objection. Form.
2 A Can I direct you to claims 3 through 6?
3 Q Okay.
4 A Actually, claim -- yeah, claim 4
5 through 6, I think.
6 Q Okay. So claim 4, as I'm reading it,
7 says switching the sounds from the binaural sound
8 to stereo.
9 Is that right? Am I reading that
10 correctly?
11 A Yes, you are.
12 Q Okay. Now, let's look back at your
13 declaration and the example that we were just
14 looking at in paragraph 60.
15 A Yes.
16 Q So, in paragraph 60, when the driver
17 doesn't hear an alert that is in stereo, the car
18 switches the alert to binaural sound; is that
19 right?
20 A It does, in this example.
21 Q All right. So it does the opposite of
22 what the claims say. The claims say switch from

1 binaural to stereo, and this example switches from
2 stereo to binaural sound; is that right?
3 MS. PARTRIDGE: Objection. Form.
4 A Literally, that's what that says. But
5 in -- to be consistent with some of the other
6 answers I've given you previously, these
7 transitions from one thing to another would be
8 read by a POSA to also be, possibly, work in the
9 opposite direction. Let's say the system, for
10 instance, thought that there was a child from the
11 back of the car and emanated a binaural alert, but
12 then the child went away or it was a false alarm.
13 And then, so it would switch back to stereo.
14 Q In this scenario, would it make sense
15 to have a car switch from binaural to stereo if
16 there was a child behind the car and the user was
17 not noticing the child behind the car?
18 MS. PARTRIDGE: Objection. Form.
19 Q Would it make sense to have a
20 binaural -- switch an alert from binaural to
21 stereo?
22 MS. PARTRIDGE: Objection. Form.

1 A Well, all I can tell you is, is that
2 the example shows where the camera has made a
3 correct identification and so makes a switch from
4 stereo to binaural.
5 What I just recited to you was
6 something that would be obvious to a POSA, which
7 would be two possible situations. One is the
8 child is no longer behind the car. And then we
9 would go and reverse way of, oh, there's no longer
10 a need to alert, and now I will cue the listener
11 by switching back to stereo.
12 Another situation might be a false
13 alarm that the camera detected a child and, in
14 fact, it was a bird and the bird flew away.
15 Q And so, your testimony is, a person of
16 ordinary skill would have understood that these
17 scenarios were possible?
18 MS. PARTRIDGE: Objection. Form.
19 A When a POSA reads these specifications,
20 and there's these examples that are given, I think
21 what they are meant to do is to give the POSA an
22 idea of how these alerting systems, that

1 manipulate sound in specific ways, could be used.
2 But I don't believe that they're meant to be
3 all-inclusive.
4 Q Okay. And it would have been obvious
5 to a POSA that there were other ways they could
6 use the system?
7 A Well, in particular, the way that we've
8 been just discussing it, but certainly you could
9 show that a hazard was no longer present. I mean,
10 my own car right now has a backup alarm when it
11 detects something that's there, and that backup
12 alarm turns off when it's no longer an issue.
13 So it turns on, it turns off. So we go
14 from condition A to condition B, and we go back to
15 condition A.
16 Q Okay. Can you turn, now, to paragraph
17 64, please, also in your declaration.
18 A Absolutely. Okay. This seems to be a
19 discussion of Dr. Roginska's declaration. Is that
20 correct?
21 Q That seems correct.
22 A Okay.

1 Q Can you just take a look at this
2 paragraph and then we can have a discussion?
3 A Sure. Give me a moment.
4 Q In fact, maybe just read the first,
5 looks like, three sentences, and then we can talk.
6 It's kind of a long paragraph.
7 A Oh, okay.
8 Yeah, so up to the first reason that I
9 felt that I disagreed with Dr. Roginska.
10 Q Right. Okay. So my first question to
11 you is, you say PHOSITA, a POSA, would, in fact,
12 have an understanding of how to implement the
13 claimed spatial audio methods described in the
14 '179 and '184 patent, based on knowledge of
15 spatial audio rendering.
16 What spatial audio -- what knowledge of
17 spatial audio rendering are you talking about
18 here?
19 A I'm speaking about those methods that
20 are outlined, I believe, in my declaration several
21 pages later. Yeah, actually, the next page, on
22 page 37, methods of creating alerts in the claims.

1 And so, I've itemized what I believe would be
2 known a PHOSA, a PHOSITA, POSA, to implement these
3 methods.
4 Q So, just to make sure I understand what
5 you're saying. Are you saying that part of what
6 was -- part of the knowledge of spatial audio
7 methods -- sorry, excuse me -- strike that.
8 You said that a POSA would have had
9 knowledge of spatial audio rendering and that that
10 knowledge is outlined in the next paragraphs?
11 MS. PARTRIDGE: Objection. Form.
12 A So on Section B, which is paragraph 65
13 through, I think, 80, there's a number of spatial
14 audio methods that would be well-known to a POSA
15 for how to degrade binaural audio to create, for
16 instance, inside-the-head localization; for
17 instance, to change the perceived auditory
18 distance from the sound by lowering its volume, et
19 cetera.
20 Q Okay. So you're saying a POSA would
21 have known how to create these alerts?
22 A Absolutely.

1 Q Okay. And would the POSA also have
2 known that they could use those alerts to let the
3 user know that they were leaving an environment?
4 A No. I think that's the novelty here.
5 The idea of connecting these methods to the
6 concept of alerting and cuing transitions in
7 environments.
8 THE WITNESS: I think, Jayme, are you
9 with us? Oh, she's here.
10 Q So just to clarify for the record,
11 you're saying that a person would not necessarily
12 know that they could use these changes in binaural
13 sound as an alert to the user, that they were
14 leaving an environment?
15 A Based on my assessment, the patent
16 '179, a way for groups to gather together these
17 various techniques to provide these cues and
18 transitions of environments, and I think, on the
19 whole, that would not have been obvious as a means
20 of alerting someone in the context of virtual
21 environments and virtual reality.
22 I had not heard of that as a technique

1 for that purpose in 2015.
2 Q Okay. If you are reducing or if you
3 are changing binaural sound from binaural to
4 monaural or stereo, for instance, would that
5 necessarily act as an alert to the user that the
6 user is leaving the environment?
7 A I believe those are salient cues. When
8 I say "salient," I think it's something that's
9 noticeable. Humans are very sensitive to changes
10 in auditory localization, auditory quality.
11 And so, these methods that are brought
12 out can sound pretty dramatic when you experience
13 them.
14 Q So, it would be a salient cue if you're
15 changing binaural sound to monaural, it would be a
16 salient cue to the user?
17 MS. PARTRIDGE: Objection.
18 Q Would you be able to use that salient
19 cue to alert or warn the user?
20 MS. PARTRIDGE: Objection. Form.
21 A That's the concept here in the patent.
22 Q So, is the answer to my question, yes,

1 you would be able to use that salient cue to alert
2 or warn the user?
3 MS. PARTRIDGE: Objection. Asked and
4 answered.
5 A In the context of virtual environments,
6 as specified in those patents, I think that one
7 could use these changes for something else, but as
8 an alert to a change in environments, that is,
9 again, what I feel is something that was new.
10 Q Okay. I understand that you're saying
11 it's something that was new. But it was something
12 that you could use as a salient cue to a user that
13 the user was leaving an environment; is that
14 right?
15 MS. PARTRIDGE: Objection. Form.
16 A Well, yeah, you could use it because
17 it's described here in the patent.
18 Q Okay. But you also said that one could
19 use these changes for something else.
20 What else could they be used for?
21 A Well, I used, in courses on binaural
22 sound, to demonstrate what inside-the-head

1 localization would sound like, and then we could
2 discuss its psychoacoustic and physical
3 properties. So we would demonstrate these types
4 of sounds, and then we would discuss why a human
5 would perceive something as sound inside your
6 head.
7 So it was a way of demonstrating
8 certain aspects of psychoacoustics.
9 Q Okay. Is there any other reasons you
10 might use this type of alteration of binaural
11 audio?
12 MS. PARTRIDGE: Objection. Form.
13 A I have a patent where I used
14 inside-the-head localization as a way of
15 prioritizing communication.
16 Q Any other purpose for using this type
17 of alteration in binaural sound?
18 A Sometimes it was done demonstratively.
19 For instance, you might switch from one type of
20 binaural sound to another type of binaural sound
21 to demonstrate, through experimental facilities,
22 changes in auditory localization, depending on the

1 particular type of HRTFs you use. So there's a
2 resource context for that. You might also switch
3 from the use of head-related transfer functions to
4 stereo to also demonstrate the type of
5 inside-the-head localization that occurs with
6 stereo and to demonstrate what's known in
7 psychoacoustics as lateralization.
8 Q Are there other reasons you might alter
9 binaural sound in that way?
10 A Those are the ones that I can think of
11 at this moment.
12 Q Okay. Can you, please, turn to
13 paragraph 66 of your declaration.
14 A Sure. Yes.
15 Q Okay. In this section, you discuss
16 altering or degrading audio cues to prevent the
17 user from experiencing external localization of
18 the sounds.
19 Is that right?
20 A Yes.
21 Q And you agree that POSAs, before 2015,
22 would have known how to alter or degrade audio

1 cues to prevent the user from experiencing
2 external localization of sounds?
3 MS. PARTRIDGE: Objection. Form.
4 A I'm sorry. Yeah. That -- well, I will
5 say that people knew that if you degraded audio
6 cues to prevent experiencing localization to
7 sounds, you would do things to process the sound
8 differently rather than using, let's say, 3-D
9 audio techniques. So you might mix the same
10 signals to both ears.
11 Q Okay. And this is something that those
12 of ordinary skill in the art knew how to do as of
13 2015?
14 MS. PARTRIDGE: Objection. Form.
15 A Inside-the-head localization is a
16 well-studied phenomena for many years before the
17 days of these patents. So, most POSAs would know
18 that sounds sound like they are coming from the
19 middle of your head if you play the same signal
20 through both of your left and right -- well, both
21 of your headphone channels.
22 Q Okay. And you agree, also, that

1 changing sound from binaural to stereo or mono
2 would prevent the user from experiencing -- would
3 alter or degrade audio cues to prevent the user
4 from experiencing external localization of sounds?
5 MS. PARTRIDGE: Objection. Form.
6 A I think that's something that was
7 well-understood by POSAs, yes.
8 Q Okay. Can we turn to paragraph 71 of
9 your declaration.
10 A Okay. I'm there.
11 Q So here you're discussing filtering the
12 binaural sound to alter a spectral cue.
13 Do you agree that a POSA, as of the
14 time of the alleged inventions, would have known
15 how to filer the binaural sound to alter a
16 spectral cue?
17 MS. PARTRIDGE: Objection. Form.
18 A Yes.
19 Q And does changing sound from binaural
20 to stereo or binaural to mono constitute
21 altering -- constitute filtering the binaural
22 sound to alter a spectral cue?

MS. PARTRIDGE: Objection. Form.
A So your question was, does changing from binaural to stereo or mono constitute altering a spectral cue?
Q Let me read it again. My apologies.
Does changing sound from binaural to stereo or binaural to mono constitute filtering the binaural sound to alter a spectral cue?
MS. PARTRIDGE: Objection. Form.
A In essence, it does change the spectral cues when you do that.
Q Okay. Let's turn to paragraph 74, please.
A Yes.
Q In this paragraph, the first sentence, you say "a spectral caused by diminishing high frequencies as a cue to distance would also be known to a PHOSA," or a person of ordinary skill in the art.
What do you mean by that?
A Oh, well, the physics of sound are such that the absorption of sound by air causes sounds

1 that go into the distance to sound more dull.
2 They lost their energy; the high frequency
3 doesn't -- isn't conveyed at the same amplitude as
4 the amplitude of lower frequencies, which
5 survive -- well, their level is more intact over a
6 longer distance and higher frequencies are
7 affected.
8 So, basically, to put it in lay terms,
9 the treble is attenuated under tone controls as
10 sound goes off into the distance.
11 Q And a person of ordinary skill in the
12 art would have known to use a low-pass filter to
13 achieve this diminishing of high frequencies?
14 A Yes, the use of a low-pass filter to
15 attenuate high frequencies is very well-known.
16 Q Okay. Can you turn, please, to
17 paragraph 76.
18 A Yes.
19 Q Okay. Just -- so here you're
20 discussing degrading a spatial cue of the sound
21 playing to the user. Would a person of ordinary
22 skill in the art have known, as of the time of the

1 alleged inventions, how to degrade a spatial
2 cue --
3 MS. PARTRIDGE: Objection.
4 Q -- of the sound to a user?
5 MS. PARTRIDGE: Objection. Form.
6 A Yes. If degradation of spatial cues
7 was done for demonstrative purposes. You know, I
8 know it from the perspective of psychoacoustics,
9 so, yeah, that's something that would be
10 well-known to a POSA.
11 Q Okay. And would a POSA have known,
12 also, that changing sound from binaural to mono or
13 changing sound from binaural to stereo would
14 degrade a spatial cue of the sound playing to the
15 user?
16 MS. PARTRIDGE: Objection. Form.
17 A Yes, that was -- is well-understood,
18 that the spatial cues would change significantly
19 if that occurred.
20 Q At the end of this paragraph you say "A
21 PHOSITA would recognize common and well-known
22 methods of spatial processing that are relatively

1 degraded compared to 3-D sound techniques that
2 you're HRTF filtering."
3 What are the common and well-known
4 methods of spatial processing?
5 A Stereo, pseudostereo. There's a number
6 of secret sauce spatial processors, they were
7 called spatial exciters. Various processors and
8 POSAs would have been aware of these various
9 gizmos that were out there for their various
10 application in the commercial world, for instance,
11 and they would understand that they would not be
12 processes that would be equivalent to the
13 capability of 3-D sound. So in that sense,
14 they're degraded.
15 Q I notice here that this limitation says
16 "degrade a spatial cue." You have been using the
17 word "cuing" throughout your deposition today in,
18 what seems like, a sort of different way.
19 Is this a different cue or is this the
20 same cue you've been discussing?
21 MS. PARTRIDGE: Objection. Form.
22 A Well, when I say "spatial cue," I

1 guess -- or the patent is actually using that
2 word, spatial cue. So, in this context, I'm
3 talking about, for instance, we can degrade a
4 portion of the HRTF that's responsible for our
5 ability to perceive elevation, but that HRTF still
6 may contain enough information to hear sound in a
7 left/right direction for instance. So, it would
8 be degraded from the sense that its elevation cues
9 might be removed.
10 Q That's not the same as the cuing that
11 you were discussing earlier?
12 A Cuing --
13 MS. PARTRIDGE: Objection -- objection.
14 Form.
15 A Okay. So, you've got to remind me what
16 cuing I was discussing before. I know I've been
17 talking about alerts.
18 Q Yeah, you were talking about cuing in
19 the context of alerts. You were sort of using it
20 as another way to say alert or warning.
21 A Oh.
22 MS. PARTRIDGE: Objection. Form.

1 A Right. So, when we alert somebody that
2 there's a train -- change in the environment from
3 one environment to another, we're providing a cue,
4 an auditory cue here, as to that occurrence.
5 So, in that sense, the word "cue" there
6 is being used very generally. We're talking,
7 there, then, about a transition between two
8 environments. Whereas, here, a spatial cue, okay,
9 is talking about degrading spatial information
10 that would normally be contained in a signal to
11 enable sound localization.
12 So, that was what I believe a POSA
13 would interpret this, that these are spatial cues,
14 degrading a spatial cue could be like the example
15 I just gave you, as a means of degrading -- well,
16 I just said it. Degrading spatial sound. But
17 when we were talking about cuing as a transition
18 between different environments, we might not be
19 affecting the specific spatial cues of an HRTF,
20 but we might be providing a cue through some other
21 means that we discussed quite a bit today.
22 Q Okay. Let's turn to paragraph 80 of

your declaration, please.

Here you're discussing -- sorry, tell me when you're there.

A Okay. I am there. Let me give it a quick read.

Q Please, yes.

A Yes, it's -- I've read it.

Q So in this paragraph, you say a PHOSITA would understand that altering processing of the binaural sound by the DSB and reducing the volume of the binaural sound localizes to the user at the virtual image to mean changing some aspect of the position of the SLP.

Is that right?

A That's what I wrote.

Q Okay. Would a person of ordinary skill in the art, at the time of the alleged inventions, have known how to change some aspect of the position of the SLP?

A Yes.

Q Okay. So that was known in the art before 2014, 2015?

1 A They would know how to change the
2 position of a sound localization point by going
3 from binaural to mono, for instance.
4 Q Okay. And does changing -- yeah, so
5 you anticipated my next question, which is, does
6 changing sound from binaural to either stereo or
7 binaural to mono constitute altering processing of
8 binaural sound?
9 MS. PARTRIDGE: Objection.
10 THE WITNESS: Objection?
11 MS. PARTRIDGE: Form.
12 THE WITNESS: Oh.
13 A Sorry, one more time with your
14 question.
15 Q Sure. Does changing sound from
16 binaural to either stereo or mono constitute
17 altering the processing of binaural sound?
18 MS. PARTRIDGE: Objection. Form.
19 A Does that constitute a change? Yes, it
20 does. Changing binaural to stereo, changing
21 stereo to binaural, changing binaural to mono,
22 that constitutes a change. That's altering the

1 processing of the binaural sound.
2 Q Okay. Thank you, Dr. Begault.
3 MS. OSMAN: Can we take a break? Can
4 we go off the record?
5 MS. PARTRIDGE: Sure.
6 PLANET DEPOS TECHNICIAN: Going off the
7 record at 20:13.
8 (Recess taken.)
9 PLANET DEPOS TECHNICIAN: Back on the
10 record. The time is 20:30.
11 BY MS. OSMAN:
12 Q Welcome back, Dr. Begault. Thank you
13 for rejoining us.
14 Did you talk to your counsel during the
15 break?
16 MS. PARTRIDGE: I'll let you answer
17 that question yes or no, Dr. Begault.
18 A No.
19 Q Thank you very much.
20 MS. OSMAN: With that, I have no
21 further questions. That being said, I'm leaving
22 the deposition open because Ms. Partridge asserted

1 privilege, and I don't believe that the question
2 asked for or requested any privileged information.
3 So I'm going to -- unless, Ms. Partridge, you are
4 willing to allow Dr. Begault to answer my question
5 from earlier today, I'm going to leave the
6 deposition open.
7 MS. PARTRIDGE: I'm not going to allow
8 him to answer the question. I completely disagree
9 with you reading the rules because the rules don't
10 say even what you stated to the board, so I find
11 that interesting, but we can certainly take that
12 up with the board.
13 And also, give me a break and I'll let
14 you know if I have anything.
15 MS. OSMAN: For the record, I disagree
16 with you. What I said to the board is entirely
17 correct. I copied and pasted from the Trial
18 Practice Guide. Furthermore, you've allowed
19 Dr. Begault to answer the exact same question
20 after other breaks.
21 MS. PARTRIDGE: You can make your
22 argument however you want to, but I completely

1 disagree and I think that you mischaracterized,
2 completely, the rules. But I did let him answer
3 some questions, you're exactly right about that,
4 but it did not waive anything.
5 I think that if you want to take it to
6 the board, we'll take it to the board.
7 MS. OSMAN: That's fine.
8 MS. PARTRIDGE: I need to take a break
9 right now so I can decide if I'm going to ask any
10 more question.
11 I assume that you're passing the
12 witness?
13 MS. OSMAN: I'm passing the witness.
14 I'm leaving the deposition open.
15 MS. PARTRIDGE: Have at it.
16 MS. OSMAN: Ms. Partridge, how long of
17 a break do you need?
18 MS. PARTRIDGE: 10 or 15.
19 MS. OSMAN: Great.
20 PLANET DEPOS TECHNICIAN: Off the
21 record. The time is 20:32.
22 (Recess taken.)

PLANET DEPOS TECHNICIAN: Back on the record. The time is 20:40.

MS. PARTRIDGE: I have no questions. Pass the witness.

MS. OSMAN: Thank you.

No further questions from me either. Although I will keep the deposition open. Thank you very much, Dr. Begault, for your time.

PLANET DEPOS TECHNICIAN: Off the record. The time is 20:40.

MS. PARTRIDGE: Thank you.

THE WITNESS: When will I receive a copy of the deposition so that I can review it for whatever questions?

MS. PARTRIDGE: We've got to talk to Judy about that.

(Off the record.)

1 ACKNOWLEDGMENT OF DEPONENT
2 I, DURAND RENÉ BEGAULT, PH.D., do
3 hereby acknowledge that I have read and examined
4 the foregoing testimony, and the same is a true,
5 correct and complete transcription of the
6 testimony given by me and any corrections appear
7 on the attached Errata sheet signed by me.
8
9 _____ _____
10 (DATE) (SIGNATURE)
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1 CERTIFICATE OF SHORTHAND REPORTER - NOTARY PUBLIC
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4 I, Judith E. Bellinger, Certified
5 Reporter and
6 Notary Public within and for the State of Maryland
7 do hereby certify: That DURAND RENÉ BEGAULT,
8 PH.D., the witness whose deposition is
9 hereinbefore set forth,
10 was duly sworn by me before the commencement of
11 such deposition and that such deposition was taken
12 before me and is a true record of the testimony
13 given by such witness.
14 I further certify that the adverse
15 party, EIGHT KHZ, LLC, was represented by counsel
16 at the deposition.
17 I further certify that the deposition
18 of DURAND RENÉ BEGAULT, PH.D., occurred at the via
19 Zoom on Friday, June 14, 2024, commencing at
20 11:39 a.m. to 8:40 p.m.
21 I further certify that I am not related
22 to any of the parties to this action by blood or

1 marriage, I am not employed by or an attorney to
2 any of the parties to this action, and that I am
3 in no way interested, financially or otherwise, in
4 the outcome of this matter.
5 IN WITNESS WHEREOF, I have hereunto set
6 my hand this 17th day of June 2024.
7
8 My Commission Expires: November 3, 2024
9
10
11 Judith E. Bellinger
12 _____
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14 THE STATE OF MARYLAND
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