

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

WAG ACQUISITION, L.L.C.,
Patent Owner.

IPR2022-01413
Patent 9,762,636 B2

Before HUBERT C. LORIN, JOHN A. HUDALLA, and
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

LORIN, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
Dismissing Petitioner's Motion to Exclude
35 U.S.C. § 318(a)

I. INTRODUCTION

This is a Final Written Decision in an *inter partes* review challenging the patentability of claims 1–12 of U.S. Patent No. 9,762,636 B2 (Ex. 1001, “the ’636 patent”). We have jurisdiction under 35 U.S.C. § 6.

Petitioner has the burden of proving unpatentability of each claim by a preponderance of the evidence. 35 U.S.C. § 316(e) (2018). Having reviewed the arguments of the parties and the supporting evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1–12 are unpatentable.

A. Background

Google LLC (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1–12 of the ’636 patent. WAG Acquisition, L.L.C. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

After institution (Paper 7, “DI”), Patent Owner filed a Patent Owner Response (Paper 10, “PO Resp.”); Petitioner filed a Reply (Paper 13, “Pet. Reply”); and Patent Owner filed a Sur-reply (Paper 16, “PO Sur-reply”).

On January 4, 2024, the parties presented arguments at an oral hearing, the transcript of which is of record. Paper 33.

B. Related Proceedings

Petitioner indicates that the ’636 patent is asserted in pending district court litigation styled *WAG Acquisition, L.L.C. v. Google LLC*, No. 6:21-cv-00816-ADA (W.D. Tex.). Pet. 1; *see also* Paper 3 (Patent Owner’s Mandatory Notices), 2.

Petitioner indicates that the '636 patent is also the subject of the following other pending district court litigations:

- *WAG Acquisition, L.L.C. v. The Walt Disney Company*, No. 2:21-cv-08230 (C.D. Cal., filed Oct. 18, 2021); and,
- *WAG Acquisition, L.L.C. v. Amazon.com, Inc.*, No. 6:21-cv-00815 (W.D. Tex., filed Aug. 6, 2021).

Pet. 1; Paper 3, 2.

Petitioner also makes us aware that the '636 patent is the subject of Office proceeding IPR2022-01227 (P.T.A.B.) (filed July 13, 2022). Pet. 2. Patent Owner makes us aware that the '636 patent is also the subject of Office proceeding IPR2022-01433 (P.T.A.B.) (filed Aug. 23, 2022). Paper 3, 5. Final written decisions have issued in each of these proceedings. IPR2022-01227, Paper 27; IPR2022-01433, Paper 26.

Patent Owner makes us aware of other district court litigations involving U.S. Patent Nos. 6,766,376, 8,122,141, 8,185,611, 8,327,011, 8,364,839, 9,729,594, and 9,742,824 related to the '636 patent. Paper 3, 3–4. Patent Owner makes us aware of other Office proceedings involving U.S. Patent Nos. 8,122,141, 8,185,611, 8,327,011, 8,364,839, 9,729,594, and, 9,742,824 related to the '636 patent. *Id.* at 5–8.

C. Real Party in Interest

Petitioner identifies Google LLC and YouTube, LLC as real parties in interest. Pet. 1. According to Patent Owner, “WAG ACQUISITION, L.L.C. is the real party in interest.” Paper 4, 2.

D. The '636 Patent (Ex. 1001)

1. Disclosure

The '636 patent, titled “Streaming Media Delivery System,” relates to “systems and methods for delivering streaming media, such as audio and video, on the Internet.” Ex. 1001, code (54), 1:52–55.

The '636 patent describes problems with prior-art streaming technologies, where “users viewing or listening to streaming content over Internet connections often encounter interruptions, due to the frequency of unanticipated transmission delays and losses that are inherent in many Internet protocols.” Ex. 1001, 2:34–38. The patent describes prior-art methods of addressing this, involving a “pre-buffering technique to store up enough audio or video data in the user’s computer so that it can play the audio or video with a minimum of dropouts.” *Id.* at 2:42–45. After several seconds waiting for playback to begin, the “audio or video data is delivered from the source at the rate it is to be played out.” *Id.* at 2:63–65. Playback would continue, but could still be interrupted by network interruptions. *Id.* at 3:5–41.

The '636 patent addresses this by, for example, “sending initial streaming media elements to the user system at a sending rate more rapid than the playback rate, to fill the user buffer,” and then continuing sending media elements “at about the playback rate.” Ex. 1001, 3:60–64. Figure 1, reproduced below, shows a block diagram of the elements of the streaming media buffering system of the '636 patent. *Id.* at 4:23–25.

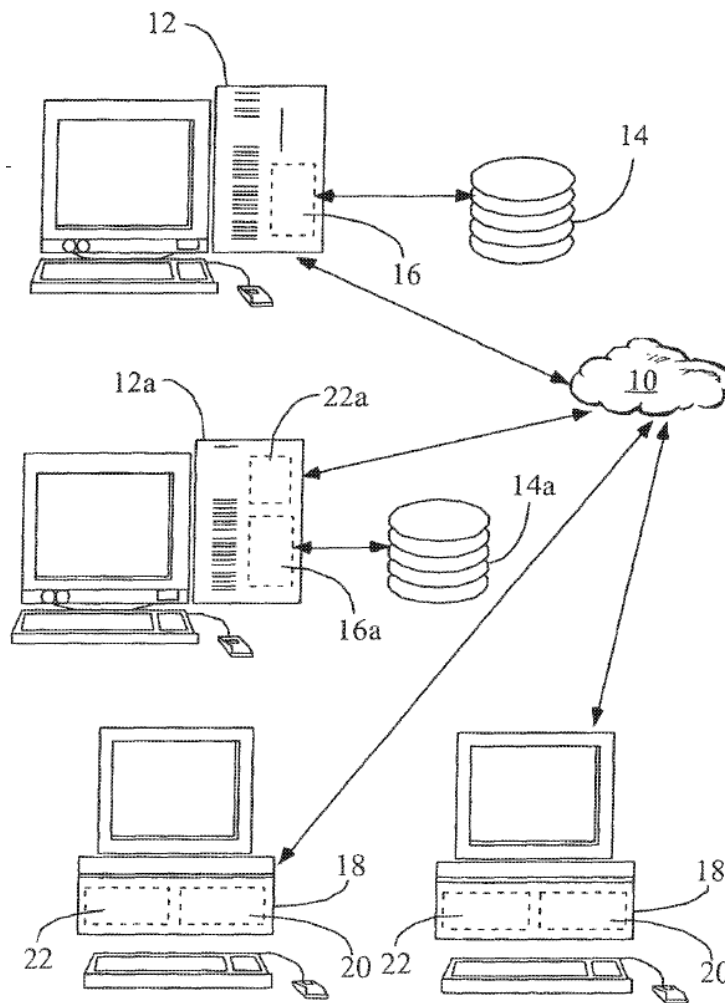


Figure 1 shows streaming server 12, Internet 10, server buffer 14, buffer manager 16, and user computer 18 with buffer 20. Ex. 1001, 6:30–52.

When a user connects to the server 12, the server transmits audio/video data, as sequential data elements, from the server's buffer 14 to the user buffer 20 at a higher-than-playback rate. Ex. 1001, 9:36–39. The “media begins to play on the user computer 18 as soon as the user connection is made to the audio server 12 and a minimal amount of data elements have been received and stored in the user's buffer 20.” *Id.* at 9:40–45.

Additionally, the patent describes the user playback device “maintaining a record of the identifier of the last sequential media data element that has been received by said player,” and then “requesting transmission of the next sequential media data elements following said last sequential media data element.” Ex. 1001, 4:7–11. The patent also describes that:

If the interruptions are so severe as to deplete the user’s buffer and stop the play out, the media player can quickly recover as well, by beginning to play out again without waiting to first build up the buffer, as soon as the media player begins to receive media data elements.

Id. at 6:25–29. The “source server 12 sends the media as sequential data elements at a rate dependent on the quality of the connection with each user computer 18.” *Id.* at 11:13–16.

Initially, the user buffer manager 22 requests the server 12 sends media data elements, to start playback. Ex. 1001, 9:46–47. The server sends elements at a rate “higher than the playback rate,” until the server’s buffer has been sent. *Id.* at 9:48–53. A “feedback manager may be associated with user computer 18, including means for sending to the source server the serial number of the last data element received, or for requesting more data.” *Id.* at 10:50–53.

2. Claims 1–12

Claims 1, 5, and 9 are the independent claims, from which claims 2–4, 6–8, and 10–12 depend, respectively. Claim 1 is reproduced below.

1. [preamble]¹ A method for distributing a live audio or video program over the Internet from a server system to a plurality of user systems, the method comprising:

1[a] receiving at the server system a continuous digitally encoded stream for the audio or video program, via a data connection from a live source, in real time, the server system comprising at least one computer;

1[b] upon receipt of the stream by the server system,

1[b(i)] supplying, at the server system, media data elements representing the program, each media data element comprising a digitally encoded portion of the program and having a playback rate,

1[b(ii)] serially identifying the media data elements, said serial identification indicating a time sequence of the media data elements, and

1[b(iii)] storing the media data elements in a data structure under the control of the server system;

1[c] receiving requests at the server system via one or more data connections over the Internet, for one or more of the media data elements stored in the data structure,

1[c(i)] each received request specifying one or more serial identifiers of the requested one or more media data elements,

1[c(ii)] each received request originating from a requesting user system of a plurality of user systems; and

1[d] responsive to the requests, sending, by the server system, the one or more media data elements having the one or more

¹ Petitioner's designations to reference the elements of claim 1 are set forth in brackets. Pet. 13–47. Herein we refer to the elements of claim 1 using Petitioner's designations.

specified serial identifiers, to the requesting user systems corresponding to the requests; wherein

1[d(i)] the data connection between the server system and each requesting user system has a data rate more rapid than the playback rate of the one or more media data elements sent via that connection;

1[d(ii)] each sending is at a transmission rate as fast as the data connection between the server system and each requesting user system allows;

1[d(iii)] the one or more media data elements sent are selected without depending on the server system maintaining a record of the last media data element sent to the requesting user systems;

1[d(iv)] all of the media data elements that are sent by the server system to the plurality of user systems are sent in response to the requests; and

1[d(v)] all of the media data elements that are sent by the server system to the requesting user systems are sent from the data structure under the control of the server system as the media data elements were first stored therein.

Ex. 1001, 16:28–17:8.

E. Asserted References and Testimonial Evidence

Petitioner relies on the following references:

Name	Reference	Ex. No.
Carmel	U.S. Patent No. 6,389,473 B1, issued May 14, 2002	1003
Ravi	U.S. Patent No. 6,292,834 B1, issued Sept. 18, 2001	1004
Narayan	U.S. Patent No. 6,008,853, issued Dec. 28, 1999	1005

Petitioner also relies on the Declaration of Nathaniel Polish, Ph.D. (Ex. 1002), the Reply Declaration of Dr. Polish (Ex. 1111), and the Deposition transcript of W. Leo Hoarty (Ex. 1103) as support for the various contentions.

Patent Owner relies on the Declaration of Mr. Hoarty (Ex. 2002) and the Deposition transcripts of Dr. Polish (Exs. 2006, 2016) as support for the various contentions.

F. Asserted Grounds

Petitioner contends that claims 1–12 of the '636 patent are unpatentable under the following grounds:

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
I	1–12	103(a) ²	Carmel
II	1–12	103(a)	Carmel, Narayan
III	1–12	103(a)	Carmel, Ravi
IV	1–12	103(a)	Carmel, Narayan, Ravi

Pet. 4.

² The Leahy-Smith America Invents Act, Pub. L. No. 112–29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. §§ 102 and 103. Because the challenged claims of the '636 patent have an effective filing date before the effective date of the applicable AIA amendments, we refer to the pre-AIA version of 35 U.S.C. § 103 throughout this Decision.

G. Overview of the Prior Art References

1. Carmel (Ex. 1003)

Carmel describes a method for streaming live or prerecorded media from a server to multiple client computers over the Internet. Ex. 1003, 2:1–21. Clients connect to a server to receive a multimedia sequence, “substantially in real time.” *Id.* at 7:4–5. Figure 3A of Carmel is reproduced below.

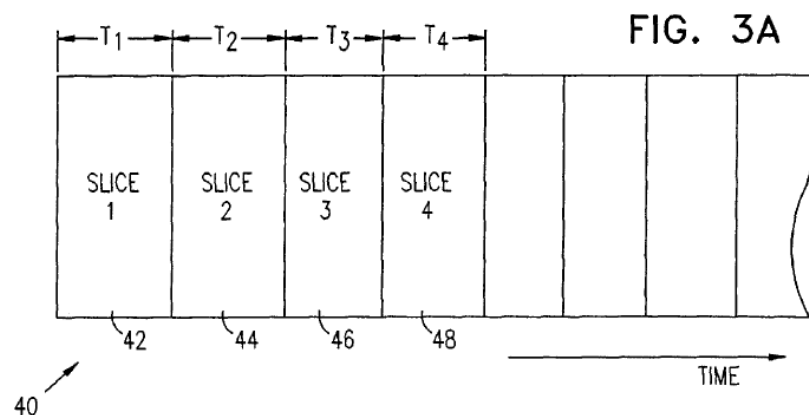


Figure 3A is a block diagram that schematically illustrates a data structure of a stream of broadcast data 40, typically corresponding to a multimedia data sequence. Ex. 1003, 7:18–22.

Data stream 40 comprises a series of data slices 42, 44, 46, 48, etc., with each slice containing a segment of video and/or audio data that corresponds to a respective, successive time interval T_1 , T_2 , T_3 , etc. Ex. 1003, 7:22–25. Each slice is stored as a corresponding file with a running slice index 1, 2, 3, . . . N , and perhaps also a time stamp that indicates a real time at which the data in the file were recorded or an elapsed time relative to the beginning of the stream. *Id.* at 7:27–32. An index file that comprises a slice ID is uploaded to a server, with the slice ID indicating the index of the file in the data stream that was most recently uploaded. *Id.*

at 7:59–64. Each time a new file is uploaded, the slide ID is updated. *Id.* at 7:65–66.

When a client computer connects to the server, the client computer downloads and analyzes the index file to identify at what point in the stream to begin to receive the data stream from that point in substantially real time as it is transmitted. Ex. 1003, 8:1–7. For example, a user interface graphic “slider” may be displayed to computer users, allowing individual users to select the starting point of the streamed media. *Id.* at 8:17–31.

2. *Ravi (Ex. 1004)*

Ravi, titled “Dynamic Bandwidth Selection for Efficient Transmission of Multimedia Streams in a Computer Network,” relates “to the efficient and reliable delivery of multimedia streams over a diverse computer network with dynamically variable bandwidth capacity.” Ex. 1004, code (54), 1:56–60. Ravi seeks “efficient transmission of multimedia streams from a server to a client computer over a diverse computer network including local area networks (LANs) and wide area networks (WANs) such as the internet.” *Id.* at 3:2–6. The “client computer includes a playout buffer, and the transmission rate is dynamically matched to the available bandwidth capacity of the network connection between the server and the client computer.” *Id.* at 3:11–15. The “performance bottleneck is the bandwidth capacity of the network connection.” *Id.* at 7:6–10.

2. *Narayan (Ex. 1005)*

Narayan, titled “Sub-Frame Decoder with Area Dependent Update Rate for Digital Camcorder Transmission Standard,” relates to “encoded video image decoding and especially software only decoding on a personal

computer.” Ex. 1005, code (54), 1:10–12. Narayan “employs a digital camcorder to generate the stream of video image data. This is transmitted to a personal computer, preferably a notebook computer, for decoding and display.” *Id.* at 1:66–2:2.

II. ANALYSIS

A. Principles of Law for Patentability

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.³ *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) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the

³ The record does not include evidence or argument regarding objective indicia of nonobviousness.

grounds for the challenge to each claim”)). This burden of persuasion does not shift to Patent Owner, except in limited circumstances not present here. *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).

B. Level of Ordinary Skill in the Art

Petitioner contends a person of ordinary skill in the art as of the alleged priority date would have possessed at least a bachelor’s degree in computer science or an equivalent field requiring learning computation principles, and two years of work experience in networking or streaming media systems, particularly audio and video, over the Internet. Additional education could compensate for less practical experience. Conversely, additional practical experience could compensate for less education.

Pet. 8–9 (citing Ex. 1002 ¶¶ 21–23).

Patent Owner “largely agrees” with Petitioner’s formulation of a person of ordinary skill in the art. PO Resp. 6. But Patent Owner adds the “clarification” that “the level of skill thus specified would include some theoretical understanding as well as some familiarity with basic internet protocols and tools for working with dynamic content and creating interactive web sites to handle such content.” *Id.* (citing Ex. 2002 ¶ 13).

Petitioner states that “[Patent Owner]’s clarification does not impact the analysis because, if anything, it only raises the level of skill and makes the claims more obvious.” Pet. Reply 2 (citing Ex. 1111 ¶¶ 11–13).

We observe that Patent Owner cites no intrinsic evidence to support its “clarification” to Petitioner’s description of a person of ordinary skill in

the art. *See* PO Resp. 6; Ex. 2002 ¶ 13. Be that as it may, our analysis would not change if we adopted Patent Owner’s “clarification” to Petitioner’s description of a person of ordinary skill in the art. As Petitioner indicates, Patent Owner’s “clarification” would increase the level of ordinary skill. *See* PO Resp. 6; Ex. 2002 ¶ 13. “[I]t is generally easier to establish obviousness under a higher level of ordinary skill.” *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1366 (Fed. Cir. 2012).

Accordingly, we adopt Petitioner’s proposed definition for the level of skill in the art possessed by a person of ordinary skill in the art because it comports with the technology and claims in the ’636 patent and the asserted references and appears reasonable.

C. Claim Construction

“[Claims] of a patent . . . shall be construed using the same claim construction standard that would be used to construe the [claims] in a civil action under 35 U.S.C. [§] 282(b), including construing the [claims] in accordance with the ordinary and customary meaning of such claim[s] as [would have been] understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100 (2023); *see also Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005). The meaning of claim terms may be determined by “look[ing] principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner provides a table, reproduced below, listing three “Disputed Term[s]” with corresponding “Petitioner’s Construction[s]” and “Patent Owner’s Construction[s].” Pet. 10. The table appears to reflect the parties’ positions in the underlying district court litigation. *See* Ex. 1040, 8–15. Petitioner does not contend “that any term requires express construction.” *Id.* at 9. Rather, its “analysis accommodates the narrowest versions of the constructions” set forth in the table. *Id.*

Disputed Term	Petitioner’s Construction	Patent Owner’s Construction
“each sending is at a transmission rate as fast as the data connection between the server system and each requesting user system allows”	Indefinite	Plain and ordinary meaning
“all of the media data elements that are sent by the server system to the requesting user systems are sent from the data structure under the control of the server system as the media data elements were first stored therein”	“all of the media data elements that are sent by the server system to the requesting user systems are sent from the same data structure under the control of the server system and in the same format as the media data elements were first stored therein”	Plain and ordinary meaning
“supplying, at the server system, media data elements representing the program”	“creating, at the server system, media data elements representing the program”	Plain and ordinary meaning

Petitioner’s table listing three “Disputed Term[s]” with corresponding proposed “Petitioner’s Construction[s]” and “Patent Owner’s Construction[s].” Pet. 10.

Except as it relates to the “Disputed Term” “supplying, at the server system, media data elements representing the program” (*see* 1[b(i)]), Patent

Owner does not raise a dispute in this proceeding over the information set forth in the table. *See generally* PO Resp. 6–56.

Patent Owner asserts constructions for the preambles of the independent claims and for 1[c]–1[c(ii)], 1[d] (relating to 1[c]–1[c(ii)]), 1[d(i)], 1[d(iii)] and 1[d(iv)] and their respective limitations in claims 5 and 9. PO Resp. 7–23.

Petitioner responds that “[Patent Owner]’s positions—which were not advanced in district court or the [Prelim. Response] —are unclear (lacking any actual construction), unsupported by intrinsic evidence, and should be rejected.” Pet. Reply 3. Petitioner nevertheless addresses each of Patent Owner’s asserted constructions. *Id.* at 3–9.

Patent Owner responds to Petitioner by reiterating its asserted constructions. PO Sur-reply 3–7.

The parties’ positions relative to Patent Owner’s asserted constructions have been reviewed. They impact claim scope and for that reason they will be addressed in our analysis of the patentability of claim 1. *See infra* § II.D.1.

“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.” *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *see Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

D. Ground 1—Obviousness over Carmel Alone

Petitioner challenges claims 1–12 as unpatentable under 35 U.S.C. § 103(a) over Carmel. Pet. 14–57.

1. Independent claim 1

1. [preamble] A method for distributing a live audio or video program over the Internet from a server system to a plurality of user systems, the method comprising:

Petitioner contends that Carmel teaches the preamble. Pet. 13–14 (citing Ex. 1003, 2:1–4, Abstract).

Relying on Figure 2 of Carmel, Petitioner explains that “computer 34 ‘receives audiovisual input from input device 22,’ where input device 22 may be a video camera (to capture video and/or audio) or a microphone (to capture audio).” Pet. 14 (citing Ex. 1002 ¶ 95). Petitioner explains that Carmel teaches a system whereby computer 34 is a transmitting computer which generates a “multimedia sequence.” *Id.* (citing Ex. 1003, 6:28–30; *see also id.* at 6:26). According to Petitioner, a person of ordinary skill in the art would understand “‘multimedia’ refers to a broad array of communications, including live video or audio.” *Id.* (citing Ex. 1003, 6:32–35).

In support of its contention that Carmel teaches distributing the live audio or video over the Internet, Petitioner quotes Carmel: “[computer 34,] a plurality of clients 30, and network server 36, all of which communicate over network 28, preferably using the well-known Internet Protocol (IP).” Pet. 14 (quoting Ex. 1003, 6:28–31). Petitioner provides (with respect to limitation 1[a]) an annotated version of Figure 2 of Carmel (reproduced below), with Carmel’s server system highlighted by a blue box, showing that it comprises transmitting computer 34 and network server 36, and a green box showing the input device. *Id.* at 16.

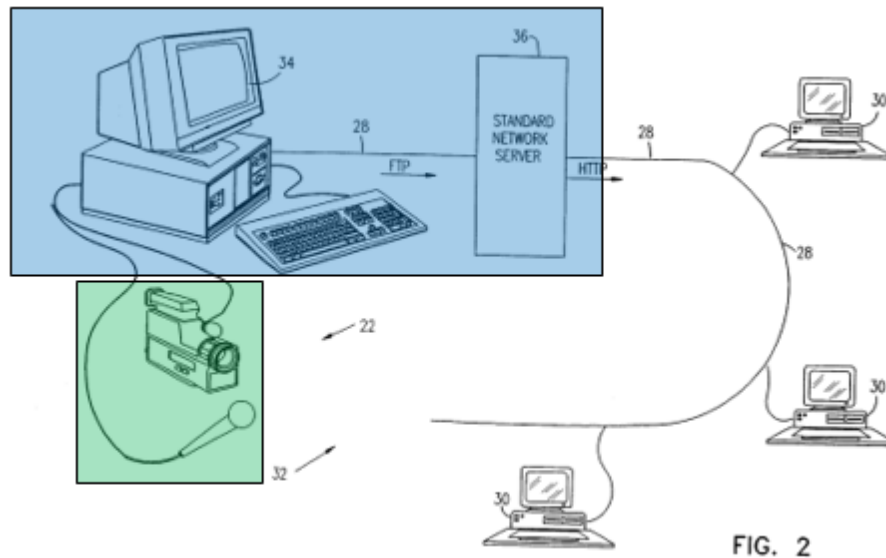


Figure 2 is a schematic illustration of a computer system comprising a transmitting computer 34 that receives audiovisual input from device 22, a plurality of clients 30, and a network server 36, all communicating with each other over a network 28. Ex. 1003, 6:24–35.

Patent Owner has provided no substantive argument challenging Petitioner’s contentions as to the preamble. *See generally* PO Resp. 36–56.

Rather, Patent Owner proposes that the Board construe the term “program” in claim 1’s preamble to mean “an *entire program*.” PO Resp. 8. Generally, a preamble does not limit a claim. *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002). Here, Patent Owner’s proposed construction would limit the claim to an “entire program.”

Patent Owner argues that “[t]he plain meaning of the claims is that the claimed method, server, and program are for distributing an *entire program* over the internet, and not merely some portion of a program.” PO Resp. 8. Patent Owner explains, *inter alia*, that “[t]his understanding is reflected in the body of each claim” “by way of the first step of receiving ‘a continuous

digitally encoded stream for the audio or video program’ [1[a]] and a second step of supplying media data elements ‘representing the program’ [1[b(ii)]],” and “confirmed by the specification.” *Id.* (quoting Ex. 1001, 14:56–58 (“The user computer then continues with additional data requests for the duration of playing the audio/video material.”)). Patent Owner cites a number of claim limitations (*id.* at 9–11) which it argues show “the body of claim 1 makes clear that the recited method is applicable to the entire program, and not merely some portion thereof.” *Id.* at 9. According to Patent Owner, it is “reasonably evident on the face of the claims, [and] closely track[ing] the specification,” that the claims “address a continuous, time-sensitive process, whose continuity is critical to the user . . . and its limitations apply for the entire streaming of the program.” *Id.* at 11.

Petitioner disagrees principally because “[t]he claims do not include the word ‘entire.’” Pet. Reply 3. The “limitations [Patent Owner] cites do not require the streaming of an ‘entire’ live audio/video program.” *Id.* at 4 (citing Ex. 1002 ¶¶ 25–26). Petitioner also indicates that the statement in the specification that the Patent Owner refers to (i.e., Ex. 1001, 14:56–58), “merely discloses sending requests ‘for the duration of playing’—not for the ‘entire’ program.” *Id.*

Patent Owner responds, *inter alia*, that Petitioner’s position “falter[s] when viewed together with limitations that apply by their terms to ‘all’ of the media data elements or ‘each’ sending.” PO Sur-reply 3. Patent Owner explains:

In view of the preamble’s reference to a method (or system, or recorded medium) “for distributing a live audio or video program,” and in view of the specification’s disclosure that the user computer “continues with additional data requests for the

duration of playing the audio/video material”—and that these are the same “requests” referenced in the claim as being correspondingly received by the server over the same duration—it is clear that the claim addresses a process structured to be sustainable over the duration of the corresponding client’s playback, and that the server must therefore be implemented so that the limitations will be met for a transmission of that duration.

Id.

We need not decide whether claim 1’s preamble limits the claim. Carmel teaches claim 1’s preamble even if the term “program” in the preamble means “an entire program.” This is so because, as reflected in Petitioner’s annotated version of version of Figure 2 of Carmel (reproduced above), transmitting computer 34 “receives audiovisual input from input devices 22,” *e.g.*, “a video camera and/or microphone” that may “generate a multimedia data stream representing an entertainment or informational program to be transmitted to a plurality of clients” in real time. Ex. 1003, 1:24–28, 3:25–28, 6:32–33, 14:19–20, code (57), Figure 2; *see* Ex. 1002 ¶ 95. Transmitting computer 34 may also receive broadcast data “from a video, audio or animation sequence stored on disk or tape.” Ex. 1003, 9:64–66; *see* Ex. 1002 ¶ 95. Given that Carmel discloses that a streamed program may constitute “an interview program” obtained from “a prerecorded sequence” and then downloaded and reconstructed by a client computer “for the appreciation of a user,” we find that Carmel teaches distributing “an entire program” according to Patent Owner’s proposed construction of the term “program” in claim 1’s preamble.

Based on our review of the evidence of record, we find that Carmel teaches the preamble as claimed.

1[a] receiving at the server system a continuous digitally encoded stream for the audio or video program, via a data connection from a live source, in real time, the server system comprising at least one computer;

Petitioner contends that Carmel teaches this step. Pet. 15–16.

Petitioner points to input device 22 as the “live source” in Carmel’s system. Pet. 15 (referring to Figure 2, *see* § II.D.1. [preamble]). According to Petitioner, it “provides an ‘audiovisual input’ to the transmitting computer 34.” *Id.* (citing Ex. 1003, 6:32–35).

Petitioner further explains that the “input devices 22 (live source) in Carmel’s system shares a ‘data connection’ with the server system [i.e., transmitting computer 34 and server 36].” Pet. 16. “In Carmel’s embodiment illustrated in Figure 2, the ‘data connection’ is the communication wire connecting the input device(s) 22 to the computer 34.” *Id.* (citing Ex. 1002 ¶ 98).

As for the limitation “receiving at the server system a *continuous digitally encoded stream* for the audio or video program,” Petitioner contends that computer 34 receives such a stream from input device 22. Pet. 17 (citing Ex. 1002 ¶ 99). That input device 22 transmits such a stream would have been obvious to a person of ordinary skill in the art, according to Petitioner, “[g]iven the state of the art and the common use of digital recording equipment.” *Id.* (citing Ex. 1002 ¶ 100). As evidence of the state of the art, Petitioner cites, *inter alia*, video cameras “well known in the art that . . . could output video in digital format to a computer as by the mid-1990s, [such as] the DV (digital video) standard [that] was widely adopted by the camera and video industry.” *Id.* (citing, *e.g.*, Ex. 1021, 3; Ex. 1002 ¶ 100).

Patent Owner has provided no substantive argument challenging Petitioner's contentions as to 1[a]. *See generally* PO Resp. 36–56.

Based on our review of the evidence of record, we find that Carmel teaches 1[a].

1[b] upon receipt of the stream by the server system,

Petitioner reiterates its contention (*see* discussion with respect to limitation 1[a]) that Carmel teaches computer 34 (which is part of the server system) receiving an audiovisual input from input device 22. Pet. 18 (quoting Ex. 1003, 6:32–33, 9:64–65 (“Broadcast data are then input to the computer, for example, from input devices 22”)). According to Petitioner, this teaching meets the limitation. *Id.*

Patent Owner has provided no substantive argument challenging Petitioner's contentions as to 1[b]. *See generally* PO Resp. 36–56.

Based on our review of the evidence of record, we find that Carmel teaches 1[b].

1[b(i)] supplying, at the server system, media data elements representing the program, each media data element comprising a digitally encoded portion of the program and having a playback rate,

Petitioner contends that Carmel teaches this step. Pet. 18–21.

Petitioner explains that “Carmel teaches . . . the audiovisual data is input to the computer 34 from the input devices 22.” Pet. 19 (citing Ex. 1003, 7:19–21, 9:66–67). According to Petitioner, this shows Carmel teaches “supplying” audiovisual data “at the server system,” as claimed. *Id.*

Petitioner explains that, after the input, “the data is compressed into data stream 40.” Pet. 19 (citing Ex. 1003, 7:19–21, 9:66–67). “This data

stream 40 is ‘then “sliced” . . . into files 42, 44, 46, 48, etc., as shown in FIG. 3A.’” *Id.* (quoting Ex. 1003, 9:67–10:1). Petitioner reproduces Figure 3A of Carmel showing said slices. *Id.* (reproduced below and above in section I.G.1.).

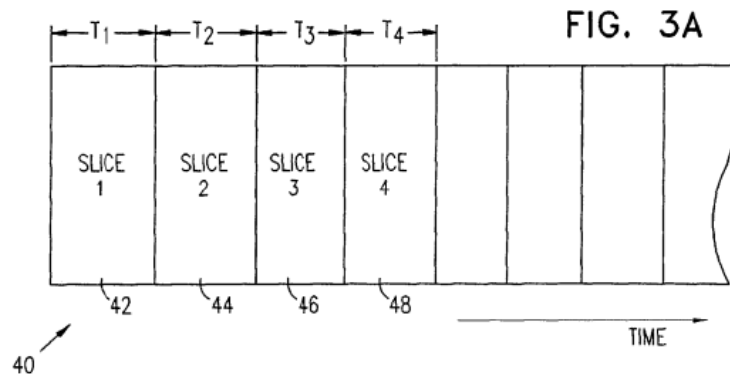


Figure 3A is a block diagram that schematically illustrates a data structure of a stream of broadcast data 40, typically corresponding to a multimedia data sequence. Ex. 1003, 7:18–22.

Petitioner contends that “[e]ach ‘slice’ of the data stream 40 corresponds to a ‘media element.’” Pet. 19. In support, Dr. Polish testifies that

Carmel teaches “[e]ach slice contains a segment of video and/or audio data, corresponding to a respective, successive time interval T_1 , T_2 , T_3 , etc.” (Carmel, 7:23–25.) The compilation of slices of the data stream 40 thus “represent the program” of audiovisual data that was provided to computer 34.

Ex. 1002 ¶ 108; Pet. 20.

These segments (i.e., slices) meet the “media data elements” limitation of the step because, according to Petitioner, “[t]he ’636 patent explains media data elements are segments of the media data . . . provided to the server system.” Pet. 19–20 (citing Ex. 1001, 6:30–32, 7:16–35, 8:4–6, 9:36–38, 9:45–45, 10:9–12; Ex. 1002 ¶ 108).

As for “each media data element comprising a *digitally encoded portion* of the program,” Petitioner contends that a person of ordinary skill in the art would have understood that “audiovisual data received by the computer 34 would be digitally encoded.” Pet. 20 (Ex. 1002 ¶ 109). Dr. Polish explains that, when “the digitally encoded data stream 40 (*i.e.*, program) is sliced into portions, . . . each data slice comprises a portion of the program,” and thus would be digitally encoded as well. Ex. 1002 ¶ 109; Pet. 20.

As for “each media data element . . . having a playback rate,” Petitioner contends that “[e]ach data slice (media data element) [of Carmel’s data stream 40] has a playback rate.” Pet. 20. In support, Dr. Polish testifies that

[a] person of ordinary skill in the art would therefore understand that a slice of audiovisual data, such as a segment of a video or a segment of an audio recording, would naturally have a playback rate, *i.e.* the rate at which that segment of video or audio plays at normal speed from beginning to end. This is confirmed by Carmel, which explains each slice corresponds to “a respective, successive time interval labeled T₁, T₂, T₃, etc.” (Carmel, 7:23–25.)

Ex. 1002 ¶ 111; Pet. 21.

According to Patent Owner, “Carmel discloses that the elements are created at an upstream source computer 34, and only uploaded from there to server 36.” *Id.* at 36–37 (citing Ex. 1003, Abstract, Figure 2). Patent Owner points out that the “Petition cites ¶ 106 of its expert’s declaration (EX1002), which only *confirms* that the ‘supplying’ would be on the source computer, *not the server.*” *Id.* at 37 (referring to Pet. 19). “Nor does Carmel make it obvious to create the elements on the *server*, as the separate role of source

computer 34 is integral to Carmel’s disclosure.” *Id.* (citing Ex. 2002 ¶ 70) (emphasis added).

Petitioner replies, *inter alia*, “that the claim recites a ‘server system,’ not a ‘server.’” Pet. Reply 18 (Ex. 1111 ¶¶ 87–88).

Patent Owner responds, *inter alia*, that Petitioner “overlooks that the Petition construed this limitation as ‘creating’ the elements at the server system, and now belatedly seeks to expand the meaning of ‘server system.’” PO Sur-reply 20–21.

We understand Patent Owner to be arguing that Carmel does not meet the claim limitation “at the server system” for the reason that Carmel discloses supplying elements at source computer 34 rather than at server 36 and not that Petitioner improperly construed the claim term “supplying” as “creating.” PO Sur-reply 20–21; Pet. 10 (discussed in § II.C.). Patent Owner does not appear to dispute that Carmel’s “creating” teaches the recited “supplying,” albeit at source computer 34. *See* PO Resp. 36–37 (citing Ex. 1003, Abstract, Fig. 2).

Patent Owner contends that Petitioner “impermissibl[y] change[s]” the grounds in its Reply in identifying the “server system” that is being supplied in Carmel. PO Sur-reply 21.

As we stated *supra*, Petitioner explains that Carmel teaches a server system. *See* § II.D.1.1.[preamble]; Pet. 13–14 (“Carmel discloses a method for distributing a live audio or video program over the internet from a server system to a plurality of user systems.”) (citing, *inter alia*, Ex. 1003, 2:1–4)). Petitioner’s annotated version of Figure 2 of Carmel (reproduced *supra*) highlighting Carmel’s “server system” via a blue box shows Carmel’s “server system” comprises transmitting computer 34 and network server 36.

Pet. 15; Pet. Reply 19. In addressing 1[b(i)], Petitioner contends in the Petition that “Carmel teaches that after the audiovisual data is input to the computer 34 from the input devices 22, the data is compressed into data stream 40.” Pet. 19. Since Carmel’s computer 34 is part of Carmel’s “server system” as Petitioner explained in the Petition, Petitioner has not newly argued and has not expanded the meaning of “server system” in contending in its Reply that Carmel teaches “supplying” “at the server system” as 1[b(i)] requires. Pet. Reply 19.

Petitioner persuasively shows that Carmel teaches a “server system” as indicated by the blue box in Petitioner’s annotated version of Carmel Figure 2 highlighting the source computer 34 and server 36. *See* Pet. 15–16 (stating “[c]ompare Carmel, Fig. 2 (computer 34 and server 36) with ’636 patent, Fig. 1 (server 12).”); *see also* § II.D.1.1. [preamble] (reproducing Petitioner’s annotated version of Carmel Figure 2). Patent Owner agrees that “Carmel discloses that the elements are created at an upstream source computer 34, and only uploaded from there to server 36.” PO Resp. 36–37 (citing Ex. 1003, Abstract, Figure 2). Since the combination of the source computer 34 and server 36 form the “server system,” as Petitioner has persuasively shown, it follows that Carmel’s creation of elements at upstream source computer 34 teaches “supplying, at the server system, media data elements” (1[b(i)]).

Based on our review of the evidence of record, we find that Carmel teaches 1[b(i)] as claimed.

1[b(ii)] serially identifying the media data elements, said serial identification indicating a time sequence of the media data elements, and

Petitioner contends that it would have been obvious to one of ordinary skill in the art to serially identify “media data elements” to indicate a time sequence. Pet. 22–24.

Petitioner explains that Carmel teaches that each slice (i.e., “media data element”) of data stream 40 is identified via a “running slide index.” Pet. 22 (citing Ex. 1003, 2:6–7 (“[e]ach slice is preferably assigned a respective slice index”), 7:27–28). According to Petitioner, “the slices are identified ‘serially’ because each new slice (and corresponding slice index) is identified by the next available spot in the running slice index.” *Id.* (citing Ex. 1002 ¶ 115).

Petitioner contends that it would have been “obvious that the serial identification[s] [of the slices of Carmel’s data stream 40] ‘indicat[e] a time sequence.’” Pet. 23. This is so because, according to Dr. Polish, a person of ordinary skill in the art “would understand the order of slice indices in the running slice index indicates a ‘time sequence’ of the slices.” Ex. 1002 ¶ 116 (footnote omitted); Pet. 23.

Patent Owner has provided no substantive argument challenging Petitioner’s contentions as to 1[b(ii)]. *See generally* PO Resp. 36–56.

Based on our review of the evidence of record, we find that Carmel renders obvious 1[b(ii)].

1[b(iii)] storing the media data elements in a data structure under the control of the server system;

Petitioner contends that Carmel teaches storing media elements in a data structure under the control of the server system. Pet. 24–25.

Petitioner explains that Carmel teaches “the memory available on server 36 is limited, and files 42, 44, 46, etc., will be stored on the server and erased therefrom in a ‘first-in-first-out’ sequence.” Pet. 25 (quoting Ex. 1003, 7:55–58). According to Petitioner, such a storage within a server/memory meets the claimed “data structure” because the ’636 patent similarly describes the “data structure” operating in a first in, first out, sequence. *Id.* (“The ’636 patent [also] characterizes the claimed ‘data structure’ as a FIFO (first in, first out) buffer.”) (citing Ex. 1001, 7:15–35 (“FIFO Server Buffer Implementation”)).

Petitioner further contends that “Carmel’s server 36 and/or the memory structure within that server 36 (data structure) is ‘under the control of the server system’ [as claimed]” because server 36 is part of Carmel’s server system. Pet. 25 (citing Ex. 1002 ¶ 122; relying on Figure 2 of Carmel).

Patent Owner has provided no substantive argument challenging Petitioner’s contentions as to 1[b(iii)]. *See generally* PO Resp. 36–56.

Based on our review of the evidence of record, we find that Carmel teaches 1[b(iii)].

1[c] receiving requests at the server system via one or more data connections over the Internet, for one or more of the media data elements stored in the data structure,

1[c(i)] each received request specifying one or more serial identifiers of the requested one or more media data elements,

1[c(ii)] each received request originating from a requesting user system of a plurality of user systems; and

Petitioner's position

Limitation 1[c] requires the server system to receive requests via a data connection over the Internet for the stored media elements. Petitioner explains that Carmel teaches this. Pet. 25–26. “Carmel’s server 36 receives requests via Internet data connections for one or more of the data slices (media data elements) stored in server 36.” Pet. 26 (citing Ex. 1002 ¶ 126). Petitioner reproduces Figure 2 which, according to Petitioner, “clearly teaches the client devices submit requests for multimedia data, and the server system receives those requests.” *Id.* (citing Ex. 1002 ¶¶ 126–127).

Limitation 1[c(i)] further requires that each received request specify a serial identifier of the requested media data elements. Petitioner explains that Carmel teaches this because “Carmel discloses the client request for a particular data slice 42, 44, 46, etc. specifies the slice by referencing the corresponding slice index.” Pet. 27. As an example, Petitioner quotes Carmel: “When one of computers 30 connects to server 36 and begins to download the data stream, it first reads the index file [50] in order to identify at what point in stream 40 to begin and to start receiving the data stream.” *Id.* (quoting Ex. 1003, 8:1–5; citing 10:42–48; Ex. 1002 ¶ 131). Petitioner explains that Carmel teaches that “the request for a particular slice of data stream 40 specifies the serial indicator (slice index) of the requested slice.”

Id. at 28–29. Petitioner provides an annotated version of Figure 6A (reproduced below with Petitioner’s highlighting “SELECT SLICE”) of Carmel which “confirms this process is repeated for each slice.” *Id.* at 29.

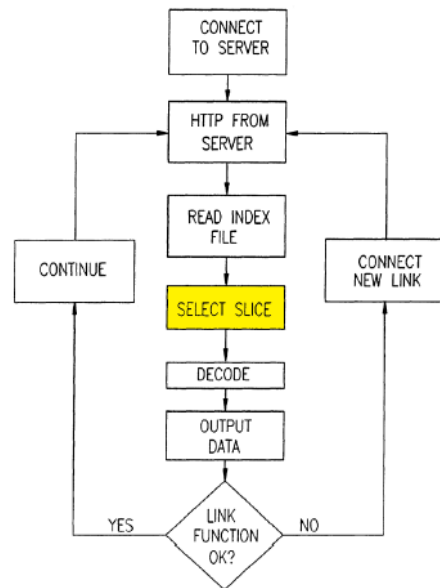


Figure 6A is a flow chart that schematically illustrates a method by which a client downloads and plays back data stream 40 transmitted by computer 34. Ex. 1003, 6:3–6; Pet. 29 (highlighting added by Petitioner).

Limitation 1[c(ii)] further requires that each received request originate from a requesting user system of the user systems. Petitioner explains that “Carmel teaches that the requests for slices of data stream 40 originate” from “user systems,” i.e., clients 30. Pet. 29–30 (citing, *inter alia*, Ex. 1002 ¶ 137). According to Petitioner, this is confirmed by, for example, Figure 6A. “Figure 6A shows that the client 30 ‘select[s] [the] slice’ the user wants to download. The request for a slice, therefore, originates from client 30.” *Id.* at 30 (referring to Petitioner’s annotated version of Carmel’s Figure 6A, reproduced above).

Patent Owner's position

The parties agree that in Carmel a client requests a particular data slice in a data stream from which point the data stream begins downloading. *See, e.g.*, Pet. 27; PO Resp. 37. The parties diverge on whether this satisfies 1[c]–1[c(ii)].

Patent Owner disagrees that this is sufficient to meet the claim. Patent Owner's disagreement is premised on its construction of 1[c]–1[c(ii)] as requiring “pulling” each slice *subsequent* to the request. *See* PO Resp. 11–12, 37.

Patent Owner acknowledges that the “Petition does indeed argue that Carmel discloses repeated client requests to the server, each specifying the serial IDs of the successive stream elements” and that Petitioner's argument is “also reflected by Dr. Polish's declaration.” *Id.* at 39 (citing Pet. 28–29; Ex. 1002 ¶ 129; Ex. 2006, 106:9–14). But, according to Patent Owner, “Carmel reflects no such disclosure.” *Id.* Patent Owner contends that “[i]n Carmel, the client selects a starting point for streaming, which tells the server at which point in the stream to begin streaming. . . . *The server pushes successive slices from that starting slice.*” *Id.* at 37 (citing Ex. 2002 ¶ 71) (emphasis added). According to Patent Owner, “the only ‘request’ that the Petition identifies corresponds to the disclosed client selection of a ‘starting slice.’” *Id.* at 38.

Patent Owner explains that

the selected slice [in Carmel] specifies the “*starting slice*” (EX1003-10:46) “indicat[ing] at which slice of data stream 40 to begin downloading” (EX1003-10:44-45), the “request” so received constitutes a request for an open-ended stream of media

data elements (including the starting slice and following slices), and thus [pushes] for *more than one* media data element.

PO Resp. 38. According to Patent Owner, Carmel cannot meet 1[c]–1[c(ii)] because, in Carmel, each subsequent slice in the open-ended stream is not requested, i.e., not “pulled.” *Id.* “The Petition cites no disclosure that each disclosed client request specifies the serial ID of each media data element requested.” *Id.* at 38–39. To support Patent Owner’s argument, Mr. Hoarty testifies that “Carmel discloses that the client selects a starting point for streaming, which tells the server at which point in the stream to begin streaming. A POSITA [person of ordinary skill in the art] would understand from this and other disclosures in Carmel . . . that the server disclosed in Carmel pushes successive slices from the selected starting slice.” Ex. 2002 ¶ 71; PO Resp. 37.

Construction

The parties dispute whether 1[c]–1[c(ii)] requires pulling every slice subsequent after the initially requested starting slice.

Petitioner construes the limitation broadly; that is, it covers a request specifying one serial identifier. *See, e.g.,* Pet. Reply 6:

[B]ased on the claims’ plain language, and the specification, a POSITA would understand that the requests could identify: one serial identifier (*e.g.*, the identifier of the first portion being requested), more than one identifier (*e.g.*, the identifiers of the first two portions being requested), or each identifier for each portion requested. ([Ex. 1111], ¶34; EX1103, 96:10–101:3.) A POSITA would not understand the claims to require each-and-every media data element to be specifically identified in any request. ([Ex. 1111], ¶¶30–37.) The claims expressly state: “each received request specifying one or more serial identifiers of the requested one or more media data elements.” (’636, cl. 1.)

Dr. Polish buttresses Petitioner’s construction by testifying that one of ordinary skill in the art would have understood 1[c]–1[c(ii)], based on the claim language, to cover one request specifying one identifier for more than one media data element. *See* Ex. 1111 ¶ 34:

Based on the claim language, a POSITA would understand that the requests for “one or more media data elements” is a request for portions of the audio or video program that identifies one serial identifier (such as the identifier of the first portion being requested), more than one identifier (such as the identifiers of the first two portions being requested), or each identifier for each portion requested. This is expressly stated in the claim: “each received request specifying one or more serial identifiers of the requested one or more media data elements.”

See Pet. Reply 6.

Patent Owner, on the other hand, construes the limitation more narrowly; that is, “[t]he plain and literal meaning of limitations c–c(ii) is that, even if the ‘received request’ is for more than one element, each such requested element is identified in the request by the respective serial identifier of that media data element.” PO Resp. 11–12. “This understanding is confirmed by the specification, which explains that ‘the user computer transmits a request to the server to send one or more data elements, specifying the serial numbers of the data elements,’ to which the server responds in kind.” *Id.* (quoting Ex. 1001, 14:51–54). “The ‘one’ term in the claim language is directed to the case of a request for a single element, while the ‘or more’ term contemplates that a request may identify more than one element, by the elements’ respective serial identifiers.” *Id.*

For the following reasons, we are unpersuaded that the intrinsic record limits 1[c]–1[c(ii)] to the construction Patent Owner proposes; that is, “each

such requested element is identified in the request by the respective serial identifier of that media data element.” PO Resp. 12.

a. Plain and Ordinary Meaning

We start with the plain or ordinary meaning of 1[c]–1[c(ii)]. *See Phillips*, 415 F.3d at 1313.

We agree with Petitioner that 1[c(i)] is worded more broadly than Patent Owner maintains. The limitation reads “each received request specifying one or more serial identifiers of the requested one or more media data elements.”

Patent Owner states that “[t]he ‘one’ term in the claim language is directed to the case of a request for a single element, while the ‘or more’ term contemplates that a request may identify more than one element, by the elements’ respective serial identifiers.” PO Resp. 12.

However, a plain reading of 1[c(i)] yields another possibility; that is, a request specifying “one” serial identifier of the requested “more” elements.

b. Intrinsic Evidence

However, we cannot look at the ordinary meaning in a vacuum. “Rather, we must look at the ordinary meaning in the context of the written description and the prosecution history.” *Phillips*, 415 F.3d at 1313 (quoting *Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005)). The “proper definition is the ‘definition that one of ordinary skill in the art could ascertain from the intrinsic evidence in the record.’” *Id.* at 1314 (quoting *Unitherm Food Sys., Inc. v. Swift–Eckrich, Inc.*, 375 F.3d 1341, 351 (Fed. Cir. 2004)). The intrinsic evidence in the record includes the claims, the specification, and the prosecution history. *Phillips*, 415 F.3d at 1314.

1) Claims

We have reviewed the claims but do not see that they limit the scope of 1[c]–1[c(ii)].

Patent Owner states that when “read in light of limitation d,” Patent Owner’s narrow construction “is the only reasonable interpretation of limitation c–c(ii).” PO Resp. 12 (referring to 1[d(iv)]) (*see id.* at 21 (“Patent Owner disputes . . . insofar as limitation d(iv) read in combination with limitations c–c(ii) does require every element in the response to be requested by its serial ID.”)).

We addressed the construction of 1[d(iv)] in the Decision on Institution. *See* DI 37–40. We stated there that:

Petitioner contends that Carmel teaches server 36 sending data slices “only in response to requests from clients 30.” Pet. 42–43 (citing [Ex. 1002] ¶¶ 175–177, 180–181).

Patent Owner does not appear to dispute this.

Rather, Patent Owner argues that Carmel can only meet the limitation if it teaches “client 30 request[ing] *each and every slice* of the stream by slice number,” and according to Patent Owner Carmel does not do that. Prelim. Resp. 26 (emphasis added). But, as we stated, the limitation does not require every slice to be requested by slice number. Thus, this argument does not undermine Petitioner’s contention.

Id. at 39–40.

We do not agree that one of ordinary skill in the art considering the “plain and literal meaning of limitation c–c(ii),” even when “read in light of limitation d,” would have understood the scope of 1[c]–1[c(ii)] to be limited in the manner Patent Owner is advocating. We maintain that

A principal difficulty lies with Patent Owner's view that Carmel can only meet the claim limitation if it teaches "client 30 request[ing] *each and every slice of the stream by slice number.*" Prelim. Resp. 26 (emphasis added). Although the limitation calls for "all" of the media data elements to be sent in response to requests, it does not require every slice to be requested by slice number.

DI 39.

2) Specification

Limitations 1[c]–1[c(ii)] must be read in view of the specification.

We disagree with Patent Owner that the specification provides sufficient support to limit the plain and ordinary meaning of "each received request specifying one or more serial identifiers of the requested one or more media data elements" (1[c(i)]) as Patent Owner proposes. PO Resp. 12 (relying on Ex. 1001, 14:51–54).

We agree with Petitioner that the disclosure Patent Owner relies on (i.e., Ex. 1001, 14:51–54) "does not state that the user computer identifies each-and-every serial number of each-and-every data element requested. Rather, it only requires 'one or more' be requested by serial number." Pet. Reply 7 (citing Ex. 1111 ¶¶ 34–36); PO Resp. 12.

Patent Owner counters that Dr. Polish testified that this specification language "would not include a data element that is not identified by—identified in the request by a serial number." Ex. 2016, 42:2–43:11; PO Sur-reply 5–6.

However, the question is one of claim scope. Dr. Polish did not testify that the specification "confirm[s]," as Patent Owner argues, a construction of the *claim* such that a user computer transmitting a request to

the server to send “more” data elements *must* specify the serial number of every data element requested. PO Resp. 12.

Further undercutting Patent Owner’s reliance on the specification to narrow the scope of 1[c]–1[c(ii)], Petitioner directs us to Mr. Hoarty’s deposition testimony wherein he states that he “agrees that in one embodiment⁴ in the specification, the server continues to send data after receiving a single request.” Pet. Reply 6–7 (citing, *inter alia*, Ex. 1103, 100:9–101:3; Ex. 1111 ¶ 35). According to Dr. Polish:

Mr. Hoarty agrees that in one embodiment in the common specification for the ’636 and [9,742,824] patents, the specification indicates to a POSITA that the user will send a single request to the server but that the server will continue to send data after that single request. (EX1102, 24–26 (discussing ’824); EX1103, 100:9–101:3 (confirming prior testimony).) The sentence cited by Patent Owner does not change a POSITA’s understanding. (’636 POR, 12 (citing ’636, 14:51–53 (“the user computer transmits a request to the server to send one or more data elements, specifying the serial numbers of the data elements.”); ’824 POR, 13 (same).)

Ex. 1111 ¶ 35; Pet. Reply 6.

For the foregoing reasons, we are unpersuaded that the intrinsic evidence requires a construction that limits the plain and ordinary meaning of 1[c]–1[c(ii)] as Patent Owner proposes.

⁴ Referring to Ex. 1001, 8:13–15 (“Once a connection is made to a user’s computer (e.g., user computer 18), server 12 sends the media data to the user computer in the following manner.”) See Ex. 1103, 97:15–17 (referring to 8:15–17 of the ’824 patent).

We determine that 1[c]–1[c(ii)] are to be construed broadly, consistent with the plain and ordinary meaning, which covers a request specifying “one” serial identifier of the requested “more” elements, which is in line with Petitioner’s construction. *See* Pet. Reply 6. They do not require pulling every slice subsequent after the requested starting slice.

We will apply that construction in analyzing Petitioner’s challenge under the asserted ground.

Discussion

Central to Patent Owner’s dispute over the applicability of Carmel to the claimed subject matter is the distinction between “push” and “pull” techniques. PO Resp. 1–6. According to Patent Owner, “push” refers to a technique whereby a “server serves media to one or more users from a buffer on the server.” *Id.* at 2–3. “Pull” refers to a technique whereby “movement of each successive streaming media element from the server is responsive to repeated individual requests from the client for the successive elements, by their respective serial identifiers.” *Id.* at 1. According to Mr. Hoarty, “[i]n the context of internet streaming, where streams comprise sequential data elements from a sender to a receiver, push is understood to mean that movement of the data elements is *initiated by the sender*. Pull is understood to mean that movement of the data elements is *initiated by the receiver*.” Ex. 2002 ¶ 21; PO Resp. 2 n.1.

The parties do not dispute that 1[c]–1[c(ii)] describe a “pull” technique. PO Resp. 1 (“[t]he claims of the ’636 patent are drawn to a ‘pull’ streaming model”); Pet. Reply 1 (“[T]he claims recite a client-driven process, [albeit] the claims do not use the words ‘push’ or ‘pull,’ nor does the specification characterize the purported invention as such.”).

The question is whether Petitioner has carried its burden of showing that Carmel teaches a “pull” technique consistent with 1[c]–1[c(ii)]. *See* “Construction” *supra*.

In that regard, Petitioner explains that Carmel teaches client devices submitting requests for multimedia data and the “server system” receiving those requests. Pet. 26. Referring to Figure 6A (*see supra*), Petitioner shows that Carmel discloses that “[r]esponsive to a user input, client 30 selects an appropriate starting slice and begins to download and decode (decompress) files 42, 44, 46, etc.” Ex. 1003, 10:45–47; Pet. 24. In this way, “a user can decide and indicate at which slice of data stream 40 to begin downloading.” *Id.* at 10:44–45; Pet. 25. Dr. Polish testifies that “[t]he request from client 30 thus specifies the first slice (and each subsequent slice) to download from server 36.” Ex. 1002 ¶ 129; Pet. 27.

According to Dr. Polish, “[a] person of ordinary skill in the art would understand the request from the client 30 specifies the slice by reference to the slice’s serial identifier.” Ex. 1002 ¶ 130; Pet. 27. According to Dr. Polish, “the ‘serial identifier’ of a data slice is the data slice’s slice index stored in the running slice index. Carmel discloses the client request for a particular data slice 42, 44, 46, etc. specifies the slice by referencing the corresponding slice index.” *Id.* Petitioner provides an example of how the operation works:

Carmel teaches that when a client 30 connects to server 36 with the intention of receiving data stream 40, the client first reads index file 50 and then selects which slice within data stream 40 to receive first. (*See, e.g., Carmel*, 7:59–8:7 (“When one of computers 30 connects to server 36 and begins to download the data stream, it first reads the index file [50] in order to identify at

what point in stream 40 to begin and to start receiving the data stream[.]”), 10:42–48; [Ex. 1002] ¶131.)

In one example, the client 30 requests the most recent slice uploaded to server 36, the client 30 specifies the “serial identifier” of the requested slice by reading slice ID 52 in slice index 50. ([Ex. 1002] ¶131.) The slice ID 52 includes the “serial identifier” of the slice (the slice index), which the server uses to locate and receive the requested slice. (*Id.*)

Pet. 27–28. Dr. Polish explains what happens next:

After selecting the desired slice of data stream 40, the client 30 “begins to download the data stream.” (Carmel, 8:1–11.) Carmel discloses the client begins downloading the data stream 40 at the desired slice, i.e. the slice corresponding to the specified slice index. Carmel explains that when client 30 selects a particular slice of data stream 40, “[t]his is the point at which the download will begin, unless the user of the computer chooses otherwise.” (*Id.*, 8:32–41.) “Responsive to a user input, client 30 selects an appropriate starting slice and begins to download and decode (decompress) files 42, 44, 46, etc.” (Carmel, 10:44–47; *see also id.*, 2:1–21, 3:63–66, 4:7–11, 10:24–54, Fig. 6A, 13:30–35.)

Ex. 1002 ¶ 143; Pet. 32.

Patent Owner disputes that Carmel’s teaching of a client downloading a file in response to a request for a slice is a “pull” technique. *See, e.g.*, PO Resp. 53 (discussing 1[d(iv)]).

According to Patent Owner, “[a] POSITA would understand from the disclosure of Carmel that client 30 ‘begins to download’ the sequence of slices because server 36 is *sending* [i.e., ‘pushing’] them.” PO Resp. 53 (citing Ex. 2002 ¶ 92) (referring to Ex. 1003, 10:45–48 (“Responsive to a user input, client 30 selects an appropriate starting slice and begins to download and decode (decompress) files 42, 44, 46, etc.”)). In the same vein, Patent Owner contends that “according to the Carmel specification,

addressing Fig. 6A, SELECT SLICE corresponds to an action that is ‘[r]esponsive to a user input.’ EX1003-10:44-48. It thus *does not reflect a selection per a value read from the index file.* EX2002 ¶ 68.” PO Resp. 34 (emphasis added).

Petitioner responds, *inter alia*, by referring to Figure 6A (*see supra*) and explaining that, in Figure 6A, “Carmel teaches ‘client 30’ opens an HTTP link with ‘server 36.’” Pet. Reply 10 (citing Ex. 1003, Figure 6A, 10:35–47). “[C]lient 30’ selects and downloads a slice.” *Id.* According to Petitioner, “[i]f the [http] link function is sufficient—i.e., the data connection is equal to or faster than playback so ‘client 30’ is not falling behind—‘client 30’ will continue to use the single HTTP link.” *Id.* at 10–11 (citing Ex. 1111 ¶ 75). “By teaching that ‘client 30’ monitors links, establishes links, and controls the slices allocated to each link, Carmel teaches a client-driven and ‘pull’-based approach.” *Id.* at 10–11 (citing Ex. 1111 ¶¶ 62–84).

Patent Owner disagrees, arguing, *inter alia*, that Carmel teaches “[r]esponsive to a user input, client 30 *selects* an appropriate starting slice’,” rather than downloading the slice. PO Sur-reply 9 (citing Ex. 1003, 10:43–46).

We have reviewed the record and find Petitioner has the stronger position. The claim does not recite “push” or “pull,” even though the parties agree that 1[c]–1[c(ii)] reflect a “pull” technique (PO Resp. 1; Pet. Reply 1). What the claim recites is “receiving requests at the server system” (1[c]) and “responsive to the requests, sending, by the server system, the one or more media data elements . . . to the requesting user systems corresponding to the requests” (1[d]). Petitioner must show that Carmel teaches this claimed

technique, not necessarily a “pull” technique as Patent Owner characterizes it. In that regard, Petitioner shows, *inter alia*, that Carmel teaches that “[r]esponsive to a user input, client 30 selects an appropriate starting slice and begins to download and decode (decompress) files 42, 44, 46, etc.” Pet. 26 (quoting Ex. 1003, 10:45–47; also quoting Ex. 1003, 11:5–7 (“Responsive to the [user] selection, server 36 begins to transmit data slices [to the client 30]”)). This disclosure satisfies the technique that is claimed; that is, “sending, by the server system, the one or more media data elements” responsive to receiving requests at the server system.

We have considered Patent Owner’s detailed discussion of the technical operations underlying the various protocols for content delivery that Carmel discloses (*e.g.*, HTTP 1.1 (Ex. 1003, 2:26)). *See generally* PO Resp. 26–36, 51–53. Patent Owner argues, *inter alia*, that Carmel’s protocols indicate that Carmel does *not* employ a pull architecture. *Id.* For example, Patent Owner explains that

The HTTP FROM SERVER box of both Figs. 6A and 6B makes clear that the client is receiving data from the server after the connection is established, without further interaction (*i.e.*, client requests), which is further confirmed by Carmel’s reliance on HTTP 1.1 push streaming mechanisms. *See* EX1003-2:22-28. Indeed, HTTP itself evolved during the period in question to support push forms of streaming, and it is exactly this capability that is reflected in Carmel. EX2002 ¶ 90.

PO Resp. 52 (emphases omitted).

The difficulty with Patent Owner’s discussion is, again, that the claim is broader in scope than Patent Owner maintains. There is no mention of a protocol, leaving open the type of protocol that may be employed. In that regard, Petitioner shows that Carmel employs well-known Internet

protocols. *See, e.g.*, Pet. 12 (“Clients [in Carmel] connect to server 36 and begin downloading and consuming data stream 40 using a well-known Internet protocol, such as HTTP, UDP, TCP, or other Internet protocols.”) (citing Ex. 1003, 7:4–17, 10:24–54.) We note that TCP is specifically recited in claim 4. Ex. 1001, 17:13–14 (“wherein the reliable transmission protocol is TCP”) (Claim 4 further limits 1[d(ii)] whereby “each sending is at a transmission rate as fast as the data connection *between the server system and each requesting user system* allows.” *Id.* at 16:61–63 (emphasis added).)

Petitioner sufficiently shows that Carmel teaches that each received request specifies a serial identifier of the requested media data elements, as 1[c]–1[c(ii)] require, consistent with our construction of 1[c]–1[c(ii)]. *See, e.g.*, Pet. 25; *see* “Construction” *supra*. Petitioner shows, *inter alia*, that Carmel teaches a “pull” technique in that it teaches movement of the data elements is *initiated by the receiver*. *Id.*; PO Resp. 1; Ex. 2002 ¶ 21. Patent Owner’s argument that this is insufficient to meet the claim because, *inter alia*, 1[c]–1[c(ii)] require “pulling” *each and every slice* subsequent to an initial request does not undermine Petitioner’s position for the reasons discussed *supra*, namely that 1[c]–1[c(ii)] do not require it. *See* PO Resp. 12–13, 38; “Construction” *supra*.

Based on our review of the evidence of record, we find that Carmel teaches 1[c], 1[c(i)], and 1[c(ii)].

1[d] responsive to the requests, sending, by the server system, the one or more media data elements having the one or more specified serial identifiers, to the requesting user systems corresponding to the requests; wherein

This step requires the server system to send a media element, having a specified serial identifier, to a requesting user system in response to a request from said requesting user system. Petitioner contends that Carmel teaches this. Pet. 31–32.

Supported by Dr. Polish’s testimony, Petitioner explains that Carmel’s server system sends slices (“media data elements”) specifying slice indices (“specified serial identifiers”) to requesting clients 30 (“requesting user systems”) corresponding to their requests. Pet. 32 (citing Ex. 1002 ¶ 142; Ex. 1003, 7:4–9, 6:52–54).

Petitioner explains that, in Carmel’s process, client 30 submits a request for a slice of data stream 40 to server 36 that includes a slice index (i.e., a serial identifier) of the desired data slice. Pet. 32. “[A]fter the client 30 selects a particular slice, the client . . . downloads that slice.” *Id.* (citing Ex. 1002 ¶ 143; Ex. 1003, 2:1–21, 3:63–66, 4:7–11, 8:1–11, 8:32–41, 10:24–54, 13:30–35, Figures 6A and 6B). According to Dr. Polish, “[a] person of ordinary skill in the art would understand that the client ‘downloading’ the specified slice of data stream 40 [involves] ‘sending, by the server system,’ the specified slice of data stream 40.” Ex. 1002 ¶ 144; Pet. 32.

Patent Owner has provided no substantive argument challenging Petitioner’s contentions as to 1[d]. *See generally* PO Resp. 36–56.

Based on our review of the evidence of record, we find that Carmel teaches 1[d].

1[d(i)] the data connection between the server system and each requesting user system has a data rate more rapid than the playback rate of the one or more media data elements sent via that connection;

This step requires the data connection between the server system and requesting user system to be more rapid than the playback rate of the sent media data element.

Patent Owner construes “data rate” as referring to the capacity of the “the data connection.” PO Resp. 40. *See also id.* at 13–14 (“The ‘data rate,’ as that term is used in this limitation, is the rate of data transfer, such as in bits per second, that the data connection *supports, i.e., its capacity.*”) (citing Ex. 1001, 4:37–54). Petitioner agrees. Pet. Reply 7 (“As PO admits, the ‘data rate of the data connection’ limitation only requires a data connection that is ‘capable’ of transferring media data elements in less time than required to play back those elements at a normal rendition. ([PO Resp. 16]; EX1103, 26:19–29:7 (limitations refer to capacity of the data connection).)).”).

Petitioner contends that Carmel teaches this. Pet. 33–37.

Petitioner begins by explaining that Carmel teaches an Internet connection between the server system (34) and clients (30) and that that satisfies the claimed “data connection between the server system and each requesting user system.” Pet. 33 (citing, *inter alia*, Ex. 1002 ¶ 148). According to Dr. Polish, “a person of ordinary skill in the art would understand the ‘data connection’ is the Internet connection between the server system and each user system.” Ex. 1002 ¶ 148; Pet. 33.

Turning now to the question of whether Carmel’s “data connection” (i.e., the Internet) has “a data rate more rapid than the playback rate of the

one or more media data elements sent via that connection,” Petitioner answers that question by, *inter alia*, quoting Carmel: “[w]hen the data stream comprises multimedia data, the **data rate** should be generally **equal to or faster** than the **rate at which the data are generated at the transmitting computer.**” Pet. 34 (quoting Ex. 1003, 2:56–59 (emphasis by Petitioner)). By this statement, Petitioner asserts, “Carmel explicitly discloses this claim limitation.” *Id.* (footnote omitted). “[A] data rate more rapid than the playback rate of the one or more media data elements sent via that connection” is satisfied whenever a media data element, playing at normal speed, has a playback rate less rapid than the data rate of the “data connection,” such as the Internet. *Id.* at 33.

Petitioner contends that a person of ordinary skill in the art reading Carmel would have understood that Carmel provides for transmission rates more rapid than the playback rate and thereby teaches a data connection having a data rate more rapid than a playback rate in three ways. Pet. 34–37.

First, according to Petitioner, “Carmel teaches the preferred operation is for the time required to transmit a given data slice should be less than the time required to play through the duration of the data slice.” Pet. 35 (citing, *inter alia*, Ex. 1003, 13:7–11, 13:30–35; Ex. 1002 ¶¶ 154–157).

Second, “Carmel discloses a lag recovery technique in which Carmel takes steps ‘to increase the data transmission or reception rate’ including varying the compression/quality level of the slices and the client 30 selecting lower quality level slices.” Pet. 35 (citing Ex. 1003, 7:36–41, 7:45–49, quoting 11:9–15 (“[I]f the rate is low, such that . . . the slices need to be played as fast as or faster than they are being received, the client will preferably select a lower quality level if one is available.”); Ex. 1002 ¶ 159).

“When the client 30 uses the lag recovery technique, the transmission rate is ‘more rapid than’ the playback rate: data slices are sent to and arrive at client 30 faster than the data slices are being played out.” *Id.* at 35–36 (footnote omitted).

Third, “Carmel discloses a client 30 can open additional links (i.e., additional data connections) to speed up the transfer of data from the server 36. ([Ex. 1002] ¶162.) By permitting multiple links between the server 36 and a single client, Carmel teaches the data rate can be increased.” Pet. 36–37.

In each of these three ways, according to Petitioner, a person of ordinary skill in the art would have understood that the transmission rate is more rapid than the playback rate and thus that Carmel teaches a data connection having a data rate more rapid than a playback rate. Pet. 34–37; Pet. Reply 21–25.

Patent Owner disagrees with Petitioner’s reasoning that Carmel teaches a data connection more rapid than the playback rate. PO Resp. 40–48.

Patent Owner argues that “[t]he Petition does not show how a *data connection* with the specified rate characteristic is disclosed or rendered obvious by Carmel.” PO Resp. 40.

Regarding the statement in Carmel that Petitioner relies on as “explicitly” disclosing 1[d(i)], Patent Owner argues that it “uses the term ‘data rate’ but does not say the ‘data rate’ of *what*.” PO Resp. 43; *see* Pet. 34 (quoting Ex. 1003, 2:56–59). According to Patent Owner, “there is no disclosure of a *data connection* whose rate is generally equal to or faster than the playback rate of the sequence of digitally encoded media data

elements initially identified in the claim.” *Id.* at 43–44 (citing Ex. 2002 ¶ 80).

We do not agree with Patent Owner’s argument. Common sense tells us that if a data rate is faster than the playback rate, then the data connection must have a capacity commensurate with the faster rate.

As Petitioner explains, “it is not possible that data can be sent at a rate more rapid than the data connection supports.” Pet. Reply 22 (citing Ex. 1111 ¶ 110).

Furthermore, Dr. Polish has testified that a faster rate would be accomplished whenever “the rate of sending a given multimedia file across a data connection (such as the Internet) is more rapid than the rate at which the given multimedia file is subsequently played at normal speed.” Ex. 1002 ¶ 150; Pet. 33. As an example, “consider a multimedia file ‘file.mp4’ that has a playback rate of 24,000 bits per second . . . [if the file] can be transmitted across the data connection faster than 24,000 bits per second, such as 36,000 bits per second,” then the data connection has a data rate more rapid than the playback rate of the file. *Id.* (citing Ex. 1001, 9:32–35 (“if the user’s connection to the Internet is made via a 56,000 bits per second modem, the user might select a media source encoded for playback at 24,000 bits per second”))).

Patent Owner also takes issue with Petitioner’s three ways that a person of ordinary skill in the art would have understood Carmel to be teaching a transmission rate more rapid than the playback rate. PO Resp. 42–48, referring to Pet. 34–37.

For each of these, Patent Owner asserts that “Carmel repeatedly teaches that the connection may not have this capability, and nowhere

teaches a data rate capability of the data connection ‘faster than’ the data rate for the elements sent via the connection.” PO Resp. 44. We addressed that argument earlier. In teaching a data rate “faster” than the playback rate, Carmel necessarily teaches a data connection with a capacity commensurate with the faster rate. *See* Pet. 34 (quoting Ex. 1003, 2:56–59). To the extent Patent Owner is arguing that Carmel must teach a data connection with a capacity that is *constantly* at a faster rate than the playback, that is not a requirement in 1[d(i)].

Patent Owner’s remaining analysis of each of Petitioner’s three ways has been carefully reviewed but does not undermine Petitioner’s position. PO Resp. 44–48.

For example, as to the third contention (i.e., regarding Carmel’s disclosure of opening additional links to speed up the transfer; Pet. 36–37), Patent Owner responds that Carmel discloses “*aggregated* links that additively provide bandwidth that is ‘generally sufficient’ to ‘convey the entire data stream in real time.’” PO Resp. 47 (quoting Ex. 1003, 2:60–3:4). “The Petition argues aggregating links (Pet. 36–37) and then the throughput of the ‘overall connection,’ but this does not address the claim language, which recites ‘a connection.’” *Id.* at 47–48 (citing Ex. 2002 ¶ 82). Patent Owner adds that “Carmel’s disclosure also doesn’t say faster than the playback rate, just faster than the individual links.” *Id.* at 48.

But in disclosing aggregated links to convey generally sufficient bandwidth, one of ordinary skill the art would have understood that Carmel’s “data connection supports, i.e., its capacity,” a data rate more rapid than the playback rate. *See* PO Resp. 13 (construing ‘data rate’ as the rate “the data connection supports, i.e., its capacity”) (citing Ex. 1001, 4:37–54).

Furthermore, as Petitioner correctly points out, the claim calls for “one or more data connections over the *Internet*” (1[c], emphasis added), not over aggregated links. Pet. Reply 25 (citing PO Resp. 47–48; Ex. 1001, cl. 1; Ex. 1111 ¶¶ 109–110). Additionally, Carmel discloses using a single connection between the server and a client. Ex. 1003, 7:45–49, 10:35–38, 10:67–11:2, 11:9–11.

Patent Owner’s analysis of each of Petitioner’s three ways does not undermine Petitioner’s contention that “Carmel explicitly discloses this claim limitation.” Pet. 34 (relying on Ex. 1003, 2:56–59). Carmel teaches that “the data rate should be generally equal to *or faster* than the rate at which the data are generated at the transmitting computer.” Ex. 1003, 2:56–59 (emphasis added); Pet. 34; *cf.* Pet. Reply 22 (“PO provides no legal basis for arguing the prior art’s disclosure of additional features somehow negates obviousness of the claimed features.”) This necessarily teaches a data rate of the connection *faster* than the playback rate and thereby teaches 1[d(i)] as Petitioner contends.

Patent Owner also argues that the data rate may fall below the playback rate. Patent Owner indicates that Carmel states that “typically none of the plurality of links has sufficient bandwidth on its own to convey the entire data stream in real time.” PO Resp. 40 (quoting Ex. 1003, 2:64–67). According to Patent Owner, Carmel “seek[s] to provide a solution using generally available hardware, software, and network facilities, when addressing data connections.” *Id.* Patent Owner explains that “Carmel provides *workarounds* for this shortcoming— to add parallel links, change the duration of slices (although only for the upload stage), change the encoding of slices, doing this dynamically during streaming, etc., indeed,

doing all of the above—but *not* the approach laid out in the challenged claims.” *Id.* The claimed approach, according to Patent Owner, is that the “rate” for the data connection is “more rapid than the playback rate ‘for the one or more media data elements sent via that connection.’” *Id.* at 41. “Carmel simply does not teach a data connection having the capability to send data more rapidly than the playback rate over the *entirety of such a stream . . .*” *Id.* at 42 (emphasis added).

But, for the reasons discussed, it remains that Carmel expressly teaches that “the data rate should be generally equal to or faster than the rate at which the data are generated at the transmitting computer.” Ex. 1003, 2:56–59. Thus, notwithstanding a data rate may fall below the playback rate, Carmel teaches “a *capability* to send data more rapidly than the playback rate over the entirety of such a stream.” PO Resp. 42; Ex. 1003, 2:56–59.

Furthermore, as Petitioner points out, Patent Owner admits “that Carmel may experience periods where the data rate is lower than the playback.” Pet. Reply 21 (citing, *inter alia*, PO Resp. 15 (“as the specification makes clear that there will be reception interruptions with an internet connection”); Ex. 1103, 33:17–34:9; Ex. 1111 ¶ 111; Ex. 2002 ¶ 26).

We have considered all of Patent Owner’s arguments but do not find they undermine Petitioner’s contention that Carmel teaches 1[d(i)].

Based on our review of the evidence of record, we find that Carmel teaches 1[d(i)].

1[d(ii)] each sending is at a transmission rate as fast as the data connection between the server system and each requesting user system allows;

Above we addressed limitation 1[d], which requires “sending” a media data element, having a specified serial identifier, from the server system to a requesting user system in response to a request from said requesting user system. Limitation 1[d(ii)] requires the “sending” to be at a transmission rate as fast as the data connection between the server system and each user system allows.

Petitioner contends that Carmel teaches or renders this step obvious. Pet. 37–40.

Petitioner begins by explaining that “Carmel discloses that slices of data stream 40 are sent to clients 30 via well-known Internet protocols, such as HTTP, UDP, RTP, or TCP.” Pet. 37 (citing Ex. 1003, 6:50–54, 7:5–9).

Dr. Polish then explains that “[i]t would be obvious to a person of ordinary skill in the art that a server sending data via Internet protocol, such as HTTP or TCP, would send the data as fast as the connection allows.” Ex. 1002 ¶ 166; Pet. 37–38. In support, Dr. Polish relies on M.H. Willebeek-LeMair et al., *Bamba – Audio and Video Streaming over the Internet* (1998) (Ex. 1019) and Jonathan C. Soo, *Live Multimedia over HTTP* (1994) (Ex. 1042). Ex. 1002 ¶ 166 (citing Ex. 1019, 271–72; Ex. 1042, 0002). Dr. Polish also points out that “the ’636 patent itself says as much, stating that ‘media data is sent to the user computer at a rate faster than the playback rate, which may be the highest rate that the data connection between the server and the user computer will support[.]’” *Id.* (quoting Ex. 1001, 8:14–20); Pet. 37.

Patent Owner has provided no substantive argument challenging Petitioner's contentions as to 1[d(ii)]. *See generally* PO Resp. 36–56.

Based on our review of the evidence of record, we find that Carmel teaches 1[d(ii)].

1[d(iii)] the one or more media data elements sent are selected without depending on the server system maintaining a record of the last media data element sent to the requesting user systems;

This limitation requires the sent media elements to be selected “without depending on the server maintaining a record of the last media data element sent.”

Petitioner contends that Carmel teaches this. Pet. 40–42.

Petitioner explains, *inter alia*, that Carmel teaches client devices 30 requesting data slices from data stream 40 from server 36 and in response sending the data slices to the requesting client devices. Pet. 26 (citing Ex. 1003, 10:45–47, 11:5–7). According to Petitioner, “the client 30 is responsible for selecting the data slice that is to be transmitted.” *Id.* at 40.

Petitioner further states that

[t]he server system in Carmel does not maintain a record of the last data slice sent to client 30. The only information the server system maintains is the running slice index (an index of all the data slices that have been generated at computer 34) and the index file 50, which denotes “the index of the file in data stream 40 that was most recently uploaded by computer 34.”

Pet. 40 (quoting Ex. 1003, 7:63–64). “Nowhere does Carmel suggest the server system (computer 34 and server 36) keeps a record of the last data slice sent to a client 30.” *Id.*

In support, Petitioner looks to, *inter alia*, Figure 6A of Carmel which, according to Petitioner, “show[s] that Carmel reflects a classic ‘client-pull’

streaming system where the data recipient is responsible for selecting the data to be transmitted. *Id.* at 41 (citing Ex. 1002 ¶ 177). Dr. Polish testifies in support that Figure 6A shows

that the client 30 reads the index file (*e.g.*, “Read Index File”) to “decide and indicate” which slice to download (*e.g.*, “Select Slice”). ([Ex. 1003,] 10:42–45.) The server 36 sends the selected slice to the client 30, where the client 30 decodes (“Decode”) and “outputs the multimedia data for the appreciation of the user” (“Output Data”). (*Id.*, 10:48–50.) The client 30 then checks to verify that the data connection between it and server 36 is acceptable (“Link Function OK?”); and if it is, client 30 “continues” back to the beginning of the process, selecting the next data slice for transmission (“Continue”).

Ex. 1002 ¶ 172; Pet. 41. Petitioner contends that this demonstrates that “sending data slices to clients 30 is dependent only on the client’s selection of desired data slices and does not depend on the server 36 maintaining a record of the last data slice sent to the client,” and thereby meets limitation 1[d(iii)]. Pet. 41.

Patent Owner disputes Petitioner’s reliance on Carmel’s Figure 6A. Patent Owner disagrees with Petitioner’s view of Carmel as teaching a “client-pull” streaming system. PO Resp. 49. According to Patent Owner, “Carmel discloses a push architecture, and as such the server must keep track of the last slice it sent to the user system so as to know which slice to send next.” *Id.* at 49 (citing Ex. 2002 ¶ 84). “The entire premise of the Petition for this limitation rests upon the faulty reading of Carmel as a ‘pull’ system and that consequently the server in Carmel does not need to maintain a record of the last slice sent to the user computer.” *Id.* (citing Pet. 40–41).

We agree with Petitioner that Patent Owner “rel[ies] on its positions regarding operations over an ‘entire program’ and that the ‘requests’ identify each-and-every element specifically.” Pet. Reply 9 (citing PO Resp. 19–21).

Patent Owner’s argument is premised on a construction of 1[d(iii)] that builds on its construction proposed for 1[c]–1[c(ii)]; that is, according to Patent Owner,

the reference in limitation d(iii) to “*the* one or more media data element sent” refers to what is sent “responsive to the requests” referenced in limitation 1[d]], which by its terms includes all of the elements responsive to “*the* requests,” which in turn refers back to all requests made per limitation 1[c]–1[c(ii)] – in other words, all of the elements that make up the program stream (or at a minimum, all of the elements sent in response to that request).

Since a stream starts, by definition, when no prior element in the sequence would have been sent, any interpretation suggesting that limitation d(iii) can be satisfied by a *single element* at the start of the stream would render limitation d(iii) meaningless.

PO Resp. 21.

The difficulty with Patent Owner’s construction is the same as the one we discussed for 1[c]–1[c(ii)]; that is, 1[d(iii)] does not require “pulling” each slice subsequent to the request. *See* PO Resp. 11–12, 38.

It is sufficient, as Petitioner has done here with this limitation, to show that Carmel teaches sending “one or more media elements” that are selected “without depending on the server maintaining a record of the last media data element sent” (1[d(iii)]). Petitioner does not have to show sending each-and-every element specifically to satisfy the limitation.

Thus, we are unpersuaded by Patent Owner’s argument that Petitioner cannot rely on Figure 6A of Carmel to “demonstrate[] that the server 36 sending data slices to clients 30 is dependent only on the client’s selection of desired data slices and does not depend on the server 36 maintaining a record of the last data slice sent to the client.” Pet. 41 (citing Ex. 1002 ¶ 177).

Based on our review of the evidence of record, we find that Carmel teaches 1[d(iii)].

1[d(iv)] all of the media data elements that are sent by the server system to the plurality of user systems are sent in response to the requests; and

Petitioner contends that Carmel teaches this limitation. Pet. 42–43.

Petitioner cites that Carmel’s teaching of a server 36 sending data slices “only in response to requests from clients 30.” Pet. 42 (citing Ex. 1002 ¶¶ 175–177, 180–181). “Server 36 cannot send data slices without the client’s input and selection.” *Id.* at 43 (citing Ex. 1003, Figures 6A and 6B).

Petitioner explains, as an example, that, under normal operation, client 30 “‘preferably monitors the rate of data coming in’ and controls whether to establish multiple links.” Pet. 43 (quoting Ex. 1003, 10:55). According to Dr. Polish, “[a] person of [ordinary] skill in the art would understand from the possibility of multiple links, that client 30 would need to be in control of which data slices are sent on each link in order to ensure that the same data slice is not sent over multiple links—which would cause wasteful and duplicative use of resources.” Ex. 1002 ¶ 181; Pet. 43.

Patent Owner's argument is limited to addressing each of the Petitioner-cited Carmel disclosures in relation to the claim language as Patent Owner construes it. PO Resp. 51–56 (discussing Ex. 1001, separately addressing Figs. 6A–6B, 8:1–11, 8:32–41, 10:24–63, 11:9–22), 21–23 (construing 1[d(iv)]); Pet. 40–41. Each disclosure is challenged on the basis that it does not disclose repeated requests and responses for subsequent slices. “The sum total of this alleged ‘evidence’ for a pull (repeated individual requests for successive slices by serial ID) is thus nothing.” PO Resp. 56.

Patent Owner's disagreement with Petitioner's position stems from its construction of 1[d(iv)], which as with 1[d(iii)], is a construction that builds on the narrow construction it proposes for 1[c]–1[c(ii)]. PO Resp. 21–23, 51–56. Patent Owner states, *inter alia*, that

Patent Owner's construction is that limitation 1[d(iv)] applies to *each* element of the stream. By reason of the claim language read as a whole, each and every element sent must be responsive to a request for that element by its serial ID.

All elements are sent in response to “the requests,” and the antecedent for “the requests” is the earlier reference to requests, which are all by serial identifier for each and every element requested. The plain and ordinary claim language, as confirmed by the specification, leaves no room for sending elements that were not requested by respective serial identifiers. Sending a stream in response to a request by serial identifiers where the responsive stream also includes subsequent portions of the stream not corresponding to one of the requested identifiers, is not within the scope of the claim.

PO Resp. 22.

The difficulty with Patent Owner’s position is the same as the one we discussed for 1[c]–1[c(ii)]; that is, 1[d(iv)] covers each received request specifying a serial identifier of the requested media data elements. It does not require, as Patent Owner puts it, that “even if the ‘received request’ is for more than one element, each such requested element is identified in the request by the respective serial identifier of that media data element.” PO Resp. 11–12. Although 1[d(iv)] requires “all of the media data elements that are sent by the server system to the plurality of user systems are sent in response to the requests,” it does not require sending each and every element “by serial identifier for each and every element requested.” See PO Resp. 22. For the reasons discussed for 1[c]–1[c(ii)], we are unpersuaded that the plain and ordinary claim language, in light the specification, limits the scope of 1[d(iv)] to the extent Patent Owner argues.

Based on our review of the evidence of record, we find that Carmel teaches 1[d(iv)].

1[d(v)] all of the media data elements that are sent by the server system to the requesting user systems are sent from the data structure under the control of the server system as the media data elements were first stored therein.

Petitioner contends that Carmel teaches limitation 1[d(v)]. Pet. 44–47.

Petitioner explains, *inter alia*, that the “‘data structure under the control of the server system’ in Carmel is the storage in server 36.” Pet. 44 (citing Ex. 1002 ¶¶ 120–123). According to Petitioner, “[a]ll data slices that are sent to clients are sent from server 36.” *Id.* (citing Ex. 1002 ¶ 185).

Petitioner further explains that Carmel teaches “all of the media data elements . . . are sent . . . as the media data elements were ‘first stored therein’ [i.e., the server system]” because “the data slices sent from server 36

are sent ‘in the same format’ as they were stored in server 36.” Pet. 43–46 (citing Ex. 1002 ¶ 188). According to Dr. Polish, “[a] person of ordinary skill in the art would therefore understand server 36 would not alter the format of the data slices prior to sending the slices to clients 30.” Ex. 1002 ¶ 188; Pet. 46–47.

Patent Owner has provided no substantive argument challenging Petitioner’s contentions as to 1[d(v)]. *See generally* PO Resp. 36–56.

Based on our review of the evidence of record, we find that Carmel teaches 1[d(v)].

2. Conclusion as to Claim 1

For the reasons discussed above, we determine that a preponderance of the evidence supports Petitioner’s position that Carmel renders obvious the subject matter of claim 1 of the ’636 patent.

3. Independent Claims 5 and 9

Claims 5 and 9, drawn to a “server system” and a “computer program product,” respectively, parallel “method” claim 1 discussed above. Petitioner indicates that claim 5 “presents no material differences from claim 1 in terms of the basic functions it recites.” Pet. 49. “Claim 9 is materially the same as claim 1 except it is written as a computer program product instead of a method.” *Id.* at 53.

Patent Owner does not provide any specific arguments as to these claims. *See* PO Resp. 36–56.

For the reasons discussed with respect to claim 1, we determine that a preponderance of the evidence supports Petitioner’s position that Carmel

teaches and renders obvious the subject matter of claims 5 and 9 of the '636 patent.

4. Dependent Claims 2–4, 6–8, and 10–12

Petitioner contends that claims 2–4, 6–8, and 10–12, depending from independent claims 1, 5, and 9, respectively, are also taught in or rendered obvious over Carmel. Pet. 44–57.

Claims 2, 6, and 10

Claim 2 further limits the method of claim 1 so that the “serial identifiers” (*see, e.g.*, 1[c(i)]) “are sequential.” Ex. 1001, 17:9–10. Claims 6 and 10 similarly further limit claims 5 and 9, respectively. *Id.* at 18:4–5, 18:66–67, respectively.

Petitioner quotes Carmel: “[c]omputer 34 stores each slice as a corresponding file, having a running slice index **1, [2], 3...N.**” Pet. 47 (quoting Ex. 1003, 7:27–30) (emphasis added). According to Petitioner, “[t]he serial identifiers (slice indices) of the slices are thus stored and exist sequentially.” *Id.* Petitioner further indicates that Carmel teaches that “each file also includes one or more time stamps, indicating a real time at which the data in the file were recorded or an elapsed time relative to the beginning of stream 40.” *Id.* (quoting Ex. 1003, 7:28–31.) According to Petitioner, “[i]t would be obvious to a POSITA that the serial identifier of the first data slice would reflect an earlier time in the data stream, and the second data slice would reflect a later time in the data stream, and so on.” *Id.* (citing Ex. 1002 ¶ 191).

Patent Owner has provided no substantive argument challenging Petitioner’s contentions as to claims 2, 6, and 10. *See* PO Resp. 56.

Based on our review of the evidence of record, we find that Carmel renders obvious the subject matter of claims 2, 6, and 10.

For the reasons discussed above, we determine that a preponderance of the evidence supports Petitioner's position that Carmel renders obvious the subject matter of claims 2, 6, and 10 of the '636 patent.

Claims 3, 4, 7, 8, 11, and 12

Claim 3 further limits the method of claim 1 so that the "sending" (*see, e.g.*, 1[d(ii)]) "is via a reliable transmission protocol." Ex. 1001, 17:11–12. Claims 7 and 11 similarly further limit claims 5 and 9, respectively. *Id.* at 18:6–7, 19:1–2, respectively. Claim 4 further limits the method of claim 3 so that the "reliable transmission protocol" "is TCP." Ex. 1001, 17:14. Claims 8 and 12 similarly further limit claims 7 and 11, respectively. *Id.* at 18:9, 19:4, respectively.

Petitioner explains that "Carmel teaches the server 36 sends data slices to clients 30 'using the well-known Internet Protocol (IP).'" Pet. 48 (quoting Ex. 1003, 6:29–31). Petitioner shows that Carmel teaches that "other Internet protocols may be used, such as **TCP/IP**, UDP, or RT(x) protocols." *Id.* (quoting Ex. 1003, 6:53–54) (emphasis added). According to Petitioner, "Carmel thus teaches that the server 36 can send data slices to clients 30 via one of several Internet protocols, including TCP." *Id.*

Patent Owner has provided no substantive argument challenging Petitioner's contentions as to claims 3, 4, 7, 8, 11, and 12. *See* PO Resp. 56.

Based on our review of the evidence of record, we find that Carmel renders obvious the subject matter of claims 3, 4, 7, 8, 11, and 12.

For the reasons discussed above, we determine that a preponderance of the evidence supports Petitioner’s position that Carmel renders obvious the subject matter of claims 3, 4, 7, 8, 11, and 12 of the ’636 patent.

E. Ground II—Obviousness over Carmel and Narayan

Petitioner challenges claims 1–12 as unpatentable under 35 U.S.C. § 103(a) over Carmel and Ravi. Pet. 54–59. “Ground 2 incorporates Ground 1’s analysis of Carmel alone but adds Narayan’s teachings for limitations 1[a], 5[b], and 9[a].” Pet. 54. Consistent therewith, Petitioner addresses only limitations 1[a], 5[b], and 9[a]. *Id.* at 55–59. Narayan is relied upon “[t]o the extent [these limitations are] not rendered obvious based on Carmel alone.” *Id.* at 55.

Because we find that Carmel alone renders obvious the claimed subject matter (*see* Ground I), we do not reach this ground. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding a petitioner “is entitled to a final written decision addressing all of the claims it has challenged”); *Bos. Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App’x 984, 990 (Fed. Cir. 2020) (non-precedential) (recognizing that “[t]he Board has the discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims”).

F. Ground III—Obviousness over Carmel and Ravi

Petitioner challenges claims 1–12 as unpatentable under 35 U.S.C. § 103(a) over Carmel and Ravi. Pet. 59–64. “Ground 3 incorporates Ground 1’s analysis of Carmel alone but adds Ravi’s teachings for limitations 1[d(ii)], 5[e(ii)], and 9[d(ii)].” Pet. 59. Consistent therewith, Petitioner addresses only limitations 1[d(ii)], 5[e(ii)], and 9[d(ii)]. *Id.* at 59–

64. Ravi is relied upon “[t]o the extent [these limitations are] not rendered obvious based on Carmel alone.” *Id.* at 60.

Because we find that Carmel alone renders obvious the claimed subject matter (*see* Ground I), we do not reach this ground.

G. Ground IV—Obviousness over Carmel, Narayan and Ravi

Petitioner challenges claims 1–12 as unpatentable under 35 U.S.C. § 103(a) over Carmel, Narayan and Ravi. Pet. 64–65. “Ground 4 is a combination of Grounds 2 and 3.” *Id.* at 64.

Because we find that Carmel alone renders obvious the claimed subject matter (*see* Ground I), we do not reach this ground.

III. PETITIONER’S MOTION TO EXCLUDE

Petitioner filed a Motion to Exclude certain exhibits submitted by Patent Owner. Paper 25 (“Mot. Excl.”). Patent Owner filed an Opposition (Paper 26, “Opp. Mot. Excl.”), and Petitioner filed a Reply (Paper 28, “Reply Mot. Excl.”).

“Generally, the Board waits until after the oral hearing, when it reviews the record in its entirety, to decide the merits of any motions to exclude. In the Board’s experience, consideration of the objected-to evidence is often unnecessary to resolve the patentability of the challenged claims, and the motion to exclude is moot.” Consolidated Trial Practice Guide⁵ 79–80.

Petitioner moves to exclude the following exhibits:

⁵ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

- Ex. 2003 (Declaration of Dr. Henry Houh filed in IPR2022-01228 (Ex. 1002));
- Ex. 2004 (May 23, 2023 Deposition of Dr. Kevin Jeffay filed in IPR2022-01430 and -01433);
- Ex. 2008 (*In re Certain Fitness Devices, Streaming Components Thereof, and System Containing Same*, Inv. No. 337-TA-1265, Initial Determination (ITC Sept. 9, 2022) (CALJ Clark S. Cheney); and,
- Ex. 2009 (*In re Certain Fitness Devices, Streaming Components Thereof, and System Containing Same*, Inv. No. 337-TA-1265, Evidentiary Hearing - Volume III (ITC March 14, 2022)).

Mot. Excl. 1–2. Petitioner states, *inter alia*, that “Exhibits 2003, 2004, and 2009 are a declaration, deposition, and hearing transcript containing testimony of experts not involved in this IPR and from cases not involving [Petitioner].” *Id.* at 2. Petitioner contends that Mr. Hoarty should not be allowed to rely on any of these exhibits as the bases of his expert testimony. *Id.* at 2. “Exhibit 2008 is an Initial Determination from the ITC, which should be excluded under FRE 401 as irrelevant.” *Id.* at 3.

We have not relied on any of these exhibits in reaching our decision. Accordingly, we need not determine whether to exclude the challenged material. Therefore, the Motion to Exclude is dismissed as moot.

V. CONCLUSION

For the foregoing reasons, Petitioner has proven by a preponderance of the evidence that the challenged claims of the ’636 patent are unpatentable, as summarized in the following table:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–12	103	Carmel	1–12	
1–12	103	Carmel, Narayan ⁶		
1–12	103	Carmel, Ravi ⁷		
1–12	103	Carmel, Narayan, Ravi ⁸		
Overall Outcome			1–12	

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–12 of the '636 patent have been proven to be *unpatentable*;

FURTHER ORDERED that Petitioner's Motion to Exclude (Paper 26) is *dismissed as moot*;

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

⁶ In view of our determination that claims 1–12 are unpatentable under § 103(a) as obvious over Carmel, we do not reach this challenge to patentability. *See supra* § II.E.

⁷ In view of our determination that claims 1–12 are unpatentable under § 103(a) as obvious over Carmel, we do not reach this challenge to patentability. *See supra* § II.F.

⁸ In view of our determination that claims 1–12 are unpatentable under § 103(a) as obvious over Carmel, we do not reach this challenge to patentability. *See supra* § II.G.

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