

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

HAMMOND DEVELOPMENT INTERNATIONAL, INC.,
Patent Owner.

IPR2020-00080
Patent 10,264,032 B1

Before MICHELLE N. WORMMEESTER, AMBER L. HAGY, and
KRISTI L. R. SAWERT, *Administrative Patent Judges*.

HAGY, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Google LLC (“Petitioner”) filed a petition for *inter partes* review (Paper 1, “Pet.”) challenging claims 1–23 of U.S. Patent No. 10,264,032 B1 (Ex. 1001, the “’032 patent”). See 35 U.S.C. § 311 (2018). Hammond Development International, Inc. (“Patent Owner”) timely filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). Pursuant to 35 U.S.C. § 314, we instituted an *inter partes* review of all challenged claims on all grounds presented in the Petition. Paper 8 (“Institution Decision” or “Dec.”). Patent Owner filed a Patent Owner Response (Paper 22, “PO Resp.”), Petitioner filed a Reply (Paper 26, “Reply”), and Patent Owner filed a Sur-reply (Paper 30, “Sur-reply”).

On January 29, 2021, we conducted an oral hearing jointly with co-pending *inter partes* review IPR2020-00020, which was also filed by Petitioner and involves claims of related U.S. Patent 9,264,483 B2. A copy of the transcript (Paper 37, “Tr.”) is included in the record.

We have jurisdiction under 35 U.S.C. § 6(b). For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–23 of the ’032 patent are unpatentable. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a).

II. BACKGROUND

A. *Related Matters*

Petitioner and Patent Owner both state the ’032 patent has been asserted by Patent Owner in *Hammond Development International, Inc. v. Google LLC*, No. 6:19-cv-00356 (W.D. Tex.); and in *Hammond*

Development International, Inc. v. Amazon.com, Inc., No. 6:19-cv-00355 (W.D. Tex.). Pet. 86; Paper 5, 2.

Petitioner also states that “[t]he ’032 patent is part of a family of patents that claim priority to U.S. Patent No. 9,264,483 [B2 (the ’483 patent)].” Pet. 86. Petitioner further states that it sought *inter partes* review of the ’483 patent in IPR2020-00020 (the “020 IPR”). *Id.* We issued a Final Written Decision in the 020 IPR on April 12, 2021. 020 IPR, Paper 38.

In addition to the present proceeding, the ’032 patent is also the subject of a pending *inter partes* review proceeding brought by Amazon.com, Inc. (“Amazon”) in IPR2020-01029. Also currently pending before the Board are *inter partes* reviews of the ’483 patent (IPR2020-00460 (Petitioner Amazon)), and related U.S. Patent 10,270,816 B1 (IPR2020-00081 (Petitioner Google); IPR2020-01067 (Petitioner Amazon)).

Petitioner also states that pending U.S. Application No. 16/389,170 “is part of the ’032 patent family.” Pet. 86.

B. The ’032 Patent (Ex. 1001)

The ’032 patent, titled “Method and System for Enabling a Communication Device to Remotely Execute an Application,” issued April 16, 2019, based on an application filed January 25, 2019. Ex. 1001, codes (22), (45), (54). The ’032 patent claims priority, through a chain of continuation applications, to the ’483 patent. *Id.* at code (63).

The ’032 patent describes a communication system that establishes a communication session between a client device and a remote application server, which executes an application for the client, e.g., the remote application server “execut[es] an application for a thin-client device.” *Id.* at 2:1–5, 2:45–57. Figure 1D of the ’032 patent, reproduced below, shows an embodiment of a communication system.

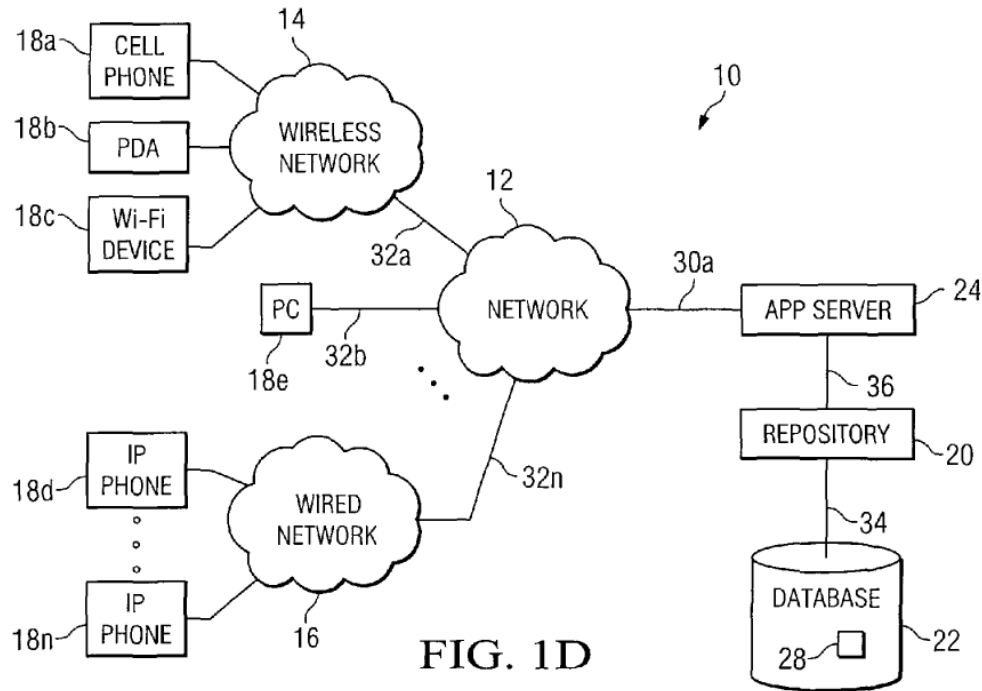


FIG. 1D

Figure 1D shows a block diagram of a communications system and associated components. Ex. 1001, 2:65–67.

As shown in Figure 1D, “clients 18a–18n . . . couple to network 12 through one or more communications links 32 and/or one or more networks 14, 16.” *Id.* at 4:7–9.¹ Additionally, “application servers 24 couple to network 12 through one or more communications links 30.” *Id.* at 3:56–57. Further, repository 20 and application server 24 are connected via “a direct communication link 36.” *Id.* at 11:1–3.

The communication system of the ’032 patent “enables a client 18 to have one or more applications 28 executed remotely” by the application server 24. *Id.* at 6:13–18. A user of the client “initiates an information collection and/or retrieval process by communicating a request to application server 24.” *Id.* at 6:16–18; *see also id.* at 5:50–52 (“In some embodiments,

¹ All bolding of reference numbers has been omitted in material quoted herein from the ’032 patent and the prior art references.

clients 18 can be configured to initiate a connection with repositories 20 and/or application servers 24.”), 2:14–17 (“At least one of the one or more communication devices is operable to communicate a request to establish a communication session.”). After that, “application server 24 notifies repository 20 that a communication session with client 18 has been requested.” *Id.* at 6:40–42. “Repository 20 . . . operates to identify a desired application 28 and to communicate application 28, or portions thereof, to application server 24 for execution.” *Id.* at 6:42–45. Further, “[u]pon receipt of application 28, application server 24 executes application 28 and begins a communication session with client 18a.” *Id.* at 6:45–47. In particular, “application server 24 begins the process of communicating information to and/or retrieving information from client 18a” by “requesting that the user of client 18a respond to a series of queries associated with application 28.” *Id.* at 6:47–49, 7:6–12. For example, application server 24 executes an application based on voice extensible markup language (Voice XML) that “enables application server 24 to interact with and collect information from client 18a.” *Id.* at 6:50–53. “[A]pplication server 24 communicates information relating to portions of Voice XML-based code to client 18a for execution on client 18a,” e.g., “by requesting that the user of client 18a respond to a series of queries associated with application 28.” *Id.* at 7:6–12. The “user of client 18a responds to each of the series of queries by ‘speaking’ a response to each query communicated to client 18a for execution.” *Id.* at 7:16–19.

C. Illustrative Claims

Of the challenged claims, claims 1, 9, and 16 are independent claims. Claims 2–8 depend, directly or indirectly, from claim 1; claims 10–15 depend, directly or indirectly, from claim 9; and claims 17–23 depend,

directly or indirectly, from claim 16. Claims 1, 9, and 16, reproduced below, illustrate the claimed subject matter (formatting and labeling added)²:

1. [1preamble] A communication device comprising:
 - [1a] a speaker;
 - [1b] an input device;
 - [1c] one or more processors; and
 - [1d] a memory having stored thereon a software program that, when executed by the one or more processors, causes the communication device to:
 - [1e] capture a voice input from a user via the input device;
 - [1f] generate packetized voice data by packetizing at least a part of the voice input;
 - [1g] transmit a request to establish a communication session over a first communication link to an application server coupled to the first communication link and adapted to establish the communication session in response to the request to establish the communication session,
 - [1h] the first communication link comprising a data connection,
 - [1i] wherein the application server resides at a location remote from the communication device;
 - [1j] wherein the application server is either (a) configured to receive an application via a second communication link, or (b) configured to cause execution of the application via the second communication link;
 - [1k1] wherein the application server is configured to generate a voice representation of information derived from the application and

² We have added formatting and labeling (numbering/lettering) to the elements in keeping with the numbering used by the parties. See Pet. ii–vi; Ex. 2001 (App. of Challenged Claims).

- [1k2] communicate a request for processing service to the communication device;
- [1l] transmit the packetized voice data to the application server via the first communication link;
- [1m] receive the request for processing service from the application server over the first communication link,
- [1n] wherein the request for processing service comprises an instruction to present the user the voice representation; and
- [1o] present the voice representation to the user via the speaker.

Ex. 1001, 13:37–14:6.

- 9. [9preamble] A communication device comprising:
 - [9a] a speaker;
 - [9b] an input device;
 - [9c] one or more processors; and
 - [9d] a memory having stored thereon a software program that, when executed by the one or more processors, causes the communication device to:
 - [9d] capture a voice input from a user via the input device;
 - [9f] generate packetized voice data by packetizing at least a part of the voice input;
 - [9g] transmit a request to establish a communication session over a first communication link to an application server configured to establish the communication session in response to the request to establish the communication session,
 - [9h] the first communication link comprising a data connection,
 - [9i] wherein the application server resides at a location remote from the communication device;
 - [9j] wherein the application server is configured to generate a voice representation of information derived from an execution of an application and to communicate a request for processing service to the communication device;

- [9k] transmit the packetized voice data to the application server via the first communication link,
- [9l] wherein the packetized voice data is used to identify the application;
- [9m] receive the request for processing service from the application server,
- [9n] wherein the request for processing service comprises an instruction to present the user of the communication device the voice representation; and
- [9o] present the voice representation to the user via the speaker.

Id. at 14:29–62.

- 16. [16preamble] A client device comprising:
 - [16a] an input device configured to capture voice input;
 - [16b] a speaker;
 - [16c] one or more processors; and
 - [16d] one or more computer-readable media storing computer-executable instructions that, when executed by the one or more processors, cause the one or more processors to perform acts comprising:
 - [16e] generating packetized audio data using at least a portion of the voice input;
 - [16f] transmitting a request to establish a communication session over a first communication link to an application server configured to establish the communication session in response to the request to establish the communication session,
 - [16g] the first communication link comprising a data connection,
 - [16h] wherein the application server resides at a location remote from the communication device;
 - [16i] wherein the application server is configured to communicate a request for processing service to the client device;
 - [16j] sending the packetized audio data to the application server via the first communication link,

- [16k] wherein the packetized audio data is used to determine the request for processing service;
- [16l] receiving the request for processing service from the application server,
- [16m] wherein the request for processing service comprises one or more instructions to the client device to retrieve content from a source located remote from the client device;
- [16n] requesting the content from the source located remote from the client device; and
- [16o] presenting, via the speaker, an audio output corresponding to the content from the source located remote from the client device.

Id. at 15:18–16:16.

D. Instituted Grounds of Unpatentability

We instituted *inter partes* review of all challenged claims based on all grounds of unpatentability asserted in the Petition (Dec. 10, 52; Pet. 2):

Claims Challenged	35 U.S.C. §	References/Basis
1–5, 7–14, 16–21	103(a) ³	Gilmore, ⁴ Dhara, ⁵ Dodrill ⁶
6, 15, 22, 23	103(a)	Gilmore, Dhara, Dodrill, Patel ⁷

³ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended several provisions of 35 U.S.C., including §§ 102 and 103. Because the ’032 patent claims priority to an application that has an effective filing date prior to the effective date of the applicable AIA amendments, we refer herein to the pre-AIA version of the statute.

⁴ Gilmore, et al., U.S. Pat. App. No. 2003/0216923 A1, published Nov. 20, 2003 (Ex. 1005, “Gilmore”).

⁵ Dhara, et al., U.S. Pat. App. No. 2003/0202504 A1, published Oct. 30, 2003 (Ex. 1009, “Dhara”).

⁶ Dodrill, et al., U.S. Pat. No. 6,766,298 B1, issued July 20, 2004 (Ex. 1006, “Dodrill”).

⁷ Patel, et al., U.S. Pat. App. No. 2006/0256950 A1, published Nov. 16, 2006 (Ex. 1007, “Patel”).

III. ANALYSIS

A. *Principles of Law*

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.⁸ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (2012) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

⁸ The parties do not direct our attention to any evidence of objective indicia of nonobviousness.

B. Level of Ordinary Skill in the Art

The level of skill in the art is a factual determination that provides a primary guarantee of objectivity in an obviousness analysis. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 1324 (Fed. Cir. 1999) (citing *Graham*, 383 U.S. at 17–18 (1966); *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991)).

Petitioner asserts a “person of ordinary skill in the art of the ’032 patent would have at least a bachelor’s degree in Computer or Electrical Engineering, Computer Science, or equivalent engineering discipline, and approximately three years of experience working on remotely-processed applications and data networking, including voice-related applications and voice-over packet technologies.” Pet. 4; see Ex. 1021 ¶ 50.⁹

Patent Owner disagrees with Petitioner’s definition and asserts “a person of ordinary skill in the art of the ’032 patent at the time of invention would have had at least a bachelor’s degree in Computer or Electrical Engineering, Computer Science, or equivalent discipline, and approximately one to two years of work experience in data networking.” PO Resp. 23. Patent Owner further contends “the level of ordinary skill [in the art relative to the ’032 patent] is not a rigid formula. More education with less experience or more experience with less formal education could equally

⁹ With the Board’s approval, subsequent to our Institution Decision, Petitioner substituted the Declaration of Stuart J. Lipoff (Ex. 1021) for the declaration of Petitioner’s original expert (Ex. 1003), while maintaining the identical substantive content of the original declaration. Per our Order granting authorization for the substitution, we consider cites to the original declaration in the Petition and other filed documents to refer to the substitute declaration. See Paper 18, 5. Therefore, we refer herein to Ex. 1021 instead of to Ex. 1003 as originally cited in the Petition.

qualify an individual as a [person of ordinary skill in the art (POSITA)].” *Id.* (citing Ex. 2007 ¶ 34). Patent Owner’s proposed level of skill thus includes fewer years of work experience, but in only “data networking” (as opposed to Petitioner’s definition, which requires work experience on both remotely-processed applications and data networking), and Patent Owner urges a less rigid requirement.

To the extent necessary herein, we apply Patent Owner’s definition of the level of ordinary skill in the art, as we did in the Institution Decision. We determine the definition offered by Patent Owner is consistent with the teachings of the ’032 patent and the prior art of record. *Cf. Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (noting that the prior art itself may reflect an appropriate level of skill in the art). We note, however, that neither party explains how the differences in the parties’ competing proposals are material to the issues before us. We further note that our adoption of Patent Owner’s proposed definition does not reflect a view that adopting Petitioner’s competing definition of the level of ordinary skill in the art would have any impact on the outcome of this proceeding. To the contrary, our fact findings would be the same under either party’s definition.

C. Claim Construction

In interpreting the claims of the ’032 patent, we “us[e] the same claim construction standard that would be used to construe the claim[s] in a civil action under 35 U.S.C. [§] 282(b).” *See* 37 C.F.R. § 42.100(b) (2019). The claim construction standard includes construing claims in accordance with the ordinary and customary meaning of such claims as would have been understood by one of ordinary skill in the art and the prosecution history

pertaining to the patent. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc).

We did not expressly construe any terms in our Institution Decision, in part because neither party presented any terms expressly for construction. Dec. 15; *see* Pet. 5; Prelim. Resp. 33–34. We did, however, address, within the context of our obviousness analysis, the parties’ apparent dispute regarding the term “establish the communication session.” *See* Dec. 14, 25–29. We advised that “the parties may wish to develop the record further at trial as to how an ordinarily skilled artisan, at the time of the invention, would have interpreted ‘communication session’ and would have understood when a ‘communication session’ is ‘established,’ in light of the disclosure of the ’032 patent.” *Id.* at 14, 31.

Patent Owner now takes issue with Petitioner’s position that no claim terms need to be construed. PO Resp. 17; *see* Pet. 5. Specifically, Patent Owner argues that Petitioner “sought specific constructions for *nine* terms” from the ’032 patent in the co-pending district court litigation, but none in this proceeding, and suggests that Petitioner’s failure to offer the same constructions here means that Petitioner has failed to satisfy its obligations in this proceeding. *See* PO Resp. 17. We disagree. Although Patent Owner is correct that the same claim construction standards apply to this proceeding as to the district court proceeding, the common standard does not mandate that all claim construction disputes submitted to the district court must also be aired here. Rather, “only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.” *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (*citing Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Patent Owner then contends the Board should adopt the same constructions adopted by the district court as to two terms of the '032 patent (PO Resp. 17–21) and also proposes constructions for two other terms not construed by the district court (*id.* at 21–23). We address each of those terms below.

1. “*request to establish a communication session*”

Independent claims 1, 9, and 16 recite that a communication device transmits a “request to establish a communication session.” Ex. 1001, 13:47, 14:40, 15:28–29. In our Institution Decision, we noted an apparent dispute between the parties over whether a telephone call to a host system was a “request” to “establish the communication session,” as Petitioner asserted, or was itself sufficient to actually establish such a session, as Patent Owner asserted in its Preliminary Response. Dec. 25–29 (citing Pet. 24–25 (asserting that the phone call in Gilmore is merely a request, and the communication session is thereafter established by the gateway executing an interactive voice application), Prelim. Resp. 41 (asserting, in describing Gilmore’s teachings, that “dialing a telephone number is not a request to establish a communication session; rather, it *is itself* the establishment of a call session”)¹⁰). We preliminarily determined, for purposes of our Institution Decision, that “the ordinarily skilled artisan would have understood that a communication device placing a telephone call to a voice response system. . . does not itself ‘establish’ a communication session, but rather is a ‘request’ to establish such a session.” *Id.* at 29. We further noted

¹⁰ Patent Owner now asserts that we misunderstood Patent Owner’s arguments from the Preliminary Response, and that what Patent Owner argued was that “a phone call (or ‘call session’) is not a communication session.” PO Resp. 43–44 (emphasis omitted).

that “the parties may wish to develop the record further at trial as to how an ordinarily skilled artisan, at the time of the invention, would have interpreted ‘communication session’ and would have understood when a ‘communication session’ is ‘established,’ in light of the disclosure of the ’032 patent.” *Id.* at 31.

In its Response, Patent Owner states the district court determined the phrase “request . . . to establish [a/the] communication session” should be “given its plain and ordinary meaning,” but “the request must occur *before* the establishment of the communication session.” PO Resp. 19 (emphasis added) (quoting Ex. 2009, 1). Patent Owner does not, however, further address the construction of this entire term. Instead, Patent Owner focuses its evidence and arguments on what it deems the characteristics of a “communication session,” while acknowledging that neither party requested the district court to construe “communication session.” *Id.* at 19–20.

In particular, Patent Owner contends, relying on the testimony of its expert, Dr. Rhyne (Ex. 2007), that the ordinarily skilled artisan would have understood that a “communication session” in the context of the ’032 patent “has certain characteristics”; namely it “(a) is a ‘session’ with a beginning and an end (b) that is the result of a *processed request* and (c) that includes an exchange of information (d) between an application server and (e) a client device (f) *over a data connection*.” PO Resp. 19–20 (emphases added) (footnotes omitted) (citing Ex. 2007 ¶ 42). Patent Owner further asserts that, “[a]t its most essential, the ‘communication session’ of the ’032 Patent is a temporary information exchange between computing devices over a data connection in response to a request from a client device.” *Id.* at 20. Patent Owner then contends that, accordingly, a “communication session” as

claimed by the '032 patent “is *not* satisfied by a mere telephone call.” *Id.* at 20 (citing Ex. 2007 ¶ 43).

Petitioner responds that Patent Owner “does not argue that its [narrower construction or additional requirements] are material to patentability, . . . so the Board need not address them.” Reply 5–6. Petitioner then counters Patent Owner’s asserted characteristics of a communication session, contending, among other things: (1) a “computing device” is not required for the client device because the '032 patent describes communication sessions over a telephone network (*id.* at 6 (citing Ex. 1001, 3:61–4:6, 5:64–6:7)); and (2) construing a “communication session” as being “in response to a request from a client device” would be redundant of other limitations in the claims (*id.* at 6–7). Petitioner notes the '032 patent describes a “communication session” as “the process of communicating information to and/or retrieving information from client 18a,” and “enabl[ing] application server 24 to interact with and collect information from client 18a” through, for example, queries to and responses from a user. *Id.* at 7–8 (quoting Ex. 1001, 6:45–53, 7:6–19; citing *id.* at 5:59–64).

In its Sur-reply, Patent Owner asserts that it proposed to the district court, and now advocates here, that the “communication session” terms carry their “plain and ordinary meaning.” Sur-reply 7–8. Patent Owner then reiterates its position that “the telephone call of *Gilmore* cannot be a communication session” because a “computing device” is required for the client device, as illustrated by the district court’s construction of a different term—“request for processing service.” *Id.* at 8–11. Patent Owner further contends that because a request to establish a communication session must

occur *before* the communication session is established, a session cannot be established *until the request is processed*. *Id.* at 10–11.

The parties’ arguments post-institution do not reveal a material dispute over the construction of the term “communication session” itself. Rather, the parties’ disputes hinge on different claim terms, including “request for processing service.” *See, e.g.*, PO Resp. 20–21; Reply 9–11; Sur-reply 11–13. We address that construction below. To the extent necessary, we construe a “communication session,” consistent with the disclosure of the ’032 patent, as the process of a communication device communicating information to, and/or retrieving information from, another communication device. *See* Ex. 1001, 6:247–49.

We determine that we need not further construe this term to resolve the parties’ disputes herein; rather, as noted, the parties’ disputes invoke additional terms, which we address below.

2. “request for processing service”

Independent claims 1 and 9 recite that the communication device receives a “request for processing service” from the application server, and further recite “wherein the request for processing service comprises an instruction to present the user [of the communication device] the voice representation.” Ex. 1001, 13:66–14:3, 14:56–60. Independent claim 16 similarly recites that the client device receives a “request for processing service” from the application server, and further recites that the request “comprises one or more instructions to the client device to retrieve content from a source located remote from the client device.” *Id.* at 16:7–11. We first summarize the parties’ positions, then turn to our analysis of this term.

a) Parties' Positions

Patent Owner addresses “request” separately from “processing service.” See PO Resp. 20–21 (“processing service[]” terms), 21–23 (“request”). With regard to the term “request,” Patent Owner acknowledges that the parties did not ask the district court to construe that term, but asserts that it should be afforded its “plain and ordinary meaning.” *Id.* at 21–22. According to Patent Owner, the plain and ordinary meaning of “request” in the context of the ’032 patent is “an action at the computer-code-instruction level.” *Id.* at 21. As support, Patent Owner quotes several passages from the Specification that Patent Owner contends “make[] clear that the ‘requests’ in the ’032 Patent are instructions that must be processed or handled by system components.” *Id.* at 21–23 (citing Ex. 1001, 6:16–18, 7:47–49, 7:66–8:5, 8:31–34, 9:1–3, 12:64–13:3; Ex. 2007 ¶ 44).

In its Reply, Petitioner points out that, although Patent Owner did not seek to construe “request” separately before the district court, Patent Owner did propose to construe “request for [a] processing service” such that the “request” portion requires “computer code instructions.” Reply 9; see Ex. 2011, 11. This contention is borne out by Patent Owner’s briefing to the district court, wherein Patent Owner argued, as it does here, that the ’032 patent “consistently describe[s] a ‘request’ as being at the computer-code-instruction level.” Ex. 2011, 11. Petitioner asserts that the district court rejected that construction when it construed “request for processing service” to have its plain and ordinary meaning. Reply 9 (citing Ex. 2009, 1–2).

With regard to “processing service,” Patent Owner asserts that the district court construed that term as “a computing process performed by a communication device for all or part of the application.” PO Resp. 20 (quoting Ex. 2009, 2). Patent Owner contends “[t]his is an important

construction because it recognizes that the '032 Patent claims a communication device that processes instructions sent by an application server.” *Id.* Petitioner, on the other hand, “maintains that claim construction is not necessary,” but asserts that “the Petition shows unpatentability under both [Patent Owner’s] and the district court’s constructions.” Reply 11.

b) Arguments and Construction in District Court

The district court’s order on claim construction does not provide reasoning behind the constructions adopted therein. *See* Ex. 2009. However, we find instructive that the district court, in construing “processing service(s),” essentially adopted the construction proposed by Petitioner (aside from excluding the negative limitation at the end of Petitioner’s proposal). Specifically, Petitioner proposed construing “request for [a] processing service” as a “request for a communication device to perform a computing process for the application *that constitutes more than acting as a speaker or input device.*” Ex. 2012, 24 (emphasis added). Petitioner similarly proposed construing “processing service(s)” as “a computing process performed by a communication device for the application *that constitutes more than acting as a speaker or input device.*” *Id.* (emphasis added). The district court adopted Petitioner’s proposed construction for “processing service(s)” except for the italicized portion quoted above, and determined that “request for [a] processing service” should be afforded its “[p]lain and ordinary meaning.” *See* Ex. 2009, 2.

In support of these proposed constructions, Petitioner argued:

The specification confirms that the “services” are provided to the “application.” It describes that the application server executes an application and sends a “request for processing service” to the communication device. [’032 patent] at 1:53–60. The communication device performs the

“processing service” for the application to assist with the interaction between the communication device and the remotely executed application. *Id.* at 6:5–10. The claims also all recite that a “request for processing service” is sent to a communication device after the step wherein the application is executed. *See, e.g., [id. at] Cl. 1, 10, 22 . . .*

Ex. 2012, 26.

Patent Owner, on the other hand, proposed construing “processing service(s)” as “automated operation of a hardware component on [a]/[the] [communication device]/[client device].” Ex. 2011, 14. Patent Owner argued that the “processing service(s)” are “‘automated’ at least because they are controlled by computer code instructions.” *Id.*

Petitioner argued that Patent Owner’s proposed construction for “processing service(s)” was under-inclusive in requiring “automated operation,” reasoning that “the specification gives examples of ‘processing services’ that are not ‘automated’ and instead require user input to the processing service.” Ex. 2012, 27. “For instance,” Petitioner continued, “the application server may communicate a ‘voice recognition software program’ to ‘assist client 18a in executing one or more queries associated with the VoiceXML-based application.’ . . . To perform the ‘processing service,’ the communication device needs user input. This processing service is thus not an ‘automated operation.’” *Id.*

Patent Owner responded by characterizing Petitioner’s argument as “conflat[ing] the *processing service* (i.e., the activity performed by the device) with the *user’s interaction with the device* (i.e., the user’s spoken response to the microphone in the communication device).” Ex. 2014, 18–19. Patent Owner then asserted that human interaction does not provide the automated processing that Patent Owner asserts is required by the ’032

patent claims:

Humans do not process computer code instructions the same way a communication device does. This is the same mistake [Petitioner] makes in every one of its IPR Petitions, where it argues that playing an audio prompt on the host side of the system for the user to listen to on a telephone call is a “request for processing service.” It is not, because it does not provide for any processing of instructions *on the client device*—it solicits only a spoken or touchtone response *from the user*, which is processed on the host side. In contrast, in the [’032 patent] . . . the application server transmits executable instructions to the communication device. Contrary to [Petitioner’s] under-inclusive argument, this processing is “automated” (as in [Patent Owner’s] construction) because it results from the automatic processing of instructions on the communication device. For example, if the instruction to the communication device is to activate a microphone and listen for a spoken response, that instruction is executed whether the user gives a spoken response or not. [Petitioner’s] example therefore fails.

Id. at 19.

c) Analysis

Turning first to the term “request,” we note that the ’032 patent uses this term broadly, spanning different contexts beyond those described in the excerpts quoted by Patent Owner. *See* PO Resp. 21–22. For example, in describing Figure 1A, the ’032 patent describes client 18a as initiating “an information collection and/or retrieval process by communicating a request to application server 24.” Ex. 1001, 6:16–18. The ’032 patent further states that “any of clients 18a–18n could initiate the communication session with application server 24” *Id.* at 6:20–21. As illustrated in Figure 1, clients 18a–18n include cell phones, personal digital assistants (“PDAs”), Wi-Fi devices, and IP phones. *Id.* at Fig. 1A; *see also id.* at 4:22–27. The ’032 patent further states that “[l]andline phones and/or IP phones can also

communicate with repository 20 and/or application server 24 in the same manner as mobile phones” *Id.* at 6:5–7. Thus, by describing that a “request” may be sent by a landline phone, and not just by a cell phone or computer, the ’032 patent uses the term “request” without limiting it to “an action at the computer-code-instruction level,” as Patent Owner argues. *See* PO Resp. 21. We, therefore, do not adopt Patent Owner’s proposed construction of “request.” We do not need to further construe that term to resolve the parties’ disputes herein.

Turning next to “processing services,” we note that the ’032 patent describes “processing services” in the context of a “thin-client” as the client device. *See, e.g.*, Ex. 1001, 4:18–19. The ’032 patent states that such a client “may include, for example, a wireless device, a voice over IP device, a desktop computer, a laptop computer, a personal digital assistant, a cell-phone, a Wi-Fi device, a work station, a mainframe computer, a mini-frame computer, a web server, or any other computing and/or communicating device.” *Id.* at 4:22–27. The ’032 patent further describes the processing services provided by a thin-client as “execut[ing] portions of code to assist with the interaction with remotely executed application 28.” *Id.* at 6:32–33. By way of example, the ’032 patent describes the application server as executing “a VoiceXML-based application” that enables the application server to interact with and collect information from the client. *Id.* at 6:50–53. In that example, the application server communicates a voice recognition software program to the client, which the client then uses to convert a user’s spoken responses to a series of queries into data that is packetized and communicated, in a packet-based communication, back to the application server. *Id.* at 7:1–22. The application server then “receives and decodes the user’s responses to each of the queries associated with the

Voice XML-based application.” *Id.* at 7:25–27.

Thus, in the context of the ’032 patent, a “request for processing service” comes from, e.g., a server, and encompasses a request for a client device to process a user’s spoken responses into, e.g., packetized data that can then be returned to the server for use in executing the application. This description is consistent with the construction of “processing service” adopted by the district court, as “a computing process performed by a communication device for all or part of the application” (Ex. 2009, 2), which, as noted above, is a broader version of what Petitioner advocated before the district court (Ex. 2012, 24) and is the same as what Patent Owner advocates here (PO Resp. 21–22).

We, therefore, construe “processing service” as “a computing process performed by a communication device for all or part of the application.”

3. “*application*”

Independent claims 1 and 9 recite, essentially, an “application” that is executed by an application server to generate a voice representation of information derived from the application. Ex. 1001, 13:55–61, 14:48–50.

Patent Owner states that the district court construed the term “application[]” according to “its plain and ordinary meaning.” PO Resp. 21. Patent Owner purportedly agrees with the district court’s approach, but further contends that, consistent with the use of the term in the ’032 patent and in the cited prior art, the ordinarily skilled artisan “would understand that an application is not merely a script or variable *used by an application* to interact with a user or a communication device.” *Id.*

Petitioner did not propose a construction in the Petition. Pet. 5. In response to Patent Owner’s proposal, Petitioner asserts that “[t]he plain meaning of ‘application’ in the ’032 patent is ‘functionality that is capable of

facilitating the ability to collect information from and/or present information to one or more clients . . . or users of [the] system.” Reply 4 (quoting Ex. 1001, 4:45–49).

As discussed in more depth below, the parties’ dispute regarding the meaning of “application” is material to whether Gilmore’s VoiceXML scripts are excluded from the scope of “application(s)” as recited in the ’032 patent claims, as Patent Owner contends. See PO Resp. 37–38 (arguing that VoiceXML scripts are not applications but are scripts used by an application); *but see* Reply 13–14 (arguing that VoiceXML scripts provide the functionality of an application as described in the ’032 patent). We preview that dispute here to provide context for the parties’ competing constructions.

The ’032 patent provides an explicit description of the term “application,” stating:

As used throughout this document, the term “application” *refers to functionality that is capable of facilitating the ability to collect information from and/or present information to one or more clients 18 or users of system 10*. In one particular non-limiting example, application 28 comprises a series of queries requesting information from and/or presenting information to a user of client 18. In some cases, applications 28 may include, for example, a Voice XML-based application, an HTML-based application, an XML-based application, an XIVR-based application, or a combination of these or other application formats. Applications 28 may comprise, for example, software, firmware, code, portions of code, a program, a web-page, information compilations, and/or a combination of these or any other types of utilities. In other embodiments, database 22 may be capable of storing, for example, one or more functions and/or other information.

Ex. 1001, 4:45–61 (emphasis added). This broad description includes not just “software” and “program(s),” but also includes, e.g., “a series of queries

requesting information” as well as “information compilations.” *Id.* As such, this definition is broader than Patent Owner’s apparent contention that the “plain and ordinary meaning” of the term “application” is an executable program, which does not encompass merely a “script” that may be “used by an application.” *See* PO Resp. 21; Sur-reply 4 (“While there may be a voice application that is executed in *Gilmore*, it is not the script files Petitioner consistently relies on in its Petition.”).

At oral argument, Patent Owner argued that the Specification’s use of the term “comprises” in describing the above-quoted example of an application that “comprises a series of queries requesting information from and/or presenting information to a user of client 18” means that a “series of queries requesting information” is *not* sufficient to constitute an “application.” Tr. 60:17—61:16. That is, Patent Owner argued that use of the open-ended term “comprises” means that *more is required* for an application than the listed items, and thus the above-quoted description means only that, for example, a “series of queries” could be “*part of* an application or a piece of an application,” but is not an “application in and of itself.” *Id.* at 62:12–16 (emphasis added).

Patent Owner’s argument is unavailing. From a logical standpoint, if the Specification were listing items that are merely a *portion* of some larger (albeit undefined) “application” entity, it would not list both “code” as well as “portions of code,” much less include broader categories of “software” and “program[s]” in the same list. The more logical reading of the quoted passage is that any one of the listed items is an example of an “application,” as long as it provides “functionality that is capable of facilitating the ability to collect information from and/or present information to one or more clients 18 or users of system 10.” *See* Ex. 1001, 4:45–49.

Based on the description provided in the '032 patent, we construe the term “application” as “functionality that is capable of facilitating the ability to collect information from, and/or present information to, one or more client devices or users.”

4. *Other Terms*

We determine that we do not otherwise need to expressly construe any other terms for purposes of this Decision. *See Nidec Motor Corp.*, 868 F.3d at 1017.

D. Ground 1: Asserted Obviousness over Gilmore, Dhara, and Dodrill

In Ground 1, Petitioner contends claims 1–5, 7–14, and 16–21 are unpatentable under 35 U.S.C. § 103(a) over the combination of Gilmore, Dhara, and Dodrill. Pet. 5–80.

1. Overview of Cited References

a) Gilmore (Ex. 1005)

Gilmore is a published U.S. Patent Application entitled “Dynamic Content Generation for Voice Messages.” Ex. 1005, code (54). Gilmore was published on November 20, 2003 (*id.* at code (43)), and is thus prior art under 35 U.S.C. § 102(b). Pet. 1. Patent Owner does not dispute the prior-art status of Gilmore.

Gilmore’s method “simulate[s] a conversation with the caller” using an automated voice response system having a voice gateway that presents a generated voice message to a telephone caller. Ex. 1005 ¶¶ 10, 39; *see also id.* ¶ 3. Figure 2 shows such a voice response system and is reproduced below.

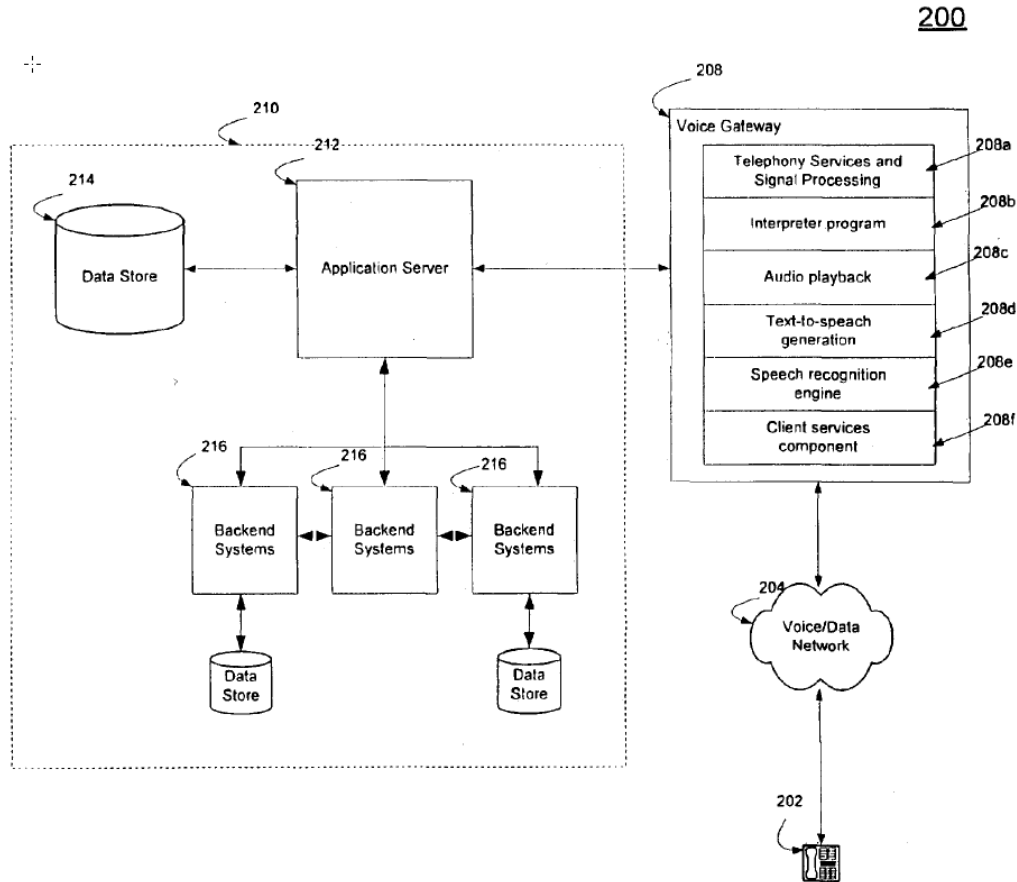


Fig. 2

Figure 2 shows a block diagram of a voice communications system and associated components. Ex. 1005 ¶ 17.

As shown in Figure 2, users of voice communications device 202, e.g., a telephone, place calls using voice/data network 204. *Id.* ¶¶ 33, 38.

According to Gilmore, such networks include the following:

[A] circuit-switched voice network such as the public switched telephone network (PSTN), a packet-switched data network, or any other network able to carry voice. Data networks may include, for example, Internet protocol (IP)-based or asynchronous transfer mode (ATM)-based networks and may support voice using, for example, Voice-over-IP, Voice-over-ATM, or other comparable protocols used for voice data communications.

Id. ¶ 31; see also *id.* ¶ 36. The “[i]ncoming calls are answered by the

telephony services and signal processing component 208a of the voice gateway 208” (*id.* ¶ 38), i.e., the voice gateway “responds to the calls in accordance with a voice program” (*id.* ¶ 33). In particular, an interpreter program in the voice gateway responds to the incoming calls by “retrieving and executing voice programs,” and “application server 212 provides the execution environment for voice applications.” *Id.* ¶¶ 39–40. Each voice application “may be a combination of, for example, java servlets, java server pages, other java code, and voice scripts such as VoiceXML scripts or SALT scripts.” *Id.* ¶ 40. “In typical operation, the voice gateway 208 retrieves the initial voice script from local memory and/or from the application server 212 and . . . execut[es] the voice-specific instructions within the script.” *Id.* ¶ 48. The “voice-specific instruction may be a prompt instruction,” i.e., a request for the user to respond with user input. *Id.* ¶¶ 39, 48.

b) Dhara (Ex. 1009)

Dhara is a published U.S. Patent Application entitled “Method of Implementing a VXML Application into an IP Device and an IP Device having VXML Capability.” Ex. 1009, code (54). Dhara was published on October 30, 2003 (*id.* at code (43)), and thus is prior art under 35 U.S.C. § 102(b). Pet. 1. Patent Owner does not dispute the prior-art status of Dodrill.

Dhara discloses an IP device, e.g., an IP phone, personal digital assistant, wireless communication device, that executes the instructions of a “voice extensible markup language (VXML)” script file “to establish an audio interface with . . . the user of the IP device.” *Id.* ¶¶ 7, 19. Figure 2 shows such an IP device and is reproduced below.

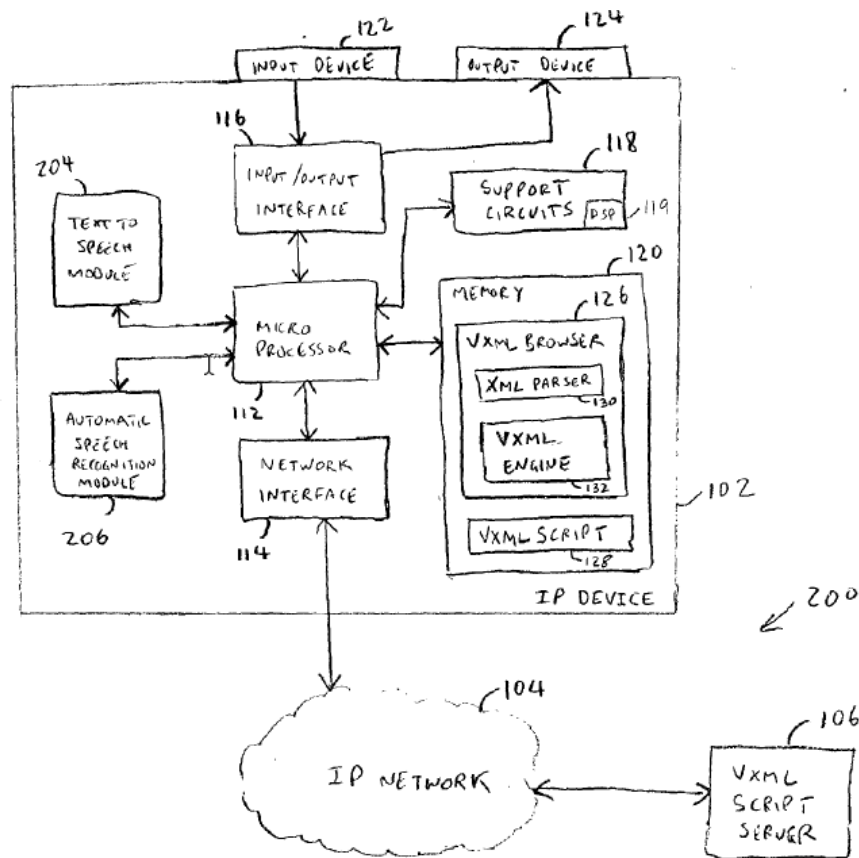


FIG. 2

Figure 2 shows a block diagram of an IP device in a computer network system. Ex. 1009 ¶¶ 11, 28.

As shown in Figure 2, “IP device 102” includes components for “implementing a [VoiceXML] application to provide an audio interface to a user of the device 102.” *Id.* ¶ 20. In particular, the IP device includes a VoiceXML browser 126 that contains instructions to “implement an audio interface accessible to a user of the IP device 102.” *Id.* ¶ 23. Further, IP device 102 includes “a text-to-speech (TTS) module 204,” which converts text into synthesized speech for IP device 102. *Id.* ¶ 28; *see also id.* ¶ 25. The text to be converted into speech is transmitted to the IP device in VoiceXML script files from VoiceXML server 106. *Id.* ¶¶ 24, 31–32. For

example, the VoiceXML script includes “an instruction contain[ing] a text prompt element.” *Id.* ¶ 32.

c) Dodrill (Ex. 1006)

Dodrill is a U.S. Patent entitled “Application Server Configured for Dynamically Generating Web Pages for Voice Enabled Web Applications.” Ex. 1006, code (54). Dodrill issued on July 20, 2004 (*id.* at code (45)), and thus is prior art under 35 U.S.C. § 102(b). Pet. 1. Patent Owner does not dispute the prior-art status of Dodrill.

Dodrill teaches a “web-based voice messaging system [that] provides voice application control between a [user’s] web browser and an application server.” Ex. 1006, code (57). The web browser is provided by a client, e.g., a “thin client.” *Id.* at 3:4–9, 3:16–22. The “application server executes a voice-enabled web application by runtime execution of extensible markup language (XML) documents that define the voice-enabled web application to be executed.” *Id.* at 5:7–10. Those “XML pages are stored as XML applications and functions 96, for example within a document database accessible by the application server.” *Id.* at 9:16–19.

2. Analysis

As discussed herein, we are persuaded Petitioner has established, by a preponderance of the evidence, that claims 1–5, 7–14, and 16–21 are unpatentable on this ground.

a) Independent Claims 1, 9, and 16

The parties argue the independent claims essentially collectively. In support of its contention that the combination of Gilmore, Dhara, and Dodrill renders independent claim 1 unpatentable, Petitioner presents evidence that Gilmore teaches or suggests the subject matter of many of the

limitations of claim 1, and provides a detailed mapping of: the preamble¹¹ (Pet. 13 (citing Ex. 1005 ¶ 30; Ex. 1021 ¶ 74)); limitation 1h (*id.* at 26 (citing Ex. 1005 ¶ 31; Ex. 1021 ¶¶ 96–97)); limitation 1i (*id.* at 26–28 (citing Ex. 1005 ¶ 31, Figs. 1–2; Ex. 1021 ¶¶ 98–99)); and limitation 1j (*id.* at 28–32 (citing Ex. 1005 ¶¶ 40, 45–46, 52, 75, Figs. 1–2; Ex. 1021 ¶¶ 100–103)).

Petitioner also presents evidence that the combination of Gilmore and Dhara teaches: limitations 1a–1d (*id.* at 14–21 (citing Ex. 1005 ¶¶ 3, 30, 33, 39, 44, 50, 53, Figs. 1–2; Ex. 1009 ¶¶ 5, 19–22, 36–37, 40–42, Fig. 2; Ex. 1021 ¶¶ 76–86)); limitation 1e (*id.* at 21–22 (citing Ex. 1005 ¶¶ 39, 49; Ex. 1009 ¶¶ 22, 34, 38; Ex. 1021 ¶¶ 87–89)); limitation 1f (*id.* at 22–23 (citing Ex. 1005 ¶¶ 30–31, 35; Ex. 1009 ¶ 19; Ex. 1021 ¶¶ 90–91)); limitation 1g (*id.* at 23–25 (citing Ex. 1005 ¶¶ 15, 33, 38–40, 46, 48, 49; Ex. 1009 ¶¶ 5, 40–42; 92–95)); and limitation 1l (*id.* at 43 (citing Ex. 1005 ¶¶ 31, 50; Ex. 1009 ¶ 19; Ex. 1021 ¶¶ 119–120)).

Petitioner also presents evidence that the combination of Gilmore and Dodrill and/or Dhara teaches: limitations 1k1, 1k2, 1m, and 1n (*id.* at 32–44 (citing Ex. 1005 ¶¶ 33–34, 39–48, 52, 103, Figs. 9–14; Ex. 1006, 8:18–24, 9:12–24, 11:66–12:30, Fig. 7; Ex. 1021 ¶¶ 104–118, 121–122)); and limitation 1o (*id.* at 44 (citing Ex. 1005 ¶¶ 48, 103, Fig. 9; Ex. 1006, 8:18–24, 11:66–12:3, Fig. 7; Ex. 1021 ¶¶ 123)).

As Petitioner notes, and we agree, independent claim 9 recites substantially similar elements as independent claim 1. Pet. 44–48. Petitioner analyzes the similar elements recited in independent claim 9 by

¹¹ Neither party takes a position on whether the preambles to the claims are limiting. Patent Owner does not separately address the preambles. See *generally* PO Resp. To the extent the preambles are limiting, we find Petitioner’s evidence persuasive.

reference to Petitioner’s analysis of independent claim 1. *Id.* Regarding the elements not recited in independent claim 1, Petitioner presents evidence that Gilmore teaches or suggests “wherein the packetized voice data is used to identify the application.” *Id.* at 47 (citing Ex. 1005 ¶¶ 34, 51; Ex. 1021 ¶¶ 134–135).

Petitioner also notes, and we agree, that independent claim 16 recites substantially similar elements as independent claim 1, and analyzes the similar elements recited in independent claim 16 by reference to Petitioner’s analysis of independent claim 1. *See* Pet. 48–57. Regarding the elements not recited in independent claim 1, Petitioner presents evidence that Gilmore teaches or suggests “wherein the packetized audio data is used to determine the request for processing service.” *Id.* at 51 (citing Ex. 1005 ¶¶ 39, 50). Petitioner relies on the combination of Gilmore and Dodrill to teach “wherein the request for processing service comprises one or more instructions to the client device to retrieve content from a source located remote from the client device.” *Id.* at 52–55 (citing Ex. 1006, 12:55–60, Fig. 7; Ex. 1021 ¶¶ 148, 150, 153–159). Petitioner relies on Dodrill to teach “requesting the content from the source located remote from the client device.” *Id.* at 55–56 (citing Ex. 1006, 12:55–60). Petitioner relies on the combination of Gilmore and Dodrill to teach “presenting, via the speaker, an audio output corresponding to the content from the source located remote from the client device.” *Id.* at 55–57 (citing Ex. 1006, 12:5–10, Fig. 7; Ex. 1021 ¶¶ 160–162).

As further discussed below in the context of Patent Owner’s arguments, we find Petitioner has demonstrated, by a preponderance of the evidence, that the combination of Gilmore, Dhara, and Dodrill teaches or suggests each of the limitations of independent claims 1, 9, and 16.

Patent Owner argues that Petitioner's showing is deficient because: (1) Gilmore's VoiceXML scripts are not "applications," and therefore the Petition fails to show an application server that is configured to (a) receive an application via a second communication link or cause execution of the application via the second communication link (limitation 1j), or (b) generate a voice representation of information derived from an application (limitations 1k1, 1n; 9j, 9n) (PO Resp. 33–39); (2) the Petition fails to identify a communication device that transmits a request to an application server that is adapted to establish a communication session in response to a request from a communication device (limitations 1g; 9g; 16f) (*id.* at 39–45); (3) Gilmore does not disclose an application server that sends a request for processing service to a communication device (limitations 1k2, 1m; 9j, 9m; 16i, 16l, 16m) (*id.* at 45–50); (4) Gilmore does not disclose a communication device that generates packetized voice data by packetizing at least a part of a voice input (limitations 1f, 1l; 9f, 9k, 9l; 16e, 16j, 16k) (*id.* at 50–51); and (5) Petitioner has failed to establish that the ordinarily skilled artisan would have been motivated to combine the teachings of Gilmore, Dhara, and Dodrill in the manner asserted by Petitioner (*id.* at 52–58).

Certain limitations of claims 1, 9, and 16 are not disputed by Patent Owner. In particular, Patent Owner has not challenged Petitioner's showing as to the recitations in the claims of: (1) a speaker, input device and one or more processors (limitations 1a, 1b, 1c; 9a, 9b, 9c; 16a, 16b, 16c); (2) a communication device that captures a voice input from a user via an input device (limitations 1e; 9e; 16a); (3) a first communication link comprising a data connection (limitations 1h; 9h; 16g); (4) an application server remote from a communication device (limitations 1i; 9i; 16h, 16n); and (5) the

application server being configured to present the voice representation of information to the user via the speaker (limitations 1o; 9o; 16o). Patent Owner also does not separately challenge the claims' recitation of a "memory having stored thereon a software program" aside from challenging the functionality of such software program as recited in the foregoing challenged limitations. *See generally* PO Resp.

We find Petitioner has shown, by a preponderance of the evidence, that these undisputed limitations are satisfied by the combination of Gilmore, Dhara, and Dodrill. In particular, Petitioner presents evidence that Gilmore teaches or suggests a communication device (e.g., a cellular phone, PDA, or voice-enabled computer) that includes a speaker, input device, one or more processors, and memory storing a software program that is executed by the processors. Pet. 14–15 (citing Ex. 1005 ¶¶ 3, 30, 39, 50, Figs. 1, 2; Ex. 1021 ¶¶ 76–80). Petitioner also presents evidence that Gilmore discloses capturing a voice input from a user via the input device. *Id.* at 21–22 (citing Ex. 1005 ¶¶ 39, 49; Ex. 1021 ¶¶ 87–88). Petitioner also presents evidence that Gilmore discloses a voice/data network that is a data connection, as well as an application server (Gilmore's voice gateway) that is located remote from a communications device, physically separated by the voice/data network. *Id.* at 26 (citing Ex. 1005 ¶ 31; Ex. 1021 ¶¶ 96–99). We find Petitioner's evidence persuasive.

Petitioner notes that Gilmore does not explicitly label some of the hardware components, and so also cites to Dhara as making explicit that a communication device such as an IP phone, computer, or PDA includes a speaker, input device (e.g., microphone), microprocessor, and memory. Pet. 16 (citing Ex. 1009 ¶¶ 19, 21–22; Ex. 1021 ¶ 80). Petitioner also presents evidence that Dhara teaches or suggests software stored in memory

to capture voice inputs for packetization, transmit communication requests, transmit packetized voice data, receive processing requests, and present voice representations to the user. *Id.* at 17–18 (citing Ex. 1021 ¶ 81).

Petitioner presents evidence and articulated reasoning supporting a finding that the ordinarily skilled artisan would have found it obvious “to incorporate Dhara’s device-side software to perform basic voice capture, transmittal, receipt, and presentation functions to facilitate interfacing between the user and Gilmore’s IVR system over an IP-based network format described in Gilmore and Dhara.” *Id.* at 18 (citing Ex. 1021 ¶ 81). In particular, Petitioner presents evidence, including the testimony of Dr. Lipoff (which we credit), that the ordinarily skilled artisan would have been motivated to combine Dhara’s teachings with those of Gilmore to extend the VoiceXML capabilities beyond the remote servers and to implement the IVR system over an IP-based network, to increase the options available for the XML voice applications, such as voice web-browsing, over the IP network. *Id.* at 19–20 (citing Ex. 1005 ¶¶ 30, 31, 35 48–50; Ex. 1009 ¶¶ 20, 21, 30–32, 36, 41; Ex. 1021 ¶¶ 82–83). Petitioner further notes that speakers, input devices, and memory were all well-known “long before the priority date of the ’032 patent,” and

[i]ncorporating a processor, memory, and software into Gilmore’s communication device (the same devices as in Dhara and Dodrill) thus merely combines known operations and functions in their ordinary and expected manner, because the memory stores software that is executed by the processor to perform operations, such as outputting an audio prompt or recording a user spoken response, as described in Dhara and Dodrill.

Id. at 21 (citing Ex. 1021 ¶ 86; Ex. 1005 ¶ 44; Ex. 1009 ¶¶ 23, 32; Ex. 1006, 11:61–12:30).

Petitioner also presents evidence that the combination of Gilmore and Dodrill teaches or suggests the communication device presenting a voice representation (e.g., audio output) to the user. Pet. 44 (citing Ex. 1021 ¶ 123); *see also infra* § III.D.2.a)(3) (discussing Petitioner’s showing regarding limitation 1k2).

We find Petitioner’s contentions regarding the undisputed limitations are supported by the cited evidence and the credible testimony of Dr. Lipoff.

We address the sufficiency of Petitioner’s showing as to the remaining (disputed) limitations in the context of Patent Owner’s arguments below.

(1) Applications received by an application server and from which a voice representation of information is derived (limitations 1j, 1k1; 9j)

Claim 1 recites that “the application server is either (a) configured to receive an application via a second communication link, or (b) configured to cause execution of the application via the second communication link.” Ex. 1001, 13:55–59 (limitation 1j). Claim 1 further recites “wherein the application server is configured to generate a voice representation of information derived from the application.” *Id.* at 13:59–61 (limitation 1k1). Claim 9 similarly recites “wherein the application server is configured to generate a voice representation of information derived from an execution of an application.” *Id.* at 14:47–50 (limitation 9j).

Central to the parties’ dispute over these limitations is the proper construction of the term “application,” which we have addressed above. We first address application of that construction to Petitioner’s showing regarding Gilmore’s VoiceXML scripts as applications. Then we turn to the parties’ disputes regarding whether (1) Gilmore teaches or suggests an application server that is configured to receive an application via a second communication link or to cause execution of the application via the second

communication link (limitation 1j); and (2) Gilmore teaches or suggests an application server that is configured to generate a voice representation of information derived from an application or an execution of an application (limitations 1k1; 9j).

(a) Gilmore’s VoiceXML scripts are applications

Patent Owner argues that Petitioner has failed to demonstrate that any of the “application” limitations are satisfied because Petitioner maps the claimed “applications” to Gilmore’s VoiceXML scripts and dynamic content generation (“DCG”) commands, which Patent Owner contends “are not ‘applications’ as the term is used in the ’032 Patent and as it would be understood by [the ordinarily skilled artisan].” PO Resp. 34. Patent Owner continues:

Gilmore at most discloses a *single* VoiceXML-based application that is executed on the application server. It accesses VoiceXML script files, processes them as part of the execution of the application, and sends prompts to the voice gateway to be rendered and played over the phone to a user. But the script files themselves (and particular text within them) are not applications.

Id. at 36.

Petitioner responds that VoiceXML scripts meet the definition of an application as recited in the ’032 patent—namely, functionality that is capable of facilitating the ability to collect information from and/or present information to one or more client devices or users. *See* Reply 13 (citing Ex. 1001, 4:45–49). Thus, according to Petitioner, “executing VoiceXML scripts executes ‘applications’ as used in the ’032 patent.” *Id.* at 14.

Petitioner further presents evidence that Gilmore processes DCG commands as part of the “application” caused to be executed on application server 212. *Id.* at 13 (citing Ex. 1005 ¶¶ 40, 52, 90, 91, 110; Pet. 31–32). In particular,

Gilmore describes “[a] dynamic content generation (DCG) command may be used in the voice scripts to significantly increase the ability of the scripts to dynamically change in response to different types of callers and in response to different caller inputs.” Ex. 1005 ¶ 52.

Patent Owner’s arguments are unavailing in part because they are premised on an overly narrow interpretation of the term “application,” which we have not adopted. *See supra* § III.C.3. As we discuss above, we agree with Petitioner that an “application,” within the meaning of the ’032 patent claims, includes “functionality that is capable of facilitating the ability to collect information from and/or present information to one or more client devices or users.” *Id.*; *see* Ex. 1001, 4:45–49.

We also agree with Petitioner that a VoiceXML script, as described in Gilmore, falls within the scope of an “application” as recited in the ’032 patent claims. In particular, Petitioner presents an annotated version of Figure 1 of Gilmore, reproduced below (Pet. 6):

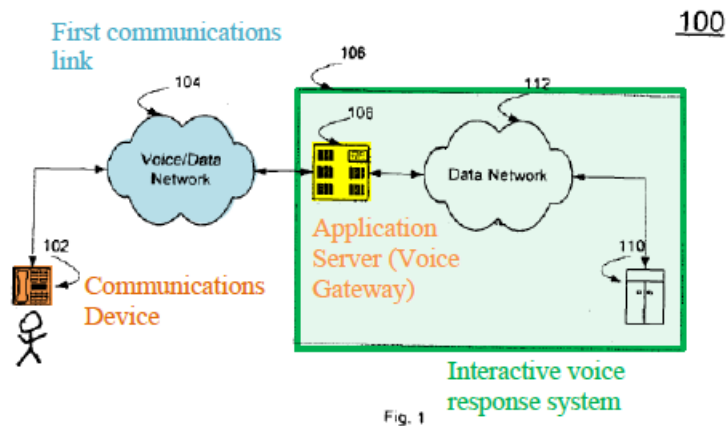


Figure 1 (annotated by Petitioner) is a diagram of an exemplary voice communications system. Ex. 1005 ¶ 16.

Petitioner presents evidence that, as shown in Figure 1, Gilmore discloses a communication system “for remotely executing interactive voice

applications using an interactive voice response (“IVR”) system 106 (**green**) over a voice/data network 104/204 (**blue**).” Pet. 5 (citing Ex. 1005

¶ 31). Petitioner further asserts “Gilmore’s voice gateway 108/208 (**yellow**) remotely executes interactive voice applications that a user can communicate with using communication device 102/202 (**orange**) by listening to audio outputs and speaking responses.” *Id.* at 5–6 (citing Ex. 1005 ¶¶ 33, 34, 39–48).

Petitioner also provides an annotated version of Gilmore’s Figure 2, reproduced below, which illustrates various components of Gilmore’s interactive voice response system.

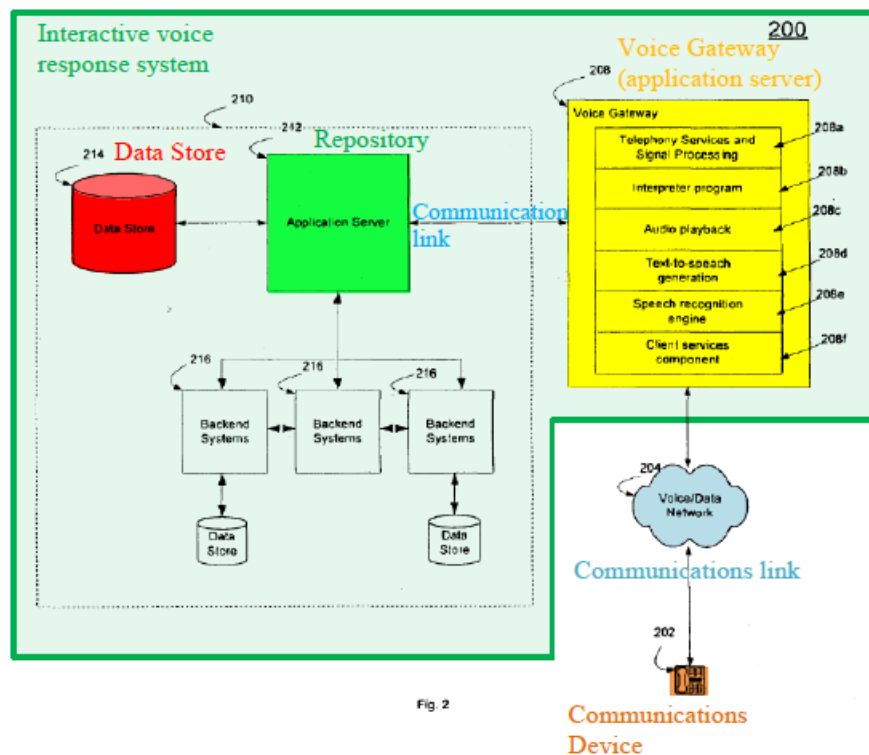


Fig. 2

Figure 2 (annotated by Petitioner, Pet. 6) is a block diagram of a voice communications system. Ex. 1005 ¶ 17.

By reference to Figure 2, Petitioner asserts that “[a]fter receiving an incoming request from a user communications device 102/202 (**orange**),

voice gateway 108/208 (yellow) ‘receives script files from the application server 212 [(green)] which obtains the files from the data store 214

[(red)].” Pet. 6–7 (quoting Ex. 1005 ¶ 46). Petitioner further asserts that

[v]oice gateway 108/208 then “parses the script by searching and executing the voice-specific instructions within the script.” . . . While executing the application scripts, voice gateway 108/208 “generat[es] outgoing speech or prompts using the audio playback component 208c and the text-to-speech generation component 208d . . . and listen[s] to spoken responses from the caller using the speech recognition engine 208c.”

Id. at 6 (quoting Ex. 1005 ¶¶ 48, 39).

Thus, Gilmore discloses that its voice gateway executes voice scripts (e.g., VoiceXML scripts) to create speech prompts for a user and to receive caller responses to given prompts. Ex. 1005 ¶ 39. As such, Gilmore’s VoiceXML scripts provide “functionality that is capable of facilitating the ability to collect information from and/or present information to one or more client devices or users”; therefore, we find that Gilmore’s VoiceXML scripts qualify as “applications” within the meaning of the ’032 patent.

(b) Gilmore’s application server is configured to receive an application via a second communication link or to cause execution of the application via that link (limitation 1j)

Petitioner presents evidence that Gilmore discloses both alternatives recited in claim 1—that the application server (a) is configured to receive an application via a second communication link, or (b) is configured to cause execution of the application via the second communication link. Pet. 28. In particular, referring to annotated Figure 1 of Gilmore, reproduced below, Petitioner presents evidence that voice gateway 108/208 is configured to “receive[] script files [applications] from the application server 212” over

network 112 (labeled “second communication link” by Petitioner). *Id.* at 29 (citing Ex. 1005 ¶ 46; Ex. 1021 ¶ 101).

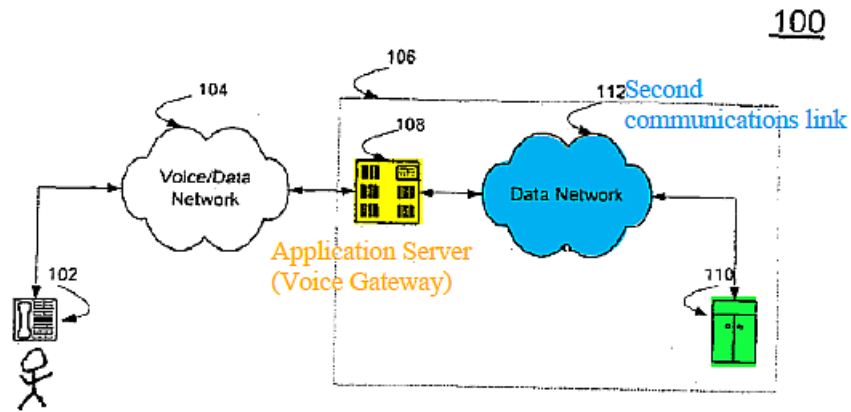


Fig. 1

Figure 1 (annotated by Petitioner, Pet. 30) is a diagram of an exemplary voice communications system. Ex. 1005 ¶ 16.

Petitioner presents evidence that Gilmore’s application server 212 “obtains the [script] files from the data store 214” (annotated red above), as shown by the double-headed arrow in annotated Figure 2, reproduced below, “and sends the application to voice gateway 108/208.” Pet. 29 (citing Ex. 1005 ¶¶ 45, 46, 52 (“When the voice gateway 208 requests a script from the application server 212, the application server 212 accesses the script from the data store 214 . . .”), ¶ 75). According to Petitioner, as shown in the annotated figure below, “voice gateway 108/208 (application server, **yellow**) receives a VoiceXML script to be executed over data network 112 (second communication link, **blue** in Figure 1, double-headed arrow in Figure 2) from application server 212 (**bright green**).” *Id.* (footnote omitted).

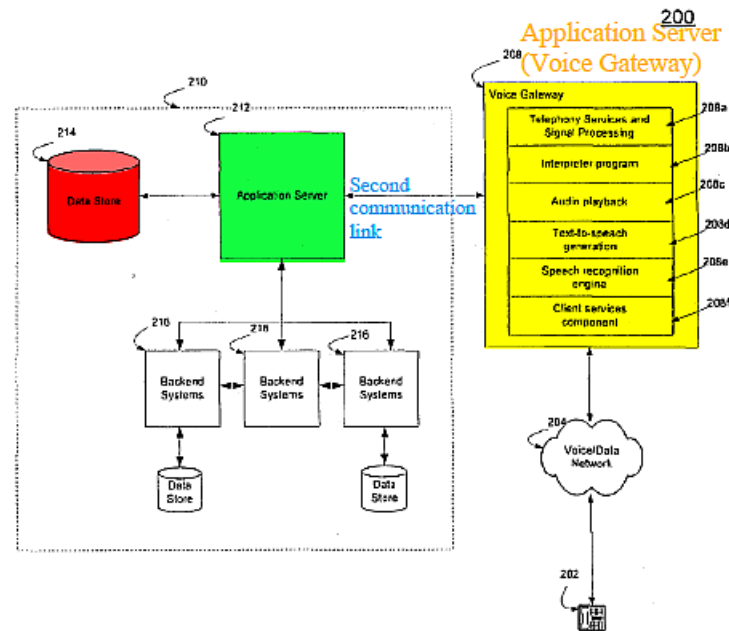


Fig. 2

Figure 2 (annotated by Petitioner, Pet. 31) is a block diagram of a voice communications system. Ex. 1005 ¶ 17.

With regard to the second claimed alternative, Petitioner presents evidence that when Gilmore’s “voice gateway 208 requests a script from the application server 212,” server 212 ‘processes the script by resolving any DCG [dynamic content generation] commands within the script into voice instructions’ before sending the script to voice gateway 108/208.” Pet. 31 (citing Ex. 1005 ¶ 52). Gilmore further explains that “application server 212 provides the execution environment for voice applications” and that “application code executed by the application server 212 coordinates which scripts to send to the voice gateway 208.” Ex. 1005 ¶ 40. Thus, Gilmore confirms that application server 212 may process the scripts before sending the processed scripts to the voice gateway 208, such as by executing DCG commands (which meet the ’032 patent’s definition of “application”) over data connection 112 (second communication link) before receiving the application from application server 212. Ex. 1005 ¶¶ 40, 52.

We are persuaded by Petitioner’s evidence and agree that Petitioner has sufficiently shown that Gilmore teaches both of the alternatives recited in limitation 1j.

Patent Owner’s challenge to Petitioner’s showing regarding limitation 1j is premised on Patent Owner’s contention that VoiceXML scripts and DCG commands are not applications. PO Resp. 37–38. Patent Owner’s arguments are unavailing in part because they are premised on an overly narrow interpretation of the term “application,” which we have not adopted. *See supra* § III.C.3. As we discuss above, we agree with Petitioner that an “application,” within the meaning of the ’032 patent claims, includes “functionality that is capable of facilitating the ability to collect information from and/or present information to one or more client devices or users.” *Id.*; *see* Ex. 1001, 4:45–49. We further agree, as also noted above, that Gilmore’s VoiceXML scripts fall within the scope of an application. We similarly agree that DCG commands fall within the scope of an application, as they are used, for example, to “significantly increase the ability of the scripts to dynamically change in response to different types of callers and in response to different caller inputs.” Ex. 1005 ¶ 52. As such, they facilitate the ability to collect information from and/or present information to one or more client devices or users.

We find Petitioner has shown by a preponderance of the evidence that Gilmore teaches or suggests the subject matter of limitation 1j.

(c) Gilmore’s application server is configured to generate a voice representation of information derived from an application or an execution of an application (limitations 1k1; 9j).

With regard to the requirement that the application server generate a voice representation of data derived from an application or execution of an

application, Petitioner presents persuasive argument and evidence that Gilmore's generation of speech using text-to-speech processing is a voice representation "of information derived from the application" because Gilmore's VoiceXML script determines what audio to present based on the application's instructions (e.g., prompt/grammar) and information in the application, e.g., menu options to speak for a specific user. Pet. 33–36, 51; Ex. 1005 ¶¶ 39, 43–44, 50, Figs. 9–14; Reply 15. Petitioner further presents persuasive argument and evidence that, in Gilmore, the generated speech is a voice representation "of information derived from an execution of an application" because Gilmore's voice gateway "generates speech from responses or response text (information) in the VoiceXML application," which "text is determined (derived) and 'tailored to the [user's] input' by executing grammar instructions in the VoiceXML (execution of the application)." Reply 14–15 (citing Pet. 33–36, 51, 61; Ex. 1005 ¶¶ 39, 43–44, 48, 50, 64, 109). Petitioner further states that "[t]he new prompt/text is thus the voice representation of the information (text) derived by executing the VoiceXML application." *Id.* (citing Ex. 1005 ¶¶ 39, 43–44, 50; Pet. 33–36, 51, 61). Petitioner adds that "Gilmore's speech is also 'of information derived from . . . execut[ing] . . . an application' because executing DCG commands in an application determines which information (e.g., menu options, prompts) to present to the user via text-to-speech based on user characteristics." *Id.* at 15 (citing Pet. 31–32; Ex. 1005 ¶¶ 90–91, 97–98).

Patent Owner argues Gilmore "fails to satisfy this element" because "the 'execution' of VoiceXML scripts in *Gilmore* is not the same thing as the execution of an application in *Gilmore* (and because the execution of the application in *Gilmore* does not happen on the alleged application server)." PO Resp. 38. In addition, according to Patent Owner:

[e]ven if the VoiceXML scripts / DCG commands of Gilmore are “applications” (which they are not), Gilmore still fails to disclose that an application server generates a voice representation that is *derived from an execution* of such an application, because there is no derivation taking place in the rendering of the text of VoiceXML scripts, as such information would be the application itself according to Petitioner.

Id. at 39.

We disagree with Patent Owner’s contentions, which are somewhat conclusory with regard to Patent Owner’s reading of “derived from execution” of an application. In contrast, as noted above, Petitioner’s contentions are persuasive and supported by the cited evidence.

We find Gilmore teaches or suggests “wherein the application server is configured to generate a voice representation of information derived from the application” as recited in claim 1 (limitation 1k1) and similarly recited in claim 9 (limitation 9j).

- (2) “[T]ransmit a request to establish a communication session over [a data connection] . . . to an application server . . . adapted to establish the communication session in response” (limitations 1g; 9g; 16f)

Claim 1 recites that the communication device “transmit[s] a request to establish a communication session . . . to an application server . . . adapted to establish the communication session in response” Ex. 1001, 13:46–51. Claims 9 and 16 contain similar recitations. *Id.* at 14:40–43, 15:28–31. We address this limitation in two parts below, in which we determine:

(a) whether Gilmore teaches a communication device sending a request to establish a communication session; and (b) whether Gilmore’s disclosure of executing VoiceXML scripts teaches a “communication session.”

(a) “*request to establish a communication session*”

Petitioner presents evidence that Gilmore’s communication device 102/202 transmits a *request to establish* a communication session, as recited in claim 1, “such as by placing a call to the IVR [(interactive voice response)] system or speaking an instruction to initiate a VoiceXML session, over voice/data network 104/204 (first communication link) to voice gateway 108/208 (application server).” Pet. 23 (citing Ex. 1021 ¶ 93). “Voice gateway 108/208 ‘receives user calls from voice communications devices 102 via the network 104 and responds to the calls in accordance with a voice program.’” *Id.* (quoting Ex. 1005 ¶¶ 33, 38). Petitioner asserts Gilmore discloses the voice gateway is “adapted to *establish the communication session* in response to the request,” as recited in claim 1, “by executing an interactive voice application (e.g., VoiceXML) to send prompts or queries that the user can respond to interact with voice gateway 108/208.” *Id.* at 24 (emphasis added). According to Petitioner, in Gilmore, “[v]oice gateway 108/208 begins (e.g., establishes) the communication session when it executes the interactive VoiceXML application.” *Id.* (citing Ex. 1005 ¶¶ 39, 40, 46, 48; Ex. 1021 ¶ 93).

Patent Owner, however, argues that Gilmore’s communication session is not established in response to a request sent *by the communication device*. PO Resp. 40–41. In particular, Patent Owner argues

it is clear from *Gilmore* that it is the action of the telephony service (*i.e.*, on the voice gateway) that initiates the alleged communication session. The “request” must therefore be the call from the user, the answer, and the subsequent action by the telephony service to interact with the VoiceXML interpreter context that requests a session.

Id. Patent Owner further asserts “[t]he call alone without the telephony

service and associated logic does not request *anything* from a VoiceXML script or interpreter.” *Id.* at 41. Patent Owner then posits that “if it is the telephone call and the answer (along with subsequent processing) [that] constitute[] the ‘request to establish a communication session,’ then the ‘request’ is *not* sent by the communication device, as the claims require.” *Id.* In other words, Patent Owner argues that it is the action of multiple devices (both the user calling via the communication device and the interim processing by the voice gateway) that constitutes a “request” in Gilmore. *See id.*

Patent Owner’s contentions are unavailing. As in the Institution Decision, we find that a communication device placing a call to a voice response system is a request to establish a communication session. *See* Dec. 29. In particular, we agree with Petitioner’s contention (supported by the testimony of Dr. Lipoff regarding the contemporaneous understanding of the ordinarily skilled artisan, which we credit) that “the call from communications device 102/202 [to the interactive voice response system] corresponds to a ‘request to establish a communication session’ because it represents the user’s action to initiate retrieval and execution of the VoiceXML script . . . that establishes the communication session.” Pet. 23–24 (citing Ex. 1021 ¶ 93). Even if Gilmore’s voice gateway performs an intermediate processing step between the user contacting the IVR (“interactive voice response”) system and executing the application, the user’s initial call to the IVR system is still a “request” that starts the process and results in the voice gateway executing the application.

(b) Gilmore discloses a communication session

Patent Owner next argues that Gilmore’s executing VoiceXML scripts does not “establish a communication session.” PO Resp. 41–45. As

support, Patent Owner makes various contentions that Gilmore discloses merely a “traditional IVR system,” and thus establishes only a “*call session*” and not a “communication session.” *Id.* at 42. Patent Owner distinguishes the ’032 patent as being about “connecting a computing device to a server so it can receive instructions requesting processing services and thus take on some of the application processing load, not making telephone calls.” *Id.* Patent Owner further asserts that “any sending and receiving of ‘instructions’ in *Gilmore* occurs over the link between the voice gateway and the application server of *Gilmore*—not between an application server and a communication device.” *Id.* at 43 (citing Ex. 2007 ¶¶ 102–104). Patent Owner further contends that the need for a “voice gateway” in *Gilmore* underscores that Gilmore discloses merely telephone calls to an IVR system, because the voice gateway “acts to support telephone calls.” *Id.* at 44. In contrast, contends Patent Owner, because the ’032 patent does “not relate to telephone calls, there is no need for a voice gateway.” *Id.*

Patent Owner’s arguments boil down to the contention that Gilmore’s “call session” (in Patent Owner’s words) cannot be a “communication session” as claimed because it lacks the ability to send a request for processing services from the application server to the communication device. PO Resp. 43. As such, Patent Owner’s arguments actually implicate a different limitation—the application server communicating a request for processing service to the communication device—which we address in the next section.

With regard to whether Gilmore teaches or suggests establishing a communication session, Patent Owner’s arguments are unavailing because they are based on an unduly narrow reading of “communication session” as

excluding voice telephone calls. As we note *supra* in Section III.C.1, the Specification broadly describes client communication devices as follows:

Each client 18 may include, for example, a wireless device, a voice over IP device, a desktop computer, a laptop computer, a personal digital assistant, a cell-phone, a Wi-Fi device, a workstation, a mainframe computer, a mini-frame computer, a web server, or any other computing and/or communicating device.

Ex. 1001, 4:22–27. The Specification also discloses that “[l]andline phones and/or IP phones can also *communicate* with repository 20 and/or application server 24 *in the same manner* as mobile phones.” *Id.* at 6:5–7 (emphases added). Gilmore similarly describes a client (communication device) as “a device able to interface with a user to transmit voice signals across a network such as, for example, a telephone, a cell phone, a voice-enabled personal digital assistant (PDA), or voice-enabled computer.”

Ex. 1005 ¶ 30; *see* Pet. 6. Thus, both the ’032 patent and Gilmore contemplate use of similar communication devices, including landline phones. We, therefore, do not agree with Patent Owner’s contention that a telephone call in Gilmore cannot qualify as a “communication session” as recited in the ’032 patent claims.

As we note above in Section III.C.1, we construe a “communication session” as encompassing the process of a communication device communicating information to, and/or retrieving information from, another communication device. We find that Gilmore discloses a communication device (voice communication device 102/202), such as a landline phone, an IP phone or cell phone (Ex. 1005 ¶¶ 30, 36, Fig. 2). We further find that such a communication device communicating information to, and/or retrieving information from, Gilmore’s voice gateway falls within the scope

of a “communication session,” as recited in the ’032 patent claims. In particular, in Gilmore, interpreter 208b on voice gateway 108/208 executes the interactive VoiceXML application and send prompts that the user can interact with and respond to using the communication device. *E.g.*, Ex. 1005 ¶¶ 39, 40, 46, 48, Fig. 2; Ex. 1021 ¶ 87. In this manner voice gateway 208 “is able to simulate a conversation with the caller.” *Id.* ¶ 39. We find such a simulated conversation, in which information is exchanged, is a communication session within the scope of the ’032 patent claims.

Based on the foregoing, we determine Petitioner has demonstrated by a preponderance of the evidence that Gilmore teaches “transmit a request to establish a communication session . . . to an application server . . . adapted to establish the communication session in response,” as recited in claim 1 (limitation 1g) and similarly recited in claims 9 and 16 (limitations 9g and 16f, respectively).

(3) Application server sends a “request for processing service” to a communication device, wherein the request for processing service “comprises an instruction to present the user the voice representation” “of information derived from the application” (limitations 1k2, 1m, 1n; 9j, 9m, 9n; 16i, 16l, 16m)

Claim 1 recites the application server “communicate[s] a request for processing service to the communication device,” and further recites that the “request for processing service comprises an instruction to present the user the voice representation” of information derived from the application (limitations 1k2, 1m, 1n). Ex. 1001, 13:62–63, 14:1–3. Claims 9 and 16 contain similar recitations (limitations 9j, 9m, 9n; 16i, 16l, 16m). *Id.* at 14:50–51, 14:56–60; 16:1–2, 16:7–11).

Petitioner relies on the combination of Gilmore, Dodrill, and Dhara to teach “receive the request for processing service from the application server

over the first communication link” (Pet. 43–44; *see id.* at 32–42), and “wherein the request for processing service comprises an instruction to present the user the voice representation” (*id.* at 44; *see id.* 36–42 (citing Ex. 1005 ¶¶ 33–34, 39–48, 103, Fig. 9; Ex. 1006, 8:18–24, 9:12–24, 11:66–12:30, Fig. 7; Ex. 1021 ¶¶ 109–118)). Petitioner also relies on the combination of Gilmore, Dodrill, and Dhara to teach “wherein the request for processing service comprises one or more instructions to the client device to retrieve content from a source located remote from the client device,” as recited in claim 16 (limitation 16m). *Id.* at 52–55 (citing Ex. 1006, 12:55–60, Fig. 7; Ex. 1021 ¶¶ 153–159).

As discussed above (§ III.C.2), we construe “processing service” as “a computing process performed by a communication device for all or part of the application.” Thus, a request for processing service communicated by an application server to a communication device includes a request by the application server that the communication device perform a computing process for all or part of the application.

Petitioner presents evidence that Gilmore discloses presenting a “request for processing service” as audio queries from the voice gateway to the user’s communication device. Pet. 36–37 (citing Ex. 1005 ¶¶ 48, 103, Fig. 9). Petitioner also presents evidence that Gilmore’s voice gateway (application server) generates the audio queries by executing VoiceXML applications to generate voice representations of information derived from the applications. *See id.* at 33 (citing Ex. 1005 ¶¶ 39, 43, 48, 52, 103). According to Petitioner, this is accomplished by Gilmore’s voice gateway either accessing an audio file at a specified URL or by employing text-to-speech to translate and play text included in a prompt instruction, resulting in an audio output such as the “What would you like to do?” query in Figure

9. *See id.* at 33–34, 36–37 (citing Ex. 1005 ¶¶ 39, 43, 44, 48, 52, 103, Fig. 9).

Petitioner then presents evidence that, “[w]hile Gilmore discloses presenting audio request[s] for processing as audio queries, Dodrill renders obvious sending the queries as an ‘instruction to present the user the voice representation,’ recited in element [1n], as a short script that is part of the request.” *Id.* at 37 (citing Ex. 1006, 9:12–24; Ex. 1005 ¶¶ 33–34, 39–48). In particular, Petitioner presents evidence that “Dodrill teaches that, rather than sending audio directly, the system can send the voice representation along with an instruction to play the voice representation in a script processed by the user device.” *Id.* (citing Ex. 1006, 8:18–24, 11:66–12:30, Fig. 7). Dodrill’s XML tags include instructions to present information to the user, such as to play audio files using a “PROMPT” or “autostart” instruction. *Id.* (citing Ex. 1006, 11:66–12:30; Ex. 1021 ¶ 112). Petitioner further presents evidence that “Dhara confirms that the user device, like Dodrill’s Figure 7, can process instructions to ‘retrieve the audio message from a source identified in the instruction.’” *Id.* at 38 (citing Ex. 1009 ¶ 33).

Patent Owner focuses its arguments on Petitioner’s showing as to Gilmore, arguing that “in *Gilmore* the cited ‘request’ is an audio prompt—processed on the application server and played over the phone via a voice gateway—for *user interaction*, not for a processing service. . . . The ‘requested’ activity is a user activity, not a device activity.” PO Resp. 45. Patent Owner acknowledges that the ’032 patent discusses VoiceXML scripts, but states that when the ’032 patent does so “it makes clear that the system of the ’032 Patent—unlike traditional VoiceXML systems [such as *Gilmore*—involves distributing some of the processing functions to the client side for execution.” *Id.* at 47 (citing Ex. 1001, 6:60–65 (“In this

example, client 18a provides application independent processing services to Voice XML-based application 28 executing remotely.”)). In contrast, continues Patent Owner, “all processing of instructions in *Gilmore* (and certainly all processing cited in the Petition) is done on the host side—*i.e.*, by the application server.” *Id.* at 48 (citing Ex. 1005 ¶ 40). In that regard, Patent Owner challenges Petitioner’s reliance on *Gilmore*’s text-to-speech conversion, stating that such conversion and subsequent audio playback is performed *by the application server*, and not by the client device. *Id.* at 48–49. Patent Owner further asserts that any interaction in *Gilmore* by a human on the client side, such as spoken commands or responses to the application server’s audio prompts, are not a “processing service” within the scope of the ’032 patent claims. *See id.*

Petitioner responds by pointing out that the Petition relies on *Gilmore* in combination with *Dodrill*, asserting that *Dodrill* teaches sending executable instructions to the user device, thus meeting the construction of “request for processing services” as adopted by the district court and as we have also adopted herein. *See* Reply 21 (citing Pet. 36–42, 44). Patent Owner does not particularly challenge *Dodrill*’s teachings, but asserts that the combination fails because Petitioner has failed to demonstrate that the ordinarily skilled artisan would have combined the teachings of *Gilmore* with *Dodrill* and/or *Dhara*. *See* PO Resp. 50, 52–59; Sur-reply 22–23. We address those arguments below in Section III.D.2.a)(5).

We are persuaded by Petitioner’s arguments and evidence that the combination of *Gilmore*, *Dodrill*, and *Dhara* teaches or suggests an application server that communicates a request for processing service to a communication device, as recited in claim 1 (limitations 1k2, 1m, 1n) and similarly recited in claims 9 (limitations 9j, 9m, 9n) and 16 (limitations 16i,

16l, 16m). In particular, Gilmore teaches the voice gateway generates a voice representation of information derived from executing a VoiceXML application, which it sends as audio prompts to the user communication device. Ex. 1005 ¶¶ 39, 43, 44, 48, 52, 103, Fig. 9. Petitioner persuasively adds teachings from Dodrill and Dhara for the user communication device receiving the voice representation in software and executing an instruction in software on the user device to play the voice representation as audio for the user, as recited in claims 1 and 9. Pet. 37–38 (citing Ex. 1006, 8:18–24, 11:66–12:30, Fig. 7; Ex. 1009 ¶ 33). Dodrill, for example, discloses an application server generating a web page for a user’s browser, wherein the web page includes media control to be performed on the user’s device by a plug-in resource. Ex. 1006, 11:61–12:4. Dodrill’s plug-in resource can play audio files for the user and also receive user input that the resource then matches to an input pattern; the resource may also record and capture user voice input and upload that input. *Id.* at 12:5–30. In that regard, we credit, and rely on, the testimony of Dr. Lipoff to the effect that the ordinarily skilled artisan would have understood that Dodrill discloses an application server sending instructions to a user device, to be executed on the user device for implementing various functionality, such as presenting audio or display prompts for a user. Ex. 1021 ¶¶ 112–114. And Petitioner persuasively points to Dhara’s teachings as confirming that a user device, like Dodrill’s Figure 7, can “process instructions to ‘retrieve the audio message from a source identified in the instruction.’” Pet. 38 (citing Ex. 1009 ¶ 33).

With regard to the recitation in claim 16 of “wherein the request for processing service comprises one or more instructions to the client device to retrieve content from a source located remote from the client device”

(limitation 16m), Petitioner presents persuasive evidence that the ordinarily skilled artisan would have understood that Dodrill not only teaches or suggests sending instructions to the user's device as part of a request for processing that outputs voice or audio prompts, but also that these instructions "may retrieve the content from a source located remote from the user's device, such as a URL location." Pet. 52 (citing Ex. 1021 ¶ 154). For example, Dodrill discloses in Figure 7 "PROMPT" instructions to "fetch[] an audio (.wav) file in response to detecting a sound tag." Ex. 1006, 12:55–60, Fig. 7. Petitioner presents the testimony of Dr. Lipoff, which we credit, in support of finding that the ordinarily skilled artisan would have understood that such instructions would be fetched from a remote location identified by a URL. *Id.* at 52–54 (citing Ex. 1006, 12:55–60, Fig. 7; Ex. 1021 ¶¶ 153–155).

We find that Petitioner has demonstrated by a preponderance of the evidence that the combination of Gilmore, Dodrill, and Dhara teaches or suggests an application server sends a "request for processing service" to a communication device, as recited in claims 1, 9, and 16 (limitations 1k2, 1m; 9j, 9m; 16i, 16l), and further wherein the request for processing service "comprises an instruction to present the user the voice representation" "of information derived from the application," as recited in claims 1 and 9 (limitations 1n, 9n), and "wherein the request for processing service comprises one or more instructions to the client device to retrieve content from a source located remote from the client device," as recited in claim 16 (limitation 16m).

We address *infra* Section III.D.2.a)(5) Petitioner's showing regarding the combination of these references, as well as Patent Owner's arguments challenging that showing.

(4) *Communication device generates packetized voice data*
(limitations 1f, 1l; 9f, 9k, 9l; 16e, 16j, 16k)

Claims 1, 9, and 16 recite a communication device having software that causes the communication device to packetize at least a part of a voice input and transmit the packetized voice data to an application server.

See Ex. 1001, 12:45–46 (limitation 1f), 12:64–64 (limitation 1l), 14:38–39 (limitation 9f), 14:52–55 (limitations 9k, 9l), 15:26–27 (limitation 16e), 16:3–6 (limitations 16j, 16k).

Petitioner presents evidence that Gilmore discloses generating packetized voice data from a voice input captured by the input device to transmit the data over an IP-based network or other packet-based network. Pet. 22 (citing Ex. 1021 ¶ 90). In particular, Gilmore discloses a communications device that “transmit[s] voice signals” over a data network, such as “packetized data” over “Internet protocol (IP)-based” network (e.g., “Voice-over-IP” network). Ex. 1005 ¶¶ 30–31, 35. Petitioner presents the testimony of Dr. Lipoff, which we credit, as support for finding that the ordinarily skilled artisan would have understood that transmitting captured voice input over an IP-based packet network requires converting the signal into packetized voice data, as claimed. Ex. 1021 ¶ 91. Petitioner also presents evidence that Dhara confirms this understanding of a skilled artisan, explaining that “transmitting and receiving voice via [an] IP network” is done “in the form of data packets” for the voice information. Pet. 22 (citing Ex. 1009 ¶ 19; Ex. 1021 ¶ 91). Petitioner further contends “Dhara also renders obvious performing the function of generating the packetized voice data using the user-device software, such as a voice browser.” *Id.* at 22–23; see Ex. 1009 ¶ 19 (describing a communication device capable of communicating voice signals over an IP network), ¶¶ 21–22; Ex. 1021 ¶ 80.

Patent Owner argues “*Gilmore* is devoid of any disclosure concerning a communication device that is configured to generate packetized voice data by packetizing at least a part of a voice input. Instead, *Gilmore* merely discloses certain networks that may be utilized in various aspects of the disclosure.” PO Resp. 51. Patent Owner challenges, in particular, Petitioner’s reliance on paragraph 30 of *Gilmore*, stating that *Gilmore* discloses therein only “aspects of the data network 112 that lie[] between gateway 108 and application system 110 shown in Figure 1—*both on the host side of the system.*” *Id.* (emphasis added). According to Patent Owner, “[t]his has nothing to do with generating packetized voice data on a *communication device.*” *Id.* Patent Owner also argues that Petitioner’s alternative reliance on *Dhara* is misplaced because the ordinarily skilled artisan would not have combined the teachings of *Dhara* with *Gilmore*. *Id.*

Petitioner responds by reiterating that *Gilmore*’s communication device transmits “voice signals” across network 104, which can be a “packet-switched data network,” “Voice-over-IP” network, or IP-based network. Reply 22 (citing Ex. 1005 ¶¶ 30–31; Pet. 22–23, 26). Petitioner further presents evidence that “*Dhara* and *Gilmore* confirm the user devices packetize voice data sent over these networks.” *Id.* (citing Ex. 1009 ¶ 19 (communication device transmits and receives voice as “data packets”); Pet. 22, 43; Ex. 1021 ¶ 91; Ex. 1005 ¶¶ 31, 35).

We are persuaded by Petitioner’s evidence that the ordinarily skilled artisan would have understood from *Gilmore* that *Gilmore*’s user device (voice communication device 102) is a device “able to interface with a user to transmit voice signals across a network,” including a “voice-enabled computer,” wherein the network may be a “packet-switched data network” such as “Voice-over-IP.” Ex. 1005 ¶¶ 30, 31; *see also* Ex. 1021 ¶ 91. We

disagree with Patent Owner's characterization of this disclosure as referencing only aspects of Gilmore's network on the host side of the system. To the contrary, this disclosure of transmission over a packet-switched network includes transmission by the device employed by the user to make calls to the system—communication device 102. *See* Ex. 1005 ¶¶ 30, 31.

We find Petitioner has demonstrated by a preponderance of the evidence that Gilmore both alone, or combined with Dhara, teaches or suggests a communication device having software that causes the communication device to packetize at least a part of a voice input and transmit the packetized voice data to an application server, as recited in claims 1, 9, and 16. Patent Owner's arguments challenging Petitioner's showing as to a motivation to combine these references are addressed in the next section.

(5) Combination of Gilmore, Dhara, and Dodrill

As noted above, Petitioner relies on Gilmore alone as disclosing several limitations of claim 1, but additionally relies on the teachings of Dodrill and/or Dhara in combination with Gilmore as to certain limitations.

In particular, as to limitations 1a–1d (a speaker, input device, one or more processors, and a memory), Petitioner asserts, relying in part on the declaration testimony of Dr. Lipoff, that an ordinarily skilled artisan would have understood that Gilmore's system included those components (Pet. 14–15 (citing Ex. 1005 ¶¶ 3, 30, 33, 39, 44, 50, 53, Figs. 1, 2; Ex. 1021 ¶¶ 76–79)), but additionally relies on Dhara's explicit disclosure of such elements (*id.* at 15–16 (citing Ex. 1009 ¶¶ 19, 21, 22, Fig. 2; Ex. 1021 ¶ 80)).

Petitioner presents evidence, including the testimony of Dr. Lipoff, which we credit, that a skilled artisan would have been motivated to include

Dhara's software to permit Gilmore's computer-based devices to interact with an IVR system, as disclosed in Gilmore, using call-in or audio command features described in Dhara. *Id.* at 18 (citing Ex. 1005 ¶¶ 30, 31; Ex. 1021 ¶ 81). Petitioner also presents evidence that "[a] skilled artisan would also have found it obvious to use Dhara's device-side software to provide access to web-browsing and customization in an IVR, such as Gilmore's system, such as for audio commands or processing instruction scripts on the user device." *Id.* (citing Ex. 1009 ¶¶ 5, 40–42; Ex. 1021 ¶ 81). Petitioner persuasively asserts that the combination of Gilmore and Dhara, as argued, would have combined known operations and functions in their ordinary and expected manner. *Id.* at 18–21 (citing Ex. 1021 ¶¶ 82–86).

As to limitations 1e, 1f, and 1l (which relate to capturing voice input via an input device, packetizing at least part of it, and transmitting it over a data connection), Petitioner presents evidence that Gilmore discloses the gateway receives spoken input from the caller and also discloses transmitting packetized data over an Internet-protocol based network (such as VoIP). *Id.* at 21–22, 43 (citing Ex. 1005 ¶¶ 30, 31, 35, 39, 49, 50). Relying in part on the testimony of Dr. Lipoff, Petitioner also presents evidence that Dhara confirms the ordinarily skilled artisan would have been motivated to implement Gilmore's voice capture in software, and would have understood that transmitting and receiving the voice input via an IP network would have involved packetizing the data. *Id.* at 22–23, 43 (citing Ex. 1009 ¶¶ 19, 22, 34, 38; Ex. 1021 ¶¶ 89–91, 119–120).

Limitations 1k2 and 1m (and similar limitations 9j and 16i) relate to a request for processing service from the application server to the communication device, and limitations 1n and 1o (and similar limitations 9n and 9o) specify that the request for processing service comprises an

instruction to present the user the voice representation, which is presented to the user via the speaker, for which Petitioner relies on the combination of Gilmore, Dodrill, and Dhara. *See* § II.D.2.a)(3). Petitioner also relies, in similar manner, on the combination of Gilmore, Dodrill, and Dhara for limitation 16m. *See id.* In particular, Petitioner presents evidence that Dodrill, Gilmore, and Dhara all describe presenting voice prompts to a user on the user's voice-enabled PDA, cell phone, or voice-enabled computer. *See* Pet. 39 (citing Ex. 1005 ¶ 30; Ex. 1006, 11:20–26; Ex. 1009 ¶ 33). Petitioner also presents evidence that Dhara teaches providing software on the user's communication device that outputs audio information using instructions in the voice-browser software. *See id.* (citing Ex. 1009 ¶¶ 32–33). Petitioner further presents evidence that Dodrill discloses similar user-side voice browsers as “thin clients,” and also describes different design options for presenting voice output information, such as creating the voice output at the remote application server and sending the voice output to the user. *See id.* at 39–40 (citing, *e.g.*, Ex. 1005 ¶¶ 39, 115; Ex. 1006, 8:22–24). Petitioner presents evidence that Dodrill, alternatively, teaches sending the user an executable file that contains instructions to present the voice prompts on the user's computer, such as in Figure 7. *Id.* at 40 (citing Ex. 1006, 8:17–22, 11:61–12:29).

We determine that Petitioner has set forth sufficiently why a skilled artisan would have been motivated to combine the teachings of Gilmore, Dodrill, and Dhara in the manner asserted by Petitioner. *See* Pet. 36–42. In particular, relying on the declaration testimony of Dr. Lipoff, Petitioner persuasively argues that the ordinarily skilled artisan “would have been motivated to incorporate Dodrill's additional functionality of sending instructions to present voice representations on Gilmore's voice-enabled

device to improve access to voice-browsing (which Dhara and Dodrill also provide) and to increase the available options for voice applications.” *Id.* at 40 (citing Ex. 1021 ¶ 117). Petitioner also persuasively argues that the ordinarily skilled artisan would have realized that shifting some processing to a capable user device would help eliminate the bottleneck of the server executing and transmitting streamed audio, thus freeing resources on the server to perform other processing, while also mitigating potential quality issues. *Id.* at 40–41 (citing Ex. 1021 ¶¶ 117, 118).

Petitioner similarly reasons, for claim 16, that the ordinarily skilled artisan would also have been motivated to provide instructions that retrieve the audio from a remote URL source (e.g., “wavurl1”) to reduce the amount of data being sent from voice gateway 108/208 to the user device by allowing the user’s device to retrieve the files directly rather than using the voice gateway as an intermediary. *Id.* at 53–55. Relying in part on the testimony of Dr. Lipoff, which we credit, Petitioner asserts that “[t]his is because providing an executable instruction to retrieve the audio file increases the processing efficiency of the overall IVR system by moving the fetch and execution operations to the user’s computer.” *Id.* at 54–55 (citing Ex. 1021 ¶ 158). Petitioner also persuasively reasons that modifying Gilmore’s system to incorporate Dodrill’s sending of instructions to present audio prompts, or retrieving content from a remote source, merely combines known operations and functions in their expected manner when combined. *Id.* at 42, 55 (citing Ex. 1021 ¶¶ 118, 159).

We find that Petitioner has articulated reasoning supported by sufficient rational underpinning to support the combination of Gilmore, Dodrill, and Dhara as to these limitations. We address below Patent Owner’s challenges to the combination of Gilmore, Dodrill, and Dhara.

(a) *Patent Owner's contentions*

Patent Owner raises several points in arguing that the ordinarily skilled artisan would not have been motivated to combine the teachings of Gilmore and Dodrill and/or Dhara. PO Resp. 51–59. In particular, Patent Owner contends: (1) Gilmore and Dodrill are nonanalogous art (*id.* at 52–53); (2) combining the teachings of Gilmore and Dodrill would require fundamental changes to one or both references (*id.* at 54–56); (3) Gilmore teaches away from Dodrill (*id.* at 56–57); (4) combining Gilmore and Dhara would result in redundant components with no or irrelevant advantages (*id.* at 57–58); and (5) Petitioner's proposed combination is motivated by hindsight (*id.* at 59). We address each of these contentions in turn below.

(i) *Nonanalogous art*

Patent Owner's contention that Gilmore and Dodrill are nonanalogous art is premised on three points: (1) Gilmore and Dodrill are not both directed to remotely-executing voice applications because Gilmore's VoiceXML scripts are not applications, and Dodrill defines "XML applications" differently than Gilmore and Petitioner do; (2) Gilmore relates to live, interactive telephone calls to an IVR system, whereas Dodrill relates to a user's interaction with a web browser to retrieve voice mails over the Internet; and (3) Gilmore's execution environment is an application server, but Dodrill's execution is done on a web browser on a client device. PO Resp. 52–53 (citing Ex. 2007 ¶¶ 126–129).

The test for determining whether a prior art reference constitutes analogous art to the claimed invention is: (1) whether the prior art is from the same field as the inventor's endeavor, regardless of the problem addressed; and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular

problem with which the inventor is involved. *See In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). A reference is “reasonably pertinent” to a problem if it “logically would have commended itself to an inventor’s attention in considering his problem.” *In re Icon Health & Fitness, Inc.*, 496 F.3d 1374, 1379–80 (Fed. Cir. 2007) (quoting *In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992)).

Patent Owner’s contentions are unavailing because, as Petitioner correctly notes, Patent Owner has not addressed either prong of the test for nonanalogous art. *See* Reply 23. In particular, Patent Owner has not addressed whether either Gilmore or Dodrill are within the *field of the inventor’s endeavor*, much less whether they are reasonably pertinent to that field. Rather, Patent Owner compares the fields of endeavor of Gilmore and Dodrill to *each other*, which misses the mark. *See* PO Resp. 52–53.

In any event, we agree with Petitioner that both Gilmore and Dodrill are in the same field of endeavor as the ’032 patent, which is described as “the field of communication systems, and more particularly to a method and system that enables a communication device to remotely execute an application.” Ex. 1001, 1:20–23; *see* Reply 23. Gilmore and Dodrill both describe methods and systems enabling communication devices to remotely execute applications on voice gateway 108/208 (Gilmore) or gateserver 92 (Dodrill). *See* Pet. 5–8, 11–13; Ex. 1005 ¶¶ 31, 33–34, 39–48; Ex. 1006, Abstract, 5:6–24, 9:12–24, 11:19–26, 11:61–12:30, Fig. 7. Petitioner also notes, and we agree, that Patent Owner’s argument that Dodrill’s interactive voice applications may be voicemail applications (PO Resp. 52–53) is irrelevant because nothing limits the ’032 patent, Gilmore, or Dodrill to particular types of applications. *See* Reply 24. Rather, all three generally disclose remotely executed interactive voice application systems, making

Gilmore and Dodrill analogous art because they are in the same field of endeavor of the '032 patent.

Based on the record before us, we find that both Gilmore and Dodrill are analogous art to the field of invention of the '032 patent.

(ii) *Fundamental changes to the prior art*

Patent Owner next argues that “[a]lthough both *Gilmore* and *Dodrill* include disclosure concerning XML, the operation of their disclosed embodiments are fundamentally different, and combining them would require changes to one or both references that would render them unsuitable for their intended purpose.” PO Resp. 54.

First, Patent Owner argues that, because Gilmore’s applications (VoiceXML scripts) are not the same thing as the applications of Dodrill (web pages), the ordinarily skilled artisan would not have been motivated to use Dodrill’s database with Gilmore. *Id.* In so arguing, Patent Owner takes a literal approach, asserting that “[a]pplying *Dodrill*’s database to *Gilmore* would result in *Dodrill*’s web pages being sent to *Gilmore*’s voice application—which expects VoiceXML scripts to process,” and vice versa— “[a]pplying *Gilmore*’s VoiceXML scripts to *Dodrill* would result in VoiceXML scripts being sent directly to a web browser—which expects an HTML page.” *Id.* at 54–55.

Patent Owner additionally argues that “Petitioner fails to explain how the web page of *Dodrill* would be applied to the alleged communication device of *Gilmore*, which serves the function of a telephone.” *Id.* at 55. Patent Owner continues, “[t]here is simply no disclosure in *Gilmore* that would support the HTML-based voice messaging web page of *Dodrill* without significant redesign and experimentation, none of which is discussed in the Petition or in Petitioner’s expert’s declaration.” *Id.* at 55–56.

Patent Owner's arguments are unavailing, as a proposed combination of references is not limited to a bodily incorporation of the features of one reference into another. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) ("The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference."); *In re Nievelt*, 482 F.2d 965, 968 (CCPA 1973) ("Combining the teachings of references does not involve an ability to combine their specific structures.") (emphasis omitted). Here, Patent Owner's assertion that Gilmore's VoiceXML scripts and Dodrill's web pages are not inter-operative focuses improperly on the bodily incorporation of Gilmore's VoiceXML scripts with Dodrill's web pages, rather than what these references would have taught to one of ordinary skill in the art. Similarly, with regard to the questions Patent Owner poses to address design changes needed to incorporate Dodrill's teachings with Gilmore (PO Resp. 56 (citing Ex. 2007 ¶ 135)), we find such alleged changes are, to a large extent, irrelevant, as they are based on Patent Owner's flawed premise of bodily incorporation.

We find Petitioner has shown persuasively what a person of ordinary skill in the art, who is also a person of ordinary creativity, would have appreciated from the combined teachings of the references. *See* Pet. 18–21, 39–42, 53–55; *see also KSR*, 550 U.S. at 421. Contrary to Patent Owner's suggestion, the Petition does not rely solely on a "telephone call" in Gilmore, but also relies on data network connections (e.g., VoIP, IP) in Gilmore and Dodrill that send voice and data. Pet. 22, 23, 26, 78. Gilmore and Dodrill both disclose remote application execution over data networks using IP phones, PDAs, and voice-enabled computers. Ex. 1005 ¶¶ 30–31; Ex. 1006, 8:18–24, 11:61–12:30; Pet. 39–42, 66–68, 72–74. Dodrill discloses that user devices can receive data and voice information and

include browsers and voice resource software to execute instructions at the user device (e.g., VoiceXML, XML)—a “request for processing service.” Ex. 1006, 7:60–62, 9:6–11, 11:61–12:30; Pet. 29, 47–62; *see also* Ex. 1009 ¶¶ 20–21, 23 (confirming VoiceXML instruction execution on a user device using a browser). Petitioner’s combination of Gilmore and Dodrill merely moves the location of processing from one known location (remote server) to another (user device), supporting a finding of obviousness. *See Uber Techs., Inc. v. X One, Inc.*, 957 F.3d 1334, 1338–42 (Fed. Cir. 2020) (holding that moving the location of processing from a remote server to a user device was obvious, regardless of underlying technological compatibility); *see also KSR*, 550 U.S. at 417 (“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.”).

We also find credible and persuasive the testimony of Dr. Lipoff on these issues. For example, we credit Dr. Lipoff’s testimony that the ordinarily skilled artisan would have had reason to combine Dodrill’s instruction to present voice presentation to the user as part of the request for processing with Gilmore’s interactive voice response system because it would “improve access to voice-browsing (which Dhara and Dodrill also provide) and to increase the available options for XML voice applications.” Ex. 1021 ¶ 117. We also credit Dr. Lipoff’s testimony that the ordinarily skilled artisan would have known that “incorporating Dodrill’s alternative to send an executable with an instruction to present audio to the user would result in merely adding known functionality to Gilmore’s system.” *Id.* ¶ 118. We also credit Dr. Lipoff’s testimony that the ordinarily skilled

artisan would also have been motivated to provide instructions that retrieve the audio from a remote URL source (as in Dodrill) to reduce the amount of data being sent from Gilmore's voice gateway to the user device by allowing the user's device to retrieve the files directly rather than using the voice gateway as an intermediary, and that doing so would combine known instruction operations and functions in an expected manner to achieve the same result in the combined operation. *Id.* ¶¶ 158–159.

For the foregoing reasons, we disagree with Patent Owner that combining Dodrill's teachings with Gilmore would have required changes to either system that would have been beyond the skill of the ordinarily skilled artisan.

(iii) *Teaching away*

Patent Owner also argues that the systems of Gilmore and Dodrill are “fundamentally different,” basing this contention on statements in the Gilmore provisional application (Exhibit 2028) that distinguish web applications and voice applications. PO Resp. 56–57 (citing Ex. 2028, 6, 2). Patent Owner then states that Gilmore's system has a host system with an application server, which Patent Owner states is a “fundamentally different type of system than *Dodrill*.” *Id.* at 57 (citing Ex. 2007 ¶ 136).

A reference teaches away from a combination when, for example, a person of ordinary skill in the art would be discouraged from following the path set out in the reference, or would be led in a direction divergent from that chosen by the inventor. *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). “[I]n general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant.” *Id.*

Patent Owner’s arguments are both conclusory and legally unavailing. Even assuming that Gilmore and Dodrill disclose different types of systems, being “different” is not teaching away, which “requires ‘clear discouragement’ from implementing a technical feature.” *Univ. of Md. Biotechnology Inst. v. Presens Precision Sensing GmbH*, 711 F. App’x 1007, 1011 (Fed. Cir. 2017) (quoting *In re Ethicon, Inc.*, 844 F.3d 1344, 1351 (Fed. Cir. 2017)). Patent Owner does not identify anything in Gilmore or Dodrill that discourages sending executable instructions to Gilmore’s devices. *Cf.* Pet. 36–42. Patent Owner’s arguments also rely on differences between graphical and voice interfaces (PO Resp. 56–57), which are irrelevant because Gilmore and Dodrill describe voice interface systems, not graphical ones, to remotely execute interactive voice applications. *See* Pet. 5–8, 11–13, 36–42. Furthermore, even considering the Gilmore provisional application, we note that it confirms the “tremendous similarities” in the systems, explaining that “VoiceXML-based voice technologies are designed to work in the same general model used for Web pages” and are “interpreted in a browser (voice gateway),” like Dodrill’s system and device browser. Ex. 2028, 8, 27.

(iv) *Redundant components*

With regard to combining the teachings of Gilmore and Dhara, Patent Owner argues the ordinarily skilled artisan would not have been motivated to “combine the features of the two systems into a single system” because they “independently accomplish similar functions—namely, offering IVR/VoiceXML functionality,” and “each device independently operates effectively on its own.” PO Resp. 57–58. Patent Owner further contends “Petitioner fails to provide sufficient evidence or technical reasoning to establish that the system of *Gilmore* is inadequate for providing

IVR/VoiceXML functionality, such that further modification of the system to place those components on a communication device is necessary.” *Id.* at 58.

Petitioner counters that “the law does not require inoperability or inadequacy for a skilled artisan to combine systems.” Reply 27 (citing *KSR*, 550 U.S. at 415, 418–21). We agree with Petitioner. Where, as here, the combination merely moves the processing from one known location to another, a finding of obviousness is supported. *See Uber*, 957 F.3d at 1338–42.

Notably, in making this argument, Patent Owner does not address any of the Petition’s specified motivations for the combination or dispute that a skilled artisan would have expected success in the combination. *See* Pet. 15–21. Rather, Patent Owner relies on *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1369 (Fed. Cir. 2012), for the proposition that hindsight is the only reason to combine references where an advantage provided by one reference is redundant to another reference. *See* PO Resp. 57–58. Patent Owner’s argument and citation are unavailing. The court in *Kinetic Concepts* found no motivation to combine in that case because the record was “devoid of any reason” to combine the references. 688 F.3d at 1369. Here, in contrast, we find the Petition provides persuasive reasons based on the references’ disclosures and testimony of Dr. Lipoff to combine Gilmore and Dhara—none of which Patent Owner persuasively rebuts. *See* Pet. 18–21; Ex. 1021 ¶¶ 81–86.

(v) *Hindsight*

Finally, invoking the testimony of Dr. Rhyne, Patent Owner asserts, tersely, that “Petitioner’s approach to proving obviousness represents an improper use of hindsight in a deliberate attempt to fish for disclosure in the

prior art based on the teachings of the '032 Patent rather than through a POSITA's understanding of the art." PO Resp. 59 (citing Ex. 2007 ¶¶ 139–142). We disagree. As discussed above, we find that Petitioner has articulated reasoning supported by evidentiary bases as to why the ordinarily skilled artisan would have combined the references in the manner proposed by Petitioner. In that regard, Petitioner's reasoning does not rely only on knowledge gleaned from the '032 patent's disclosure. *See In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971) ("Any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper."). We find that Petitioner's showing is not premised on an improper hindsight reconstruction.

(6) Conclusion

Having considered the parties' arguments and evidence, we find Petitioner has demonstrated sufficiently that the teachings of Gilmore and Dodrill and/or Dhara have been properly combined and an ordinarily skilled artisan would have found it obvious to combine these teachings in the manner proposed by Petitioner.

Therefore, after having analyzed the entirety of the record and assigning appropriate weight to the cited supporting evidence, we determine Petitioner has shown by a preponderance of the evidence that independent claims 1, 9, and 16 are unpatentable over the combination of Gilmore, Dodrill, and Dhara.

b) Dependent Claims

Claims 2–5, 7, and 8 depend, directly or indirectly from claim 1; claims 10–14 depend, directly or indirectly, from claim 9; and claims 17–21 depend, directly or indirectly, from claim 16. As such, they also include the above-discussed limitations. The dependent claims specify, for example, that the communication device includes a voice recognition application (claim 3); that the communication/client device comprises a thin client wireless device (claims 4, 13, and 20); and that the input device comprises a microphone or a receiver (claims 5, 14, 21).

Petitioner persuasively maps the limitations of the dependent claims to the cited art (and to the testimony of Dr. Lipoff in support of the combination of references).¹² See Pet. 57–80 (citing, for **claim 2**: Ex. 1005 ¶¶ 30, 31, 35, 39, 49, 50; Ex. 1009 ¶¶ 19, 22, 34, 38; Ex. 1021 ¶¶ 167–171; for **claim 3**: Ex. 1005 ¶¶ 3, 37, 50; Ex. 1009 ¶¶ 26, 28, 30, 34, 37, 38, claim 24; Ex. 1021 ¶¶ 173–177; for **claims 4, 13, and 20**: Ex. 1005 ¶ 30; Ex. 1006, Abstract, 3:8–22, 5:6–24, 11:61–12:30; Ex. 1021 ¶¶ 179–185; for **claims 5, 14, and 21**: Ex. 1005 ¶¶ 30, 33, 44, 39, 53, Figs. 1 and 2; Ex. 1009 ¶¶ 21, 22, Fig. 2; Ex. 1021 ¶ 186; for **claims 7 and 12**: Ex. 1005 ¶¶ 33, 34, 38, 39, Fig. 2; Ex. 1006, 7:16–19, 8:18–24, 9:12–24, 9:29–32, 10:22–28, 11:66–12:30; Ex. 1009 ¶ 19; Ex. 1021 ¶¶ 187–195; for **claim 8**: Ex. 1005 ¶¶ 34, 51; Ex. 1021 ¶¶ 196; for **claim 17**: Ex. 1005 ¶¶ 66–69, 71–72; Ex. 1006, 12:55–60; Ex. 1021 ¶¶ 200–201; for **claim 18**: Ex. 1005 ¶¶ 42, 45, 65–85, 115; Ex. 1006, Fig. 4; Ex. 1021 ¶¶ 203–210, for **claims 10 and 19**: Ex. 1005 ¶¶ 40, 45, 46, 52, 75; Ex. 1021 ¶¶ 211; and for **claim 11**: Ex. 1005 ¶¶ 33–34,

¹² Petitioner provides citations for limitations of certain claims by reference to earlier sections of the Petition discussing similar elements of other claims.

39–48, 103, Fig. 9; Ex. 1006 8:18–24, 9:12–24, 11:66–12:30, Fig. 7; Ex. 1021 ¶ 198). We find Petitioner’s arguments and evidence to be persuasive, and we find, for the reasons expressed by Petitioner, that the cited art teaches or suggests each of these limitations and that the ordinarily skilled artisan would have been motivated to combine the cited references in the manner proposed by Petitioner. We address below specifically the challenges Patent Owner has raised as to these dependent claims.

Patent Owner addresses claims 2, 7, 8, 12, and 19 in conclusory fashion, stating Petitioner’s showing as to those claims fails based on arguments Patent Owner made regarding claim 1. *See* PO Resp. 60. Patent Owner’s mention of claim 2 is in connection with its argument that Gilmore does not disclose moving or execution of applications by an application server (*id.* at 40)—an argument that we address *supra* in Section III.D.2.a)(1). Patent Owner’s mention of claim 7 (element 7a), claim 8, and claim 12 (element 12a) is in connection with its argument that Gilmore does not disclose a communication device that generates packetized voice data (PO Resp. 51)—which we address *supra* in Section III.D.2.a)(4). Patent Owner’s mention of claims 10 and 19 is in connection with its argument that Gilmore’s VoiceXML scripts are not applications (PO Resp. 38)—which we address *supra* in Section III.D.2.a)(1).

Patent Owner also mentions claim 11 in conclusory fashion, stating that “Petitioner provides no additional analysis for dependent Claim 11 other than to say that it would be the same as the analysis for Element [1m], and that *Gilmore* discloses it.” PO Resp. 60. Patent Owner then contends “*Gilmore* does not disclose where a request for processing service is received by a communication device from the application server over the

first communication link.” *Id.* We address this argument *supra* in Section III.D.2.a)(3).

Patent Owner then challenges Petitioner’s showing as to dependent claims 4–6, 13–15, and 20, which recite that the communication/client device “comprises a thin client wireless device.” PO Resp. 60. Patent Owner argues that “[w]hile *Dodrill* generally discusses ‘thin clients’ it does not disclose a ‘thin client’ wireless device. In fact, *Dodrill* defines thin clients as desktop computers (which themselves have web browsers and executable voice resources).” PO Resp. 60 (citing Ex. 1006, 3:16–17, 8:50–58). Thus, continues Patent Owner, “while *Dodrill* uses some of the same words as the challenged claims, they are given a different meaning than a POSITA would apply at the time of and in the context of the ’032 Patent.” *Id.* at 60–61 (citing Ex. 2007 ¶¶ 161, 188, 207).

Petitioner responds that *Dodrill*’s personal computer “is only one ‘example of a thin client,’” and states that “*Dodrill* also describes IP phone-based browsers, e.g., mobile phones.” Reply 28–29 (citing Ex. 1006, 3:16–22, 9:6–11; Pet. 65–68). Petitioner also notes that it relies on “Gilmore’s wireless cell phones and PDAs as ‘thin client wireless device[s],” whose “browser and processing capabilities were well known to skilled artisans.” *Id.* at 29 (citing Pet. 15–21, 64–68; Ex. 1009 ¶¶ 7, 23–24, 30; Ex. 1006, 7:60–62, 9:6–11). We find Petitioner’s arguments and evidence to be persuasive, and agree that both *Dodrill* and Gilmore teach thin client wireless devices. Patent Owner’s argument that *Dodrill* discloses “thin clients” only in the context of desktop computers is contradicted by the record and is unavailing.

We find Petitioner has demonstrated, by a preponderance of the evidence, that the combination of Gilmore, *Dodrill*, and Dhara teaches or

suggests the subject matter of dependent claims 2–5, 7, 8, 10–14, and 17–21. In addition, for essentially the reasons we discuss above as to the independent claims (§ III.D.2.a)(5), we determine Petitioner has made a sufficient showing that the references are properly combined and an ordinarily skilled artisan would have found it obvious to combine the teachings of Gilmore, and Dodrill and/or Dhara in the manner proposed by Petitioner. *See* Pet. 58–64, 66–68, 72–74, 77–79. In particular, Petitioner presents evidence and argument as to the dependent claims that the ordinarily skilled artisan would have been motivated to combine the teachings of Gilmore and Dodrill and/or Dhara in the manner stated by Petitioner to distribute processing and to increase processing efficiency, and would have known that the modification combines known operations and functions in the expected manner when combined. *See id.* We also credit, and rely upon, the supporting testimony of Dr. Lipoff in that regard, including Dr. Lipoff’s testimony that not only would the ordinarily skilled artisan have been motivated to make the combination, for the reasons articulated by Petitioner, but would have also reasonably expected to succeed in making the combination. *See* Ex. 1021 ¶¶ 168–171, 175–177, 182–185, 192–195, 206–120.

3. Ground 1: Conclusion

After having analyzed the entirety of the record and assigning appropriate weight to the cited supporting evidence, we determine Petitioner has shown by a preponderance of the evidence that claims 1–5, 7–14, and 16–21 are unpatentable over the combination of Gilmore, Dodrill, and Dhara.

E. Ground 2: Asserted Obviousness over Gilmore, Dhara, Dodrill, and Patel

Petitioner contends claims 6, 15, 22, and 23 are unpatentable under 35 U.S.C. § 103(a) over the combination of Gilmore, Dhara, Dodrill, and Patel. Pet. 80–85.

1. Overview of Patel (Ex. 1007)

Patel is a published U.S. Patent Application entitled “System and Method for Improved Contact Center Services to Disabled Callers” (Ex. 1007, code (54)). Patel was filed on May 11, 2005, and published on November 16, 2006 (*id.* at codes (22), (43)); accordingly, it is prior art under 35 U.S.C. §§ 102(a), (e). *See* Pet. 1.

Patel is directed to a system for providing automated voice response call services. Ex. 1007 ¶¶ 2, 10. In particular, “[w]hen a person with a disability calls into a call or contact center the caller’s disability is identified . . . an initial menu prompt may ask the caller to make a certain keypad, touch-tone, or voice response if they have a disability and would like to receive special treatment.” *Id.* ¶ 15. Caller devices “include[] a user interface (e.g., keypad, voice, touch-screen, etc.) that enables the caller to input data” such as “keypad or touch-tone input.” *Id.* ¶ 18. Further, those features “may be downloaded as a computer program product, wherein the program may be transferred from a remote computer (e.g., a server) to a requesting process (e.g., from a caller device).” *Id.* ¶ 26.

2. Analysis

Claims 6, 15, and 22 recite that the thin client wireless device comprises a touchscreen. Ex. 1001, 14:19–20, 15:16–17, 16:30–31. Claim 23 depends, indirectly, from claim 22, and recites “wherein the content comprises video.” *Id.* at 16:32–33.

Petitioner persuasively maps the limitations of claims 6, 15, and 22 to Patel, which discloses thin client wireless devices comprising a “touch-screen” user interface, such as cell phones, PDAs, or computers. Pet. 81 (citing Ex. 1007 ¶¶ 14, 17, 18). In particular, Petitioner presents evidence that, “[l]ike Gilmore, Dhara, and Dodrill, Patel’s communications devices allow users to provide ‘responses to IVR prompts, password information, a speech pattern or signature of the caller, voice commands (i.e., spoken words), and keypad or touch-tone inputs.’” *Id.* (citing Ex. 1007 ¶ 18). Patel also explains, like Gilmore and Dodrill, that the communication devices, such as a computer, cell phone, or PDA, allow a user to interact with an IVR system. Ex. 1007 ¶ 14.

Relying on the testimony of Dr. Lipoff, Petitioner reasons that the ordinarily skilled artisan would have understood from reading Patel that responding to IVR inputs using a touchscreen corresponds to responding to a prompt from an interactive voice system, such as Gilmore or Dodrill, and thus “would have found it obvious to incorporate Patel’s touchscreen into the thin client communication devices” of Dodrill and Gilmore “to expand the types of response input options and functionality.” Pet. 81 (citing Ex. 1021 ¶ 213); *see also id.* at 82 (citing Ex. 1005 ¶¶ 3, 115; Ex. 1006, 12:13–19; Ex. 1021 ¶ 214). Petitioner additionally presents the testimony of Dr. Lipoff supporting the assertion that the ordinarily skilled artisan would have expected success in making the combination because “incorporating a touchscreen into a PDA, cell phone, or voice-enabled computer . . . involved only the known application of conventional technologies operating in their ordinary and predictable manner.” *Id.* at 83 (citing Ex. 1021 ¶ 215). We find Petitioner’s arguments and evidence (including the testimony of Dr. Lipoff, which we credit) to be persuasive.

Petitioner persuasively maps the limitation of claim 23 to the teachings of Dodrill, which Petitioner contends “teaches retrieving content other than .wav audio files, including ‘text, graphics, streaming video, sound, etc.’” *Id.* at 83 (citing Ex. 1006, 7:44–50, 12:5–14). Relying in part on the declaration testimony of Dr. Lipoff, which we credit, Petitioner contends “[a] skilled artisan would have been motivated to provide for retrieving and presenting video content to expand resources and content available to the user of the IVR system and to provide the user with information that cannot be presented by audio alone,” and “retrieving and presenting video content from a remote source, as taught by Dodrill, in Gilmore’s IVR system merely combines known operations and functions in their expected manner when combined.” *Id.* at 84–85 (citing Ex. 1003 ¶¶ 218–221).

Patent Owner makes no specific arguments directed toward the claims at issue in Ground 2, but instead relies on arguments set forth for independent claims 1, 9, and 16 in connection with Ground 1. *See* PO Resp. 60–61.

We find Petitioner has shown by a preponderance of the evidence that the combination of Gilmore, Dodrill, Dhara, and Patel teaches or suggests the subject matter of claims 6, 15, 22, and 23. *See* Pet. 81–85. In addition, we determine Petitioner has made a sufficient showing that the references are properly combined and an ordinarily skilled artisan would have found it obvious to combine the teachings of Gilmore, Dhara, Dodrill, and Patel. *See id.*

3. Conclusion

For all of the foregoing reasons, and after having analyzed the entirety of the record and assigning appropriate weight to the cited supporting

evidence, we determine Petitioner has shown by a preponderance of the evidence that claims 6, 15, 22, and 23 are unpatentable over the combination of Gilmore, Dhara, Dodrill, and Patel.

IV. CONCLUSION¹³

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–5, 7–14, 16–21	103(a)	Gilmore, Dhara, Dodrill	1–5, 7–14, 16–21	
6, 15, 22, 23	103(a)	Gilmore, Dhara, Dodrill, Patel	6, 15, 22, 23	
Overall Outcome			1–23	

V. ORDER

Accordingly, it is

ORDERED that claims 1–23 of U.S. Patent No. 10,264,032 B1 are held unpatentable under 35 U.S.C. § 103 as obvious; and

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

¹³ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

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