

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC, THE WALT DISNEY COMPANY,
DISNEY STREAMING SERVICES LLC, HULU LLC, and
NETFLIX INC.,
Petitioner,

v.

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

IPR2022-01411¹
Patent 9,729,594 B2

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

HUDALLA, *Administrative Patent Judge*.

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

¹ IPR2023-00813 has been joined with this proceeding.

Google LLC (“Google”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–17 (“the challenged claims”) of U.S. Patent No. 9,729,594 B2 (Ex. 1001, “the ’594 patent”). WAG Acquisition, L.L.C. (“Patent Owner”) filed a Preliminary Response (Paper 6). Taking into account the arguments presented by Patent Owner in the preliminary record, we determined that the information presented in the Petition established that there was a reasonable likelihood that Google would prevail with respect to its unpatentability challenges. Pursuant to 35 U.S.C. § 314, we instituted this proceeding on March 10, 2023, as to all challenged claims and all grounds of unpatentability presented in the Petition. Paper 7 (“Dec. on Inst.”).

The Walt Disney Company, Disney Streaming Services LLC, Hulu LLC, and Netflix Inc. subsequently filed a similar petition along with a motion for joinder in IPR2023-00813. *See* IPR2023-00813, Papers 1, 6. We instituted an *inter partes* review and joined The Walt Disney Company, Disney Streaming Services LLC, Hulu LLC, and Netflix Inc. (“the joined parties”) as parties to this proceeding in a limited capacity. *See* IPR2023-00813, Paper 11. Henceforth, we refer collectively to Google and the joined parties as “Petitioner.”

During the course of trial, Patent Owner filed a Patent Owner Response (Paper 10, “PO Resp.”), and Petitioner filed a Reply to the Patent Owner Response (Paper 13, “Pet. Reply”). Patent Owner also filed a Sur-reply (Paper 17, “PO Sur-reply”). An oral hearing was held on December 12, 2023, and a transcript of the hearing is included in the record. Paper 38 (“Tr.”).

Petitioner filed a motion to exclude Patent Owner's Exhibits 2010, 2015, 2018, 2020, 2636, and 2824. Paper 26 ("Exclude Mot."). Patent Owner filed an opposition (Paper 28, "Exclude Opp."), and Petitioner filed a reply (Paper 32, "Exclude Reply").

With our authorization, Petitioner filed a Notice of Supplemental Authority regarding a Decision on Appeal in *Ex parte WAG Acquisition, LLC*, Appeal 2023-002525, Reexam 90/014,833 (Ex. 1117). Paper 29. Patent Owner filed a responsive brief. Paper 37. Also with our authorization, Patent Owner filed a Notice of Supplemental Authority regarding a Decision on Appeal in *Ex parte WAG Acquisition, LLC*, Appeal 2023-003319, Reexam 90/014,834 (Ex. 2023).² Paper 28. Petitioner filed a responsive brief. Paper 35.

We have jurisdiction under 35 U.S.C. § 6. This decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of claims 1–17 of the '594 patent. For the reasons discussed below, Petitioner has demonstrated by a preponderance of the evidence that claims 1–17 of the '594 patent are unpatentable.

I. BACKGROUND

A. *Real Parties-in-Interest*

Google identifies Google LLC and YouTube, LLC as real parties-in-interest. Pet. 1; Paper 25, 1. The joined parties identify The Walt Disney Company, Disney Streaming Services LLC, Disney Streaming Technology LLC, Disney Platform Distribution LLC, BAMTECH LLC, ESPN, Inc.,

² Patent Owner's Notice of Supplemental Authority pertains to grounds that we do not reach in this Decision. *See infra* § II.F.

Hulu LLC, and Netflix Inc. as real parties-in-interest. IPR2023-00813, Paper 1, 1. Patent Owner identifies WAG Acquisition, L.L.C., as the real party-in-interest. Paper 3, 2.

B. Related Matters

As required by 37 C.F.R. § 42.8(b)(2), the parties identify various related matters. Pet. 1–2; Paper 3, 2–8; Paper 25, 1–2; IPR2023-00813, Paper 1, 1–2.

C. The '594 Patent

The '594 patent is directed to “delivering streaming media, such as audio and video, on the Internet.” Ex. 1001, 1:52–55. The '594 patent addresses a purported need to, *inter alia*, deliver streaming content over the Internet on demand and without buffering delay. *Id.* at 3:45–50. Figure 1 of the '594 patent is reproduced below.

Fig. 1

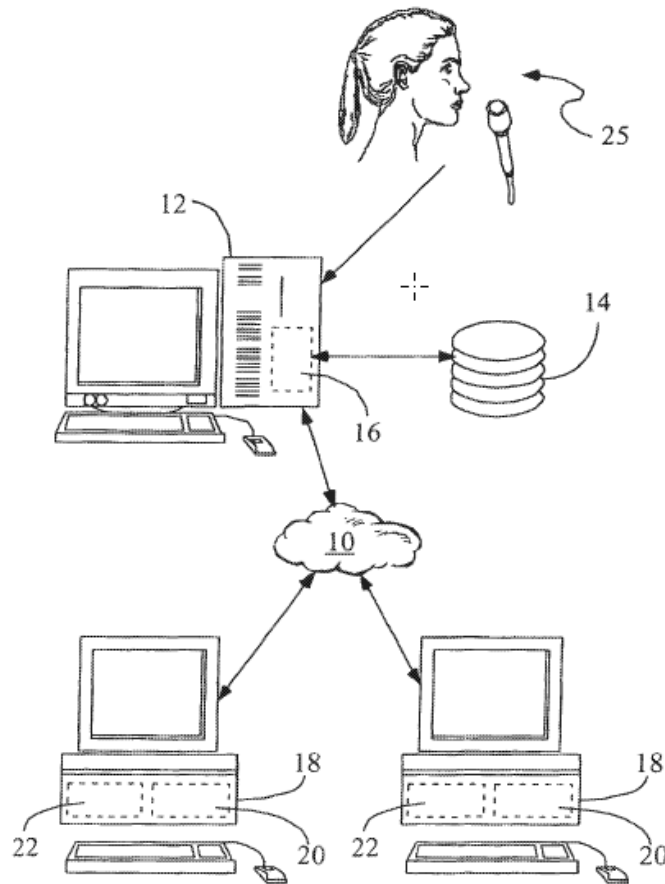


Figure 1 depicts a streaming media buffering system for distributing via the Internet streaming media composed of a plurality of time-sequenced data elements. *Id.* at 4:23–25, 6:30–32. The system includes server 12 connected to Internet 10 for transmitting the streaming media data elements. *Id.* at 6:32–35. Server 12 has server buffer 14 for storing data elements for transmission and buffer manager 16. *Id.* at 6:35–37. Buffer manager 16 may be adapted to effectively render server buffer 14 a FIFO (first-in, first-out) device. *Id.* at 7:18–20. User computer 18, which includes user buffer 20 and buffer manager 22, is connected to server 12 via Internet 10. *Id.* at 6:48–52, 6:58–59. User computer 18 is associated with media player software incorporating user buffer 20. *Id.* at 6:51–52.

Buffer manager 16 in server 12 may sequentially number the media data elements. Ex. 1001, 14:43–45. User computer 18 transmits a request to server 12 to send one or more data elements, specifying the serial numbers of the data elements, and server 12 responds by sending the requested data elements. *Id.* at 14:50–56. User computer 18 includes “means for receiving and storing a predetermined number of media data elements which are received sequentially by the media player, playing the data out sequentially as audio and/or video, and deleting media data elements from the buffer as they are played out.” *Id.* at 15:9–15. “As data is played out, the next sequential data elements are requested from the server in such a fashion as to approximately maintain the predetermined number of data elements in the user’s buffer.” *Id.* at 15:15–18. User computer 18 continues to transmit additional data requests for the duration of playing the media. *Id.* at 14:56–58. Buffer manager 22 in user computer 18 maintains a record of the serial number of the last data element (i.e., the highest data element number) received and stored in buffer 20. *Id.* at 14:47–49. Data is transmitted to user computer 18 as fast as the data connection between user computer 18 and server 12 will allow. *Id.* at 14:60–62.

The application that led to the ’594 patent was filed on October 3, 2016, and claims priority to, *inter alia*, a provisional application that was filed on September 12, 2000. Ex. 1001, codes (22), (60). Notwithstanding, Petitioner notes that, in a related litigation, Patent Owner has asserted a priority date of November 11, 1999, for the challenged claims based on Patent Owner’s asserted date of invention. Pet. 9 (citing Ex. 1047, 1). Petitioner applies the November 11, 1999, date for qualifying the asserted references as prior art. *Id.*

D. Illustrative Claim

Of the challenged claims, claims 1, 6, and 11 are independent. Claims 2–5 depend directly or indirectly from claim 1, claims 7–10 depend directly or indirectly from claim 6, and claims 12–17 depend directly or indirectly from claim 11. Claim 1 is illustrative of the challenged claims. We reproduce claim 1 below with the parties’ identifiers in brackets and formatting applied:

1. [preamble] A method for operating a media player to receive and play an audio or video program, from a remote media source via a data connection over the Internet, the method comprising:
 - [a(i)] sending requests from the media player to the media source via the data connection for one or more serially identified media data elements representing the audio or video program,
 - [a(ii)] each media data element comprising a digitally encoded portion of the audio or video program and having a playback rate,
 - [a(iii)] each request specifying one or more serial identifiers of the media data elements requested;
 - [b(i)] receiving each of the requested media data elements via the data connection, wherein the data connection has a data rate more rapid than the playback rate of the media data elements, and
 - [b(ii)] each received media data element is received at a rate as fast as the data connection between the media source and the media player allows;
 - [c] storing the received media data elements in a memory of the media player;
 - [d] playing the received media data elements in series from the memory of the media player; and
 - [e] as the received media data elements are played, the media player automatically sending additional requests for

subsequent media data elements for storage in the memory of the media player as required to maintain about a predetermined number of media data elements in the memory of the media player during playing.

Ex. 1001, 16:30–57.

E. Prior Art

Petitioner relies on the following prior art:

U.S. Patent No. 6,005,600, filed Oct. 18, 1996, issued Dec. 21, 1999 (Ex. 1006, “Hill”);

U.S. Patent No. 6,014,694, filed June 26, 1997, issued Jan. 11, 2000 (Ex. 1008, “Aharoni”);

U.S. Patent No. 6,292,834 B1, filed Mar. 14, 1997, issued Sept. 18, 2001 (Ex. 1004, “Ravi”);

U.S. Patent No. 6,389,473 B1, filed Mar. 24, 1999, issued May 14, 2002 (Ex. 1003, “Carmel”); and

U.S. Patent No. 6,845,398 B1, filed Aug. 2, 1999, issued Jan. 18, 2005 (Ex. 1007, “Galensky”).

F. The Instituted Grounds

We instituted *inter partes* review of claims 1–17 of the ’594 patent on the following grounds (Dec. on Inst. 36), which are all the grounds presented in the Petition (Pet. 3–4):

Claims Challenged	35 U.S.C. §	References
1–17	103(a) ³	Hill

³ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. §§ 102 and 103. Because the ’594 patent claims priority to an application filed before March 16, 2013 (the effective date of the relevant amendments), the pre-AIA versions of §§ 102 and 103 apply.

Claims Challenged	35 U.S.C. §	References
1–17	103(a)	Hill, Aharoni
1–17	103(a)	Hill, Ravi
1–17	103(a)	Carmel, Hill
1–17	103(a)	Carmel, Galensky
1–17	103(a)	Carmel, Hill, Ravi
1–17	103(a)	Carmel, Galensky, Ravi

II. ANALYSIS

A. Legal Standards

A 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. *See 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 skill in the art; and (4) where in evidence, so-called secondary considerations.⁴ *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We also recognize that prior art references must be “considered together with the knowledge of one of ordinary skill in the pertinent art.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (citing *In re Samour*, 571 F.2d 559, 562 (CCPA 1978)).

⁴ The trial record does not include any evidence of secondary considerations of nonobviousness.

B. Level of Ordinary Skill in the Art

Citing testimony from Dr. Polish, Petitioner contends that a person of ordinary skill in the art “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.” Pet. 8–9 (citing Ex. 1002 ¶¶ 18–23). Patent Owner “largely agrees with Petitioner’s formulation” but adds the following “clarification”: “the level of skill . . . 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.” PO Resp. 6–7 (citing Ex. 2007 ¶ 13).

We adopt Petitioner’s definition of the level of ordinary skill in the art without the qualifier “at least,” which introduces ambiguity. We are satisfied that this definition comports with the level of skill necessary to understand and implement the teachings of the ’594 patent and the asserted prior art. We also note that our analysis would not change if we adopted Patent Owner’s “clarification,” which would have the effect of increasing the level of ordinary skill. *See Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1366 (Fed. Cir. 2012) (“[I]t is generally easier to establish obviousness under a higher level of ordinary skill.”).

C. Claim Interpretation

In an *inter partes* review, we construe each claim using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b), including construing the claim in accordance with

the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

37 C.F.R. § 42.100(b) (2023). Accordingly, our claim construction standard is the same as that of a district court. *See id.* Under the standard applied by district courts, claim terms are generally given their plain and ordinary meaning, as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). “There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012).

Petitioner includes a table of “[c]laim terms [that] have been proposed for construction by Petitioner.” Pet. 9–10. These proposed constructions appear to arise from related litigation, though Petitioner provides no citation to the source of the constructions. Notwithstanding, Petitioner states that, “[f]or purposes of this petition, Petitioner does not, at this time, contend that any term requires express construction.” *Id.* at 9.

Patent Owner proposes a number of constructions for terms in the challenged claims. PO Resp. 7–12; PO Sur-reply 1–6. Petitioner replies to Patent Owner’s constructions. Pet. Reply 2–6. We now discuss certain of Patent Owner’s proposed constructions.

1. *Preambles*

Patent Owner argues that the preambles are limiting. PO Resp. 8. Petitioner does not put forth a position as to whether the preambles are limiting, but Petitioner does dispute Patent Owner's arguments related to the preambles. *See* Pet. Reply 2–4. Although we need not determine the overarching issue of whether the preambles are limiting in order to dispose of the instant case, we now discuss certain of Patent Owner's arguments related to the preamble. *See, e.g., Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

The preamble of each independent claim recites receiving and playing “an audio or video program, from a remote media source via a data connection over the Internet.” Ex. 1001, 16:30–32 (claim 1), 17:1–3 (claim 6), 17:52–18:2 (claim 11). Patent Owner contends that the recited “program” must refer to an entire program, and not merely a portion of a program. PO Resp. 7. In support of its interpretation, Patent Owner cites later limitations in the independent claims that recite “sending requests” and “sending additional requests . . . during playing,” which allegedly “refer[] to an ongoing action maintained from the start and during playback of the program.” *Id.*; *see also* PO Sur-reply 2 (similar argument). Patent Owner also cites the specification's disclosure that “[t]he user computer . . . continues with additional data requests for the duration of playing the audio/video material.” PO Resp. 7–8 (alterations added) (quoting Ex. 1001, 14:56–58); *see also* PO Sur-reply 2 (similar argument).

Petitioner argues that the preambles do not include the word “entire” in conjunction with “program.” Pet. Reply 2. According to Petitioner, “the claims recite steps that are carried out for portions of the audio/video program, such as ‘sending requests . . . for one or more . . . media data elements,’ not the ‘entire’ program.” *Id.* at 2–3 (citing Ex. 1111 ¶¶ 11–13). Petitioner also notes Mr. Hoarty’s testimony that “an audio or video program might only refer to a portion of the program.” *Id.* at 3 (citing Ex. 1103, 22:22–24:9; Ex. 1111 ¶¶ 15–16).

We decline to read in a requirement that the “program” of the preambles must be an “entire program.” In particular, we do not agree with Patent Owner that the limitation directed to “additional requests . . . during playing” or the mention in the specification of “additional data requests for the duration of playing” necessarily requires that the “playing” refers to an entire program. For example, the recited requests could relate to playing a portion of a program, a premise with which both declarants agree. Ex. 1103, 22:22–24:9; Ex. 1111 ¶¶ 13–16. Thus, we reject Patent Owner’s “entire program” interpretation.

Patent Owner further contends that “a remote media source via a data connection over the Internet” can only refer to a single source and a single connection. PO Resp. 19–21. According to Patent Owner, the invention disclosed in the ’594 patent focuses “on a client, remotely accessing existing (or live) streaming content, from ‘a’ media source, over ‘a’ connection.” *Id.* at 19–20 (citing Ex. 1001, 1:52–55, 3:45–50). Patent Owner also argues that “[t]he word ‘a’ does not mean one or more in the context of these claims” because “‘a data connection’ is a structural characteristic of the claims” that cannot be equated to aggregated connections. PO Sur-reply 3.

Petitioner argues that Patent Owner’s proposed construction contravenes well-established claim construction precedent where “the terms ‘a’ or ‘an’ in a patent claim mean ‘one or more,’ unless the patentee evinces a clear intent to limit ‘a’ or ‘an’ to ‘one.’” Pet. Reply 3–4 (quoting *FS.com v. Int’l Trade Comm’n*, 65 F.4th 1373, 1377–78 (Fed. Cir. 2023)). Petitioner also argues that the evidence of record does not establish a clear intent to limit “remote media source” and “data connection” as proposed by Patent Owner.⁵ *Id.* at 4 (citing Ex. 1111 ¶¶ 17–18).

Given that Petitioner establishes that the asserted prior art teaches the “remote media source” and “data connection” even under Patent Owner’s proposed interpretation (*see infra* § II.D.3.a), we need not resolve the parties’ dispute. *See Realtime Data*, 912 F.3d at 1375.

2. “Request” Limitations (*Limitations 1a(i)–1a(iii)*)

Claim 1 recites:

[a(i)] sending requests from the media player to the media source via the data connection for one or more serially identified media data elements representing the audio or video program,

[a(ii)] each media data element comprising a digitally encoded portion of the audio or video program and having a playback rate,

⁵ Although Patent Owner characterizes this as an improper new argument by Petitioner (PO Sur-reply 3), we do not agree with Patent Owner. Under the Board’s rules, “a petitioner is entitled to respond to new arguments made in a patent owner response.” *Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374, 1380 (Fed. Cir. 2023). The same logic applies to Petitioner’s replies to all of Patent Owner’s proposed claim interpretations, which are put forth for the first time in the Patent Owner Response.

[a(iii)] each request specifying one or more serial identifiers of the media data elements requested.

Ex. 1001, 16:34–41 (bracketed identifiers added and formatting applied) (Limitations 1a(i)–1a(iii)). Independent claims 6 and 11 include similar limitations. *Id.* at 17:7–16, 18:7–15. Patent Owner argues that the recited “requests” in these limitations relate to a plurality of requests that will be sent during receipt of an entire program. PO Resp. 9. Accordingly, Patent Owner argues that “there must be a plurality of requests, each for a serially identified media data element. If the request is for more than one element, each of the elements requested must be serially identified.” *Id.* at 9–10 (citing Ex. 1001, 14:51–53); *see also* PO Sur-reply 4 (similar argument). Patent Owner additionally argues that the system of the ’594 patent need not maintain records of the last data element, which necessitates that “the client’s requests specify by ID the exact elements for the server to send.” PO Sur-reply 4 (citing Ex. 1001, 14:45–49).

Petitioner argues that an ordinarily skilled artisan would have understood that “a media player could request portions of the audio/video program by identifying: 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.” Pet. Reply 4 (citing Ex. 1103, 96:10–101:3; Ex. 1111 ¶¶ 21–22). Petitioner also notes that Patent Owner’s cited support for its construction “does not state that the user computer identifies each-and-every serial number of each-and-every data element requested,” but rather “only requires ‘one or more’ be requested by serial number.” *Id.* at 4–5 (citing Ex. 1111 ¶ 22).

The plain language of these claims recites sending requests “for one or more serially identified media data elements” wherein “each request specif[ies] one or more serial identifiers.” This means that a request sent for a single media data element that specifies a single serial identifier is within the scope of the claim. Indeed, the controversial aspect of Patent Owner’s interpretation is tied to a situation where “the request is for more than one element.” PO Resp. 9. Given that Petitioner establishes the obviousness of a request for a single media data element that specifies a single serial identifier (*see infra* § II.D.3.b), it is unnecessary for us to consider situations where a request pertains to multiple data elements and multiple serial identifiers. *See Realtime Data*, 912 F.3d at 1375.

Regarding Patent Owner’s argument that the “request” limitations relate to a plurality of requests that will be sent during receipt of an entire program (PO Resp. 9), we reject Patent Owner’s “entire program” interpretation above. *See supra* § II.C.1. We also note that the asserted prior art teaches multiple requests (*see infra* §§ II.D.3.b, II.D.3.g), so we need not resolve the issue of whether limitations 1a(i)–1a(iii) require a plurality of requests. *See Realtime Data*, 912 F.3d at 1375.

3. “Receiving” and “Rate” Limitations (*Limitations 1b(i)–1b(ii)*)

Claim 1 recites:

[b(i)] receiving each of the requested media data elements via the data connection, wherein the data connection has a data rate more rapid than the playback rate of the media data elements, and

[b(ii)] each received media data element is received at a rate as fast as the data connection between the media source and the media player allows.

Ex. 1001, 16:42–47 (bracketed identifiers added and formatting applied) (Limitations 1b(i)–1b(ii)). Independent claims 6 and 11 include similar limitations. *Id.* at 17:17–24, 18:16–22. Patent Owner argues that “the[se] two limitations taken together require that the elements will be received in less time than it takes to play them back at normal rendition.” PO Resp. 11. Patent Owner also argues that “‘wherein the data connection has a data rate more rapid than the playback rate’ means the data connection has the specified rate not just for an isolated element, but for the duration of the performance of the recited process.” *Id.* at 10–11; *see also* PO Sur-reply 5 (similar argument). Notwithstanding, Patent Owner acknowledges that these limitations do not require “that the *instantaneous* transfer rate of the connection be faster than the playback rate at all times during transmission of the requested program, as the specification makes clear that there will be reception interruptions with an internet connection.” PO Resp. 11 n.3 (citing Ex. 1001, 12:14–17).

Petitioner calls Patent Owner’s proposed interpretation of limitations 1b(i)–1b(ii) inconsistent with Patent Owner’s acknowledgement about the instantaneous transfer rate. Pet. Reply 5 (citing, *inter alia*, PO Resp. 11 n.3). Petitioner also highlights other arguments in the Response where Patent Owner allegedly concedes that the claim “only require[s] a data connection that is ‘capable’ of transferring media data elements more rapid than the ‘playback rate.’” Pet. Reply 5 (citing PO Resp. 28–29; Ex. 1103, 26:19–29:7).

We decline to construe limitations 1b(i)–1b(ii) other than to agree with both parties (PO Resp. 11, 28–29; Pet. Reply 5) that the recited “data rate” refers to the capability of the data connection. *See, e.g.*, Ex. 1001, 4:40–43 (“The bandwidth requirement of audio or video media refers to the data rate in bits per second that must be transmitted and received in order to listen to or view the material uninterrupted.”); Ex. 1002 ¶ 126; Ex. 1103, 26:19–29:7; Ex. 1111 ¶ 24. This is sufficient to dispose of the instant case. *See Realtime Data*, 912 F.3d at 1375.

4. “Maintain Buffer” Limitation (Limitation 1e)

Claim 1 recites:

[e] as the received media data elements are played, the media player automatically sending additional requests for subsequent media data elements for storage in the memory of the media player as required to maintain about a predetermined number of media data elements in the memory of the media player during playing.

Ex. 1001, 16:52–57 (bracketed identifier added and formatting applied) (Limitation 1e). Independent claims 6 and 11 include similar limitations. *Id.* at 17:33–40, 18:29–35. For these limitations, Patent Owner argues that “the ‘additional requests’ are the same type of requests as in a(i)–a(iii), i.e., specifying the serial ID of each element requested.” PO Resp. 11. Patent Owner argues that this interpretation is consistent with the specification of the ’594 patent. *Id.* at 12 (citing Ex. 1001, 14:51–15:18).

Patent Owner’s argument regarding these limitations is essentially the same as for the other “request” limitations, as discussed above. *See supra* § II.C.2. For the same reasons discussed above (*see id.*), we determine that no construction is necessary for the “maintain buffer” limitations.

5. *Other Terms*

We determine that no other aspects of the challenged claims require explicit construction. *See Realtime Data*, 912 F.3d at 1375.

D. *Obviousness Ground Based on Hill and Aharoni*

Petitioner contends the subject matter of claims 1–17 would have been obvious over the combination of Hill and Aharoni. Pet. 11–40; Pet Reply 6–18. Patent Owner disputes Petitioner’s contentions. PO Resp. 14–37; PO Sur-reply 6–18.

1. *Hill*

Hill is a U.S. patent directed to “playing movie data held in various storage devices with varying bandwidth capabilities, where the movie player adapts to these varying conditions.” Ex. 1006, 1:6–10. Hill discloses “a system and method for enabling a user to view a moving picture with synchronized audio using a workstation connected to a digital network.” *Id.* at 3:15–18. According to Hill, movie data is composed of synchronized audio and video information that is broken into fundamental units called frames. *Id.* at 3:37–39. A clip is a sequence of frames. *Id.* at 3:46. Frames may be referenced according to their position within the global playback sequence (i.e., global frame number), or according to their position within the clip from which they originate (i.e., local frame number). *Id.* at 5:66–6:2.

Figure 1 of Hill is reproduced below.

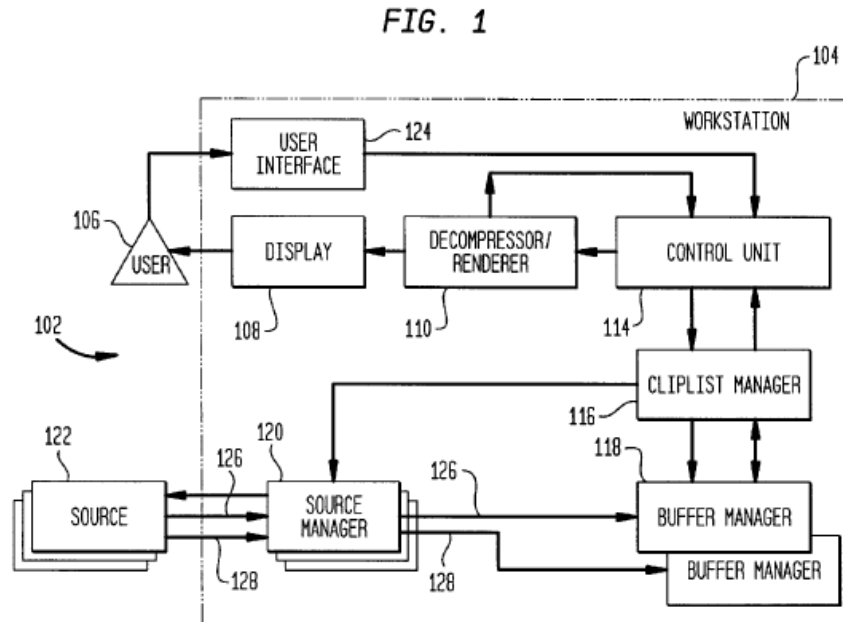


Figure 1 is a block diagram of digital network environment 102 within which the disclosed system and method of Hill is used. Ex. 1006, 2:59–61, 3:27–28. User 106 utilizes workstation 104 to play movie data. *Id.* at 3:28–29. Movie data is stored in sources 122, each of which may be any type of digital memory accessible locally or via a network server. *Id.* at 3:49–51, 3:53–55. Workstation 104 contains control unit 114, which receives control information from user 106 (via user interface 124) and from decompressor/renderer 110. *Id.* at 3:57–64. Decompressor/renderer 110 decompresses video and audio data and presents them to display 108 in correct synchronization. *Id.* at 3:67–4:2. Display 108 provides a video image for user 106. *Id.* at 3:65–67.

Buffer manager 118 provides frames upon request to control unit 114 via cliplist manager 116. Ex. 1006, 4:7–8. Buffer manager 118 prefetches future frames in order to always have available the next frame required by control unit 114. *Id.* at 4:8–15. Buffer manager 118 transfers frames to

control unit 114 via cliplist manager 116. *Id.* at 4:21–22. Cliplist manager 116 tracks where within network environment 102 each clip is stored and requests frames from source 122 via source manager 120. *Id.* at 4:22–24, 4:27–28.

Figure 2 of Hill is reproduced below.

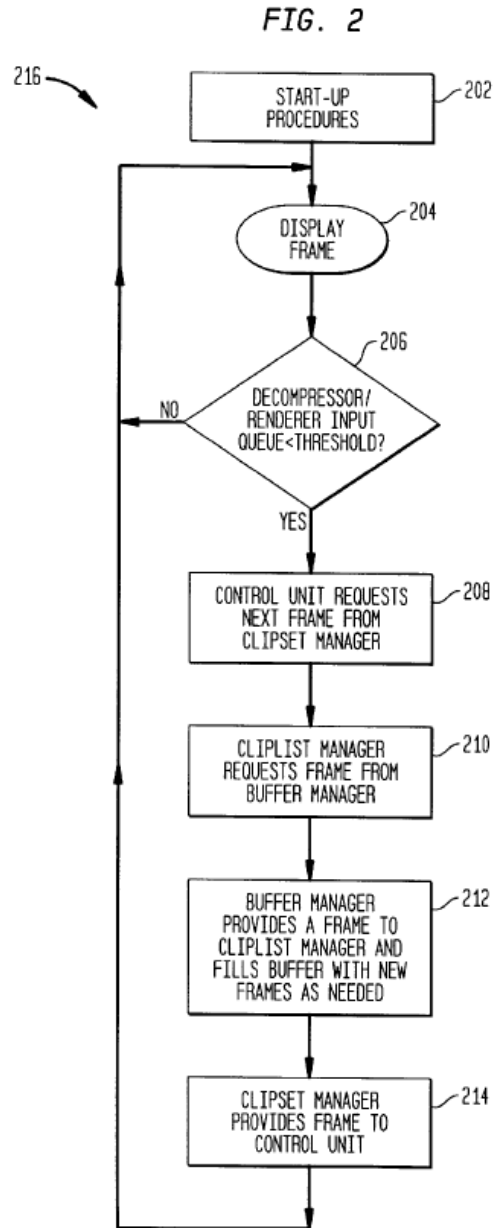


Figure 2 depicts flowchart 216 representing the general operation of the disclosed system and method of Hill. Ex. 1006, 2:61–62, 4:57–58. In

step 202, control unit 114 initiates start-up procedures when the user first requests playback of movie data. *Id.* at 4:59–61. In step 204, control unit 114 passes frame data to decompressor/renderer 110 for display to the user. *Id.* at 4:66–5:1. In step 206, control unit 114 monitors the input queues of decompressor/renderer 110. *Id.* at 5:4–5. When the queue fill level drops below a threshold, control unit 114 requests the next frame from cliplist manager 116 at step 208. *Id.* at 5:5–8. In step 210, cliplist manager 116 requests this frame from buffer manager 118. *Id.* at 5:9–10. At step 212, buffer manager 118 provides a frame to cliplist manager 116 and refills its buffers with new frames as they are needed. *Id.* at 5:10–13. In step 214, cliplist manager 116 gives the frame to control unit 114, which, in turn, gives it to the decompressor/renderer 110. *Id.* at 5:16–18. The operation continues by displaying the next frame at step 204. *Id.* at 5:18–19. Frames are displayed without interruption until the input queue in decompressor/renderer 110 again falls below a threshold. *Id.* at 5:19–21.

Figure 3 of Hill is reproduced below.

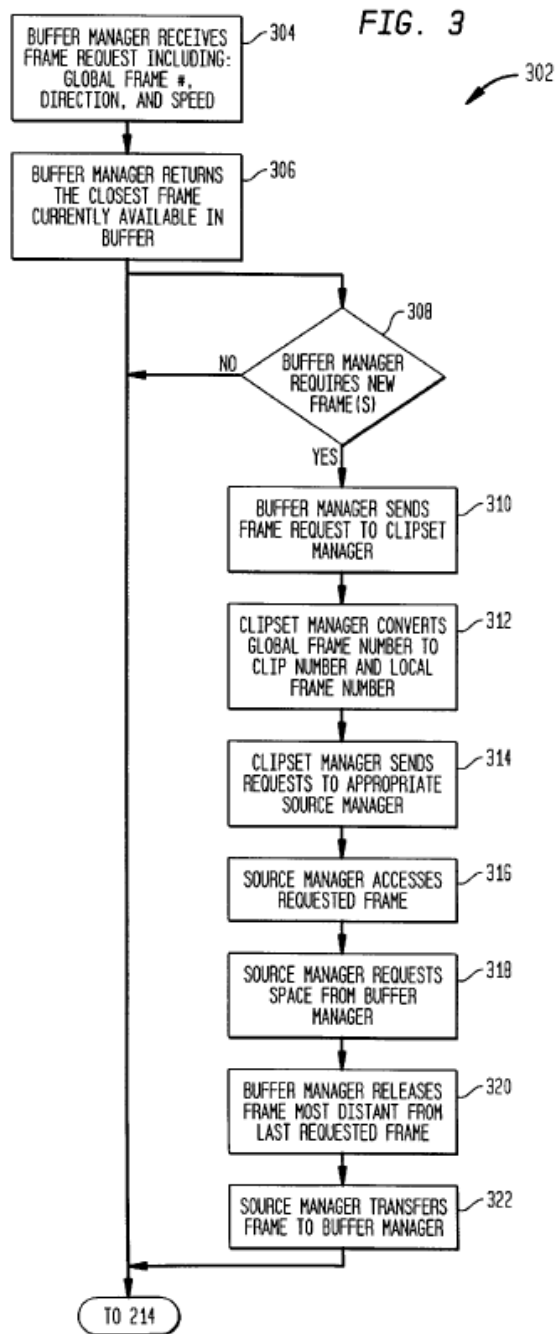


Figure 3 depicts flowchart 302 representing the input/output operation of buffer manager 118 in step 212 of Figure 2. Ex. 1006, 2:64–65, 5:23–24. In general, buffer manager 118 responds to requests for frames from cliplist manager 116 and then determines whether new frames need to be loaded.

Id. at 5:24–26. If new frames are required, buffer manager 118 uses cliplist manager 116 to retrieve these frames from an appropriate source 122. *Id.* at 5:27–28.

In step 304, buffer manager 118 receives a frame request including a global frame number from cliplist manager 116. *Id.* at 5:31–34. In step 306, buffer manager 118 returns the closest frame currently available in the buffer. *Id.* at 5:35–36. At this point, two paths are performed concurrently: One path passes control back to step 214 in Figure 2, and the other path moves to step 308. *Id.* at 5:44–47. In step 308, buffer manager 118 determines whether additional future frames must be prefetched for later requests from control unit 114. *Id.* at 5:48–51. If so, at step 310, buffer manager 118 sends requests for new frames to cliplist manager 116, which maintains the mapping between global and local frame numbers. *Id.* at 5:58–59, 6:7–10. In step 312, cliplist manager 116 converts the global frame number to a clip number and local frame number. *Id.* at 6:10–12. In step 314, cliplist manager 116 requests the frames from the appropriate source manager 120. *Id.* at 6:13–14. Source manager 120 retrieves the requested frame data from source 122 at step 316. *Id.* at 6:14–16.

Hill defines a buffer fill level as the number of future frames currently being stored in buffer manager 118. Ex. 1006, 6:60–63. Buffer manager 118 determines whether the buffer fill level has dropped below a request threshold, which represents the optimum number of future frames stored in the buffer at any given time based on the characteristics of a particular system. *Id.* at 6:58–60, 6:63–67. Buffer manager 118 will not request additional frames when the fill level exceeds the request threshold.

Id. at 7:4–5. Buffer manager 118 might request additional frames if the fill level drops below the threshold depending upon other factors. *Id.* at 7:5–7.

Hill also describes a buffer management strategy to solve the problem of inadequate source bandwidth. *See* Ex. 1006, 8:20–9:35, Fig. 4B. As part of this strategy, buffer manager 118 limits itself to two requests for frames that are outstanding with sources 122. *Id.* at 8:34–43. The strategy also involves comparing the buffer fill level to high and low thresholds, modifying a decimation factor *d* based on that comparison, and potentially decimating an outstanding request. *Id.* at 8:55–9:25, Fig. 4B.

Petitioner notes that Hill’s filing date was October 18, 1996. Pet. 10. Patent Owner does not contest the prior art status of Hill. We determine that Hill qualifies as prior art under 35 U.S.C. § 102(e) because Hill’s filing date of October 18, 1996, is before Patent Owner’s asserted date of invention for the challenged claims, which is November 11, 1999. Ex. 1006, code (22); Ex. 1047, 1.

2. *Aharoni*

Aharoni is a U.S. patent directed to “adapting the transport of video and audio information over IP networks having varying bandwidth capacities.” Ex. 1008, 1:5–9. Aharoni discusses a system for transmitting video and audio data over networks that implement TCP/IP (Transmission Control Protocol/Internet Protocol), which Aharoni calls a “reliable mechanism.” *Id.* at 6:37–40, 9:64–66. The system uses “‘best effort’ protocols such as those found on TCP/IP networks, [and] adapts to the time varying nature of the available bandwidth.” *Id.* at 7:31–34.

Petitioner notes that Aharoni's filing date was June 26, 1997. Pet. 11. Patent Owner does not contest the prior art status of Aharoni. We determine that Aharoni qualifies as prior art under 35 U.S.C. § 102(e) because Aharoni's filing date of June 26, 1997, is before Patent Owner's asserted date of invention for the challenged claims, which is November 11, 1999. Ex. 1008, code (22); Ex. 1047, 1.

3. *Claim 1*

a. Preamble

The preamble of claim 1 recites “[a] method for operating a media player to receive and play an audio or video program, from a remote media source via a data connection over the Internet.” Ex. 1001, 6:30–32. Petitioner cites Hill's teaching of workstation 104 receiving audio and video information from source 122 over the Internet for playback. Pet. 11–12 (citing Ex. 1006, 2:25–28, 3:15–18, 3:27–56, 4:35–37, Fig. 1). Petitioner cites Hill's teaching that “[t]he movie data of interest to a user will be composed of *one* or more clips” as showing that one clip could be an entire program. Pet. Reply 6–7 (emphasis by Petitioner) (quoting Ex. 1006, 3:46–47). Petitioner likewise cites Hill's teaching that each clip is stored at a source, such as “a site on the Internet,” as showing that an entire program comprising one clip can be stored at a single Internet source. *Id.* (citing Ex. 1006, 3:46–56).

Patent Owner argues that “Hill does not address playing ‘*an audio or video program*’ from *a* remote media source via *a* data connection over the Internet.” PO Resp. 20; *see also id.* at 21 (stating that the preamble requires “one program, one source, one connection”). Rather, according to Patent

Owner, “there are a *plurality* of sources, and a *plurality* of connections not all of which are over the internet.” *Id.*

As discussed above (*see supra* § II.C.1), we reject Patent Owner’s argument that the recited “program” must be an entire program. Petitioner persuasively shows that Hill’s workstation 104 receives audio and video information from source 122 over the Internet, which teaches the recited “audio or video program.” *See, e.g.*, Ex. 1006, 2:25–28, 3:15–18, 3:27–56, 4:35–37, Fig. 1; Ex. 1111, 24:6–9 (Mr. Hoarty agreeing that an audio or video program might only refer to a portion of the program). In addition, Hill’s workstation 104 (i.e., the recited “media player”) is used to play movie data received from source 122. *See, e.g.*, Ex. 1006, 3:27–36. Hill also teaches that “movie data of interest” is composed of one or more clips, each of which can be stored on a separate source on the Internet. *See, e.g., id.* at 3:46–56. We agree with Petitioner that, by extension, a single clip in Hill would be stored at a single source on the Internet. *See* Pet. Reply 6–7. This teaches the “remote media source” and “data connection” limitations even under Patent Owner’s proposed construction that requires receiving and playing a program from a single source over a single Internet connection. *See* PO Resp. 20–21; PO Sur-reply 3.

Because we find that Hill teaches the preamble, we need not determine whether the preamble is limiting. *See Realtime Data*, 912 F.3d at 1375.

b. Limitations 1a(i)–1a(iii)

Claim 1 further recites:

[a(i)] sending requests from the media player to the media source via the data connection for one or more serially

identified media data elements representing the audio or video program,

[a(ii)] each media data element comprising a digitally encoded portion of the audio or video program and having a playback rate,

[a(iii)] each request specifying one or more serial identifiers of the media data elements requested.

Ex. 1001, 16:34–41 (bracketed identifiers added and formatting applied) (Limitations 1a(i)–1a(iii)). Petitioner maps the recited “media data elements” to Hill’s frames and contends Hill’s workstation 104 “requests frames from a particular source 122 via the appropriate source manager.” Pet. 12–13 (quoting Ex. 1006, 4:27–28). Petitioner further contends the frames are “serially identified” based on Hill’s teaching of referencing frames “according to their position within the global playback sequence (*i.e.*, global frame number), or according to their position within the clip from which they originate (*i.e.*, local frame number).” *Id.* at 13 (quoting Ex. 1006, 5:60–6:4). For digital encoding, Petitioner references several instances where Hill characterizes its system as “digital” and contends that an ordinarily skilled artisan would have understood “that frames of a movie sourced from a digital network and stored in digital memory would be ‘digitally encoded.’” Pet. 16–17 (citing Ex. 1002 ¶ 117; Ex. 1006, 3:17–18, 3:27–28, 3:48–56, 4:8–11, 4:22–24, 4:31–34). Regarding the “playback rate,” Petitioner cites Hill’s teaching of an exemplary “play rate” of 24 frames per second. *Id.* at 17–18 (citing Ex. 1006, 7:20–21).

For “each request specifying one or more serial identifiers of the media data elements requested,” Petitioner cites Hill’s teaching of workstation 104 “convert[ing] the global frame number to a clip number and local frame number” and then “request[ing] the frames from the appropriate

source manager 120.” Pet. 18–19 (quoting Ex. 1006, 6:8–15). According to Petitioner, Hill’s source manager 120 then “retrieves the requested frame data from the source 122.” *Id.* (quoting Ex. 1006, 6:14–16). Petitioner also cites another example in Hill where “buffer manager 118 . . . request[s] global frame 31. This request is sent to the cliplist manager [116], which maps the global frame number to a clip number and local frame number and forwards the request to the appropriate source.” *Id.* (omission and first alteration added; second alteration by Petitioner) (quoting Ex. 1006, 7:46–50). Based on testimony from Dr. Polish, Petitioner contends that an ordinarily skilled artisan would have “consider[ed] it inherent or obvious that, in Hill, the request to the source 122 includes the clip number and/or at least the local frame number.”⁶ *Id.* (citing Ex. 1002 ¶¶ 121–122).

Patent Owner argues that “Hill does not disclose the content or format of requests from the media player to the media source, let alone any internet media source that may be in its plurality of sources.” PO Resp. 22. Rather, according to Patent Owner, Hill only teaches “a request by one part of the workstation to another part of itself (source manager 120), which is made to source manager 120 by clip and local frame ID, and that a request in some manner is made to an external source 122.” *Id.* at 24. As such, Patent Owner argues that Petitioner neither “show[s] that the request by source manager 120 to external source 122 is likewise made by serial ID” nor “specif[ies] what the interface is between a source manager 120 and an

⁶ Patent Owner disputes Petitioner’s inherency theory. PO Resp. 25. We do not reach Petitioner’s inherency theory because we are persuaded by Petitioner’s obviousness theory.

internet source, or how requests may be formatted to any specific source, let alone an internet source.” *Id.*

Patent Owner also criticizes Petitioner’s obviousness rationale related to sending requests to Hill’s source 122. *See* PO Resp. 24–28. Patent Owner calls Petitioner’s rationale conclusory because Petitioner and Dr. Polish “do[] not give a reason why the disclosures of internal data retrieval render it obvious to retrieve data over the internet the same way.” *Id.* at 25. Patent Owner also argues that Petitioner does not establish a reasonable expectation of success for applying Hill’s internal data retrieval technique to the public Internet. *Id.* at 27 (citing Ex. 2007 ¶ 73). Patent Owner characterizes the Internet as being “a much more challenging environment than the internal high-speed system busses over which the fetches specifically identified in Hill as being by serial ID are carried out.” *Id.* at 26 (citing Ex. 1006, code (57)); *see also* PO Sur-reply 9 (citing Ex. 2007 ¶¶ 72–74) (arguing that repeated requests from Internet sources would have “incurred excessive overhead, mitigating against success”). As such, Patent Owner contends that an ordinarily skilled artisan “would have strongly preferred an approach, especially for internet sources, such as caching, to avoid having to make repeated individual frame fetches over the internet to feed a downstream buffering process that the disclosure itself deems ‘critical.’” PO Resp. 26 (citing Ex. 1006, 5:12–15); *see also* PO Sur-reply 9–10 (citing Ex. 2007 ¶¶ 72–74) (similar argument). Patent Owner additionally notes that Hill does not specify a protocol for Internet retrieval. PO Resp. 27.

We are persuaded by Petitioner’s contentions, and we find that Patent Owner’s arguments do not undermine Petitioner’s showing. In particular,

Hill discloses the following regarding its normal mode of operation: “[T]he buffer manager 118 will . . . request global frame 31. This request is sent to the cliplist manager, which maps the global frame number to a clip number and local frame number and forwards the request to the appropriate source.” Ex. 1006, 7:46–50. Petitioner cites this disclosure for teaching that each request specifies one or more serial identifiers (i.e., the clip number and local frame number) of the media data elements requested (i.e., a frame). Pet. 19. Although Patent Owner disputes that the “appropriate source” in this disclosure is external to Hill’s workstation (PO Resp. 23), we disagree with Patent Owner’s argument. As noted by Petitioner (Pet. Reply 7), Hill uses “source” and “sources” to refer to external source 122. *See* Ex. 1006, 5:23–30; Ex. 1111 ¶¶ 47–49 (Dr. Polish’s analysis of the use of “source” throughout Hill). Indeed, Figure 1 of Hill depicts the sources 122 external to workstation 104. *See* Ex. 1006, Fig. 4. Hill also states that sources “may be accessed . . . via a network server” and “may be a site on the Internet.” *Id.* at 3:53–56. Thus, we are persuaded that Hill’s reference to “forward[ing] the request to the appropriate source” teaches sending a request to a remote media source over the Internet.

Regarding the requirement that the request must specify one or more serial identifiers, we note that Hill expressly states that “the buffer manager 118 . . . request[s] global frame 31” and “[t]his request is sent to the cliplist manager, which maps the global frame number to a clip number and local frame number and forwards the request to the appropriate source.” Ex. 1006, 7:46–50. Petitioner cites this statement (1) for an express teaching of requesting a frame from an external source using the clip and local frame

number;⁷ and (2) as the basis of its contention that it would have been obvious to send such a request. Pet. 19 (citing Ex. 1002 ¶¶ 121–122; Ex. 1006, 7:46–50). Having considered the entire trial record, we are persuaded by Petitioner’s obviousness rationale. Although this statement from Hill does not specify precisely what is sent in the request to the external source, it does say that Hill’s cliplist manager maps the requested frame into a clip number and local frame number prior to forwarding that request. *See* Ex. 1006, 7:46–50. Petitioner also puts forth evidence (*see* Pet. 13–14, 19; Pet. Reply 8) that Hill’s external sources organize clips by local frame number. *See* Ex. 1006, 3:46–56, 5:66–6:2, 12:7–44, Fig. 7. Moreover, Mr. Hoarty agreed that clips originate in external sources and that local frame numbers are used to reference the position of a frame within the clip from which they originate. Ex. 1103, 68:5–15. Thus, the evidence of record supports that it would have been obvious to request each frame from an external source using a clip number and local frame number because that is how the frames are stored at the external sources.⁸ *See, e.g.*, Ex. 1002 ¶¶ 110, 121; Ex. 1111 ¶ 55.

We do not agree with Patent Owner (PO Resp. 26) that the alleged challenges of requesting video over the Internet undermine Petitioner’s obviousness showing. Hill expressly discloses the retrieval of video from sources over the Internet. *See, e.g.*, Ex. 1006, 3:46–56. Accordingly, we

⁷ Patent Owner disputes that Hill expressly teaches an external request using a local frame number. PO Sur-reply 6–8. We do not reach Petitioner’s contentions that are allegedly based on express teachings in Hill because we are persuaded by Petitioner’s obviousness rationale.

⁸ As stated above, this is consistent with Patent Owner’s proposed construction for these limitations. *See supra* § II.C.2.

credit this disclosure because we must “read[] the prior art for all that it teaches.” *Smith & Nephew, Inc. v. Rea*, 721 F.3d 1371, 1378 (Fed. Cir. 2013). We also have considered Patent Owner’s arguments (PO Resp. 27) that Hill does not specify the structure of requests or the protocol used for the requests. Yet the claim does not require any particular manner of accessing a remote media source; rather, all that is required is that a request specifying serial identifiers is sent to the remote media source. *See* Ex. 1001, 16:34–41 (“sending requests from the media player to the media source via the data connection . . . each request specifying one or more serial identifiers of the media data elements requested”). As explained above, it would have been obvious to do so in light of Hill. We also disagree with Patent Owner (PO Resp. 26) that the sources are not known to Hill’s workstation; Hill states that cliplist manager 116 “specifies where each clip can be found” including locations on a server. Ex. 1006, 11:63–12:12.

Regarding Patent Owner’s argument that an ordinarily skilled artisan would have strongly preferred a prefetching and caching approach (PO Resp. 26–28; PO Sur-reply 9–10; Ex. 2007 ¶ 72), Petitioner counters that Hill in fact uses that approach. Pet. Reply 9 (citing Ex. 1111 ¶ 53; Ex. 1006, 2:25–35, 4:12–15, claims 1–18). As such, we do not view prefetching and caching to be a mutually exclusive choice in Hill as compared with requesting video data from Internet sources using a local frame number, as Patent Owner seems to imply. Again, Hill already contemplates requests for video data made to Internet sources, where clips are organized by local frame number. *See, e.g.*, Ex. 1006, 3:46–56, Fig. 7.

For these reasons, we find that, in light of the knowledge of a person of ordinary skill in the art, Hill teaches limitations 1a(i)–1a(iii).

c. Limitation 1b(i)

Limitation 1b(i) recites “receiving each of the requested media data elements via the data connection, wherein the data connection has a data rate more rapid than the playback rate of the media data elements.” Ex. 1001, 16:42–47. For the recited “receiving,” Petitioner again cites Hill’s teaching that source manager 120 “retrieves the requested frame data from the source 122.” Pet. 20 (quoting Ex. 1006, 6:13–16) (citing Ex. 1006, 3:48–56). Regarding the “data rate more rapid than the playback rate,” Petitioner cites Hill’s discussion of a scenario where the “play rate” is 24 frames per second, and the data rate is 48 frames per second. *Id.* (citing Ex. 1006, 7:20–22). Petitioner contends that an ordinarily skilled artisan would have understood that “the data rate in this scenario (48 frames/second) is ‘more rapid than’ the playback rate (24 frames/second).” *Id.* (citing Ex. 1002 ¶ 126). Petitioner additionally contends that an ordinarily skilled artisan would have known from Hill’s disclosure of 48 frames/second to use a data connection capable of satisfying those requests. Pet. Reply 11 (citing Ex. 1111 ¶ 61). Petitioner further contends that Hill’s teachings of requests of 48 frames/second during “normal operation” and teachings of Internet sources indicates that Hill discloses “using the Internet for the ‘Normal Operation’ of 48 fps.” *Id.* at 11–12 (citing Ex. 1006, 3:55–56, 6:50–7:24; Ex. 1111 ¶ 62).

Patent Owner disputes Petitioner’s analysis because the cited teaching from Hill refers to 48 frames/second as the top rate requested by the workstation, rather than what the connection will provide. PO Resp. 28–29 (citing Ex. 1006, 7:20–22). Patent Owner argues that Hill’s workstation “may not *get* what it *asks* for.” *Id.* at 29 (citing Ex. 2007 ¶ 75); PO

Sur-reply 11 (similar argument). Patent Owner also argues that Hill's disclosure of sending some frames faster than the playback rate does not necessarily apply to Internet connections, because there may be other external source connections. PO Sur-reply 11. Patent Owner also argues that "'faster than playback speed' requests would be transitory in nature so as not to overload the sources," which teaches away from having a data rate more rapid than the playback rate. *Id.* at 11–12 (citing Ex. 1006, 7:17–20).

We are persuaded by Petitioner's contentions based on Hill. As stated above (*see supra* § II.C.3), the "data rate" refers to the capability of the data connection. Hill teaches the retrieval of video data using a data connection (including the Internet) with a data rate (e.g., 48 frames/second) that is more rapid than the playback rate (e.g., 24 frames/second) during normal operation. *See, e.g.*, Ex. 1006, 3:55–56, 6:13–16, 7:20–22. Although Patent Owner argues that these cited rates from Hill pertain only to the rate that is requested by the workstation rather than the data rate actually provided (*see* PO Resp. 28–29), we agree with Petitioner that an ordinarily skilled artisan would have known that Hill was intended to be used with a connection that satisfies those requests. *See, e.g.*, Ex. 1111 ¶ 61. Indeed, Hill states the following about normal operation:

The preceding discussion assumed that the sources 122 will always be able to provide frames at the normal play rate. The buffer management strategy described thus far will operate properly with some jitter in source performance, so long as the sources 122 perform at the desired rate averaged over several frames (less than half the number of frames stored by the buffer manager 118).

Ex. 1006, 8:21–27.⁹ This supports Petitioner’s contention that, based on Hill, an ordinarily skilled artisan would have contemplated the successful implementation of the particular rates Hill teaches. *See, e.g.*, Ex. 1111 ¶¶ 61–62.

Patent Owner’s arguments against Hill’s teachings of “a data rate more rapid than the playback rate” amount to pointing out conditions where this may not occur for various reasons and/or suggesting that the quoted data rates are not achievable over the Internet. *See* PO Resp. 29; PO Sur-reply 11–13. Yet both parties acknowledge that limitation 1b(i) is directed to the capability of the data connection, and not any particular instantaneous data rate. *See* PO Resp. 11 n.3, 28–29; Pet. Reply 5; *see also supra* § II.C.3. Petitioner’s example from Hill showing 48 versus 24 frames per second teaches limitation 1b(i) at least because “prior art . . . that sometimes, but not always, embodies a claimed method nonetheless teaches that aspect of the invention.” *Hewlett-Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1326 (Fed. Cir. 2003); *see also Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002 (Fed. Cir. 2016) (“combinations of prior art that sometimes meet the claim elements are sufficient to show obviousness”). In addition, Hill expressly teaches the use of Internet sources. Ex. 1006, 3:55–56.

For these reasons, we find that Hill teaches limitation 1b(ii).

⁹ We acknowledge that this passage appears at the beginning of Hill’s section on “Inadequate Source Bandwidth.” Nonetheless, Hill uses this passage to distinguish normal operation from cases where there is inadequate source bandwidth, as is indicated by the two sentences directly after this passage: “However, not all sources will be able to meet this requirement. Some problems may be transitory (e.g., temporary resource contention), others will be continuous (e.g., low-speed networks).” Ex. 1006, 8:27–30.

d. Limitation 1b(ii) and Rationale for the Combination

Limitation 1b(ii) recites that “each received media data element is received at a rate as fast as the data connection between the media source and the media player allows.” Ex. 1001, 16:42–47. For the recitation “as fast as the data connection . . . allows,” Petitioner contends an ordinarily skilled artisan “would have found it obvious that Hill would receive frames from source 122 at workstation 104 as fast as the data connection allows.” Pet. 21 (citing Ex. 1002 ¶¶ 129–130). In support of this contention, Petitioner cites Hill’s teaching that sources 122 may be remote servers connected to workstations 104 via the Internet. *Id.* (citing Ex. 1006, 3:48–56). Accordingly, Petitioner contends that an ordinarily skilled artisan would have found it obvious “that a source sending data via Internet protocol, such as TCP, would send the data as fast as the data connection allows.” *Id.* (citing Ex. 1002 ¶ 129). Petitioner cites two non-asserted references in support of its contention that data is sent at the maximum possible speed when using the TCP protocol. *Id.* at 22–23 (citing Ex. 1002 ¶ 130; Ex. 1019, 271–72; Ex. 1042, 2).

Petitioner additionally cites Aharoni’s teaching of sending audio and video data from a server to a client device over IP networks using TCP, which Aharoni calls “a reliable mechanism.” Pet. 36–37 (citing Ex. 1008, 1:5–9, 2:12–15, 2:54–65, 6:33–8:40, 9:64–66). Petitioner contends it would have been obvious “to combine Hill with Aharoni, predictably resulting in the media streaming and playback system of Hill that uses Aharoni’s method of transporting frames using TCP.” *Id.* at 37 (Ex. 1002 ¶¶ 185–187). Petitioner notes that Hill and Aharoni both relate to streaming frames of media data from servers to client computers in networks having varying

bandwidth capacities. *Id.* at 38 (citing Ex. 1002 ¶ 186; Ex. 1006, 3:37–56; Ex. 1008, 2:54–3:61, 4:35–5:12). Petitioner contends an ordinarily skilled artisan “would have been motivated to adopt Aharoni’s teachings of sending data via TCP for Hill’s streaming and playback system” to “ensur[e] frames of movie data arrive to client workstations in a reliable manner.” *Id.* (citing Ex. 1002 ¶ 187).

Patent Owner argues that Petitioner “speaks only to what the connection itself will allow, not that the data received over the connection will be received as fast as the connection allows.” PO Resp. 30. According to Patent Owner, “[t]he fact that the connective medium itself uses one protocol or another does not establish that limitation b(ii) is met, because slowdowns between the source and destination can exist elsewhere.” *Id.* In particular, Patent Owner cites Hill’s “lengthy discussion” about “Inadequate Source Bandwidth.” *Id.* (citing Ex. 1006, 8:20–10:24); *see also* PO Sur-reply 13 (similar argument). Patent Owner also argues that adding Aharoni to Hill does nothing to remedy the alleged deficiencies in Petitioner’s showing regarding the rate that data is received over a connection. PO Resp. 34–35.

Moreover, Patent Owner disputes that an ordinarily skilled artisan would have implemented a reliable protocol such as TCP, because “‘unreliable’ protocols, such as UDP [User Datagram Protocol] and RTP [Real-time Transport Protocol] . . . were preferred at the time in question for streaming applications.” PO Resp. 33 (citing Ex. 2007 ¶¶ 83–85); *see also* PO Sur-reply 16 (similar argument). Patent Owner argues that UDP and RTP involve less handshaking and allow for faster throughput. PO Resp. 33 (citing Ex. 2007 ¶ 85). Patent Owner also cites Ravi, which Petitioner

asserts in another ground, as allegedly teaching away from TCP for streaming. *Id.* (citing Ex. 1004, 12:12–22); *see also* PO Sur-reply 16 (similar argument).

Patent Owner also notes that Aharoni teaches the use of TCP as one option for sending key frames of streaming media, but teaches the use of UDP for sending all other frames. PO Resp. 35 (Ex. 1008, 9:62–66, 10:5–21); *see also* PO Sur-reply 17 (similar argument). As such, Patent Owner argues that the TCP protocol was not preferred for streaming, and that Aharoni teaches away from sending an entire stream by TCP. PO Resp. 35–36 (citing Ex. 2007 ¶¶ 84, 87); *see also* PO Sur-reply 17 (similar argument). Patent Owner additionally argues that “Aharoni is a push, and as such would not be compatible with the ‘pull’ requests to the sources that the Petition posits for all the subject claims.” PO Resp. 36.

In its Reply, Petitioner highlights Mr. Hoarty’s acknowledgement that with TCP, “[t]he source is transmitting as fast as the network will allow. And it always is.” Pet. Reply 13 (quoting Ex. 1103, 76:5–6). In light of this, Petitioner argues that “[i]f TCP allows the source to get data onto the connection ‘as fast as the data connection . . . allows’ then the source cannot be a reason data will not also be received ‘as fast as the data connection . . . allows.’” *Id.* (citing Ex. 1103, 78:9–18; Ex. 1111 ¶¶ 68–69). Petitioner also argues it need not show that TCP is “the *best* option, only that it be a *suitable* option.” Pet. Reply 17 (quoting *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 800 (Fed. Cir. 2021)). Accordingly, Petitioner argues that Ravi and Aharoni teach that TCP is a suitable option for streaming video frames. *Id.* at 16–17 (citing Ex. 1002 ¶¶ 48–49, 129; Ex. 1011, 261; Ex. 1019, 270–71; Ex. 1111 ¶¶ 89–91). Petitioner also argues that in Hill, all frames are

key frames due to Hill’s disclosure of skipping frames. *Id.* at 17–18 (citing Ex. 1111 ¶¶ 92–94). Thus, Petitioner contends that Hill in light of Aharoni teaches using TCP for every frame. *Id.*

We are persuaded by Petitioner’s arguments. Via its citations to Aharoni and Dr. Polish’s testimony, Petitioner establishes that it was known in the art to send video data via TCP. *See, e.g.*, Ex. 1002 ¶¶ 129–130, 185–187; Ex. 1008, 2:10–15, 6:35–40, 6:52–54, 7:32–35, 9:64–66. Despite the fact that other protocols were available and may have been preferred for certain operating conditions (*see* PO Resp. 33 (citing Ex. 1004, 12:12–22; Ex. 2007 ¶¶ 83–85)), Petitioner has established the known suitability of using TCP for transmitting video data, which is all that is necessary to prove obviousness. *See Intel*, 21 F.4th at 800. In addition, Petitioner persuasively shows that an ordinarily skilled artisan would have been motivated to implement TCP (as taught by Aharoni) in Hill’s system to ensure reliable transport of video data, and would have expected success in doing so.¹⁰ *See, e.g.*, Ex. 1002 ¶¶ 185–187.

We disagree that Ravi and Aharoni teach away from using TCP. Ravi’s statement about UDP being easier to implement efficiently (Ex. 1004, 12:19–22) does not teach away because it does not “criticize, discredit, or otherwise discourage” the use of TCP. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Similarly, the fact that Aharoni’s system uses TCP for key frames while using UDP for other frames (Ex. 1008, 9:62–66, 10:5–21) is

¹⁰ We further discuss Petitioner’s rationale for combining Aharoni with Hill below in conjunction with the analysis of claims 4 and 5. *See infra* § II.D.6. Our comments in that section are also applicable to all of the claims in this ground.

enough to show the suitability of TCP for video streaming under the *Intel* standard. Further, we credit Petitioner’s additional rationale about considering all frames as key frames in Hill’s system given its ability to skip frames. *See, e.g.*, Ex. 1111 ¶¶ 92–94.

Petitioner also establishes that, with TCP, video data is transmitted as fast as the data connection allows. *See, e.g.*, Ex. 1002 ¶ 130; Ex. 1019, 271–72; Ex. 1042, 2. Mr. Hoarty agrees with this premise (*see* Ex. 1103, 75:13–76:6), and Patent Owner does not dispute this. *See* PO Resp. 30 (arguing only that Petitioner had not established how fast data is *received* with TCP). Further, both parties’ declarants agree that a source *sending* video data via the Internet as fast as the data connection allows necessarily results in the media player *receiving* the video data as fast as the data connection allows. *See, e.g.*, Ex. 1103, 76:5–6, 78:9–18; Ex. 1111 ¶¶ 68–69. We also agree with Petitioner (Pet. Reply 13 & n.6) that Patent Owner’s arguments to the contrary are illogical. Although Hill includes teachings on how to treat inadequate source bandwidth (Ex. 1006, 8:20–10:24), this does not mean that—nonsensically—a source would transmit data into the data connection slower than the bandwidth and protocol allows. *See, e.g.*, Ex. 1111 ¶ 78. Thus, we are persuaded that the combination of Hill and Aharoni would result in a TCP connection where video data is received as fast as the connection would allow.

We also have considered Patent Owner’s arguments characterizing Aharoni’s system as a “push” system, which Patent Owner argues would not be compatible with Hill’s “pull” requests. PO Resp. 36. But we do not understand Petitioner to be relying on Aharoni’s push mechanism; rather, Petitioner relies on Hill for teaching the requests. *See supra* § II.D.3.b.

Petitioner need not establish that the features of Aharoni may be incorporated in the structure of Hill in order to establish obviousness. *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

For these reasons, we find that the combination of Hill and Aharoni teaches limitation 1b(ii).

e. Limitation 1c

Claim 1 further recites “storing the received media data elements in a memory of the media player.” Ex. 1001, 16:48–49 (Limitation 1c).

Petitioner presents evidence that Hill’s source manager 120 transfers retrieved frames to buffer manager 118, which stores frames in local digital memory. Pet. 23 (citing Ex. 1006, 4:8–11, 6:30–34, 6:58–67, 11:17–28, 12:7–44). Patent Owner does not dispute Petitioner’s analysis of this limitation. We are persuaded that Hill teaches “storing the received media data elements in a memory of the media player.” *See, e.g.*, Ex. 1006, 4:8–11, 6:30–34, 6:58–67, 11:17–28, 12:7–44.

f. Limitation 1d

Claim 1 further recites “playing the received media data elements in series from the memory of the media player.” Ex. 1001, 16:50–51 (Limitation 1d). Petitioner presents evidence that Hill’s control unit 114 receives frames from buffer manager 118 and feeds them on to decompressor/renderer 110 for display “in correct synchronization.” Pet. 24 (citing, *inter alia*, Ex. 1006, 3:67–4:4, 4:7–8, 4:66–5:1). Patent Owner does not dispute Petitioner’s analysis of this limitation. We are persuaded that Hill teaches “playing the received media data elements in series from the

memory of the media player.” *See, e.g.*, Ex. 1006, 3:67–4:4, 4:7–8, 4:66–5:1.

g. Limitation 1e

Claim 1 further recites

as the received media data elements are played, the media player automatically sending additional requests for subsequent media data elements for storage in the memory of the media player as required to maintain about a predetermined number of media data elements in the memory of the media player during playing.

Ex. 1001, 16:52–57 (Limitation 1e). For “automatically sending additional requests,” Petitioner cites Hill’s “prefetching process that occurs as buffer manager 118 provides frames to the control unit 114 (via cliplist manager 116) for subsequent playback via the display 108.” Pet. 25. In particular, Petitioner references step 212 in Hill’s Figure 2 for teaching that “buffer manager 118 provides a [requested] frame to the cliplist manager 116 . . . then refills its buffers with new frames as they are needed.” *Id.* (alteration by Petitioner) (quoting Ex. 1006, 5:10–15) (citing Ex. 1002 ¶¶ 139–142). Petitioner contends that, when buffer manager 118 sends a frame to control unit 114, two paths are followed concurrently: (1) “the buffer manager continues receiving requests from control unit 114 and continues providing frames for playback”; and (2) “the buffer manager requests new future frames to fill the buffer to the request threshold.” *Id.* (citing Ex. 1006, 5:44–47, Figs. 2–3). Thus, Petitioner contends that Hill teaches prefetching future frames “as the received media data elements are played.” *Id.* (citing Ex. 1002 ¶ 143).

For the recited “predetermined number of media data elements in the memory,” Petitioner cites Hill’s teaching of a “request threshold,” which is “the optimum number of future frames stored in the buffer at any given time.” Pet. 25–26 (quoting Ex. 1006, 6:58–67) (citing Ex. 1006, Fig. 4A). Petitioner contends that Hill’s buffer manager 118 attempts to maintain the buffer fill level at the “request threshold.” *Id.* at 26 (citing Ex. 1006, 6:58–7:32).

Patent Owner does not dispute Petitioner’s analysis of this limitation. Petitioner shows persuasively that Hill’s buffer manager 118 provides frames to control unit 114 at the same time it makes additional requests for future frames. *See, e.g.*, Ex. 1006, 5:44–47, Figs. 2–3. Petitioner also shows persuasively that Hill’s “request threshold” for frames is a “predetermined number of media data elements,” and buffer manager 118 attempts to maintain the number of frames in the buffer. *See, e.g.*, Ex. 1006, 6:58–7:32, Fig. 4A.

h. Conclusion Regarding Claim 1

Petitioner has shown persuasively that Hill and Aharoni teach all limitations of claim 1. Petitioner also has put forth persuasive reasons for combining these references with a reasonable expectation of success. Thus, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of claim 1 would have been obvious over the combination of Hill and Aharoni.

4. *Claim 2*

Claim 2 depends from claim 1 and recites that the method further comprises “maintaining in the memory of the media player a record identifying the last media data element received and stored by the media player.” Ex. 1001, 16:58–61. Petitioner contends that Hill’s “buffer manager 118 identifies and requests the global frame number of the next frame it needs.” Pet. 28; *see also id.* at 12–13 (quoting Ex. 1006, 4:27–28) (analyzing Hill’s requests). As such, Petitioner contends an ordinarily skilled artisan would have understood “that buffer manager 118 must necessarily keep a record of the last frame received.” *Id.* at 28 (citing Ex. 1002 ¶¶ 150–151). In support, Petitioner cites an example from Hill where “control unit 114 requests global frame 20,” whereupon “the buffer manager 118 provides global frame 20 and then checks if the buffer fill level is below the request threshold . . . by checking to see if it has frames 21 through 31.” *Id.* at 28–29 (citing Ex. 1006, 7:39–45). Petitioner contends that once buffer manager 118 “detects that a certain frame is missing—in this example, frame 31— ‘the buffer manager 118 will then request global frame 31.’” *Id.* (quoting Ex. 1006, 7:46–47). Petitioner explains that “[t]he only way the buffer manager 118 could detect which frame is missing is if it has a record of all frames received including the last frame—in this case, frame 30.” *Id.* (citing Ex. 1006, 12:27–34). Petitioner contends that, in Hill’s normal operation, the highest frame number identifies the last frame received. Pet. Reply 15; Ex. 1111 ¶ 85.

Patent Owner argues that “Hill may have a record or index of the frames it received and has in its buffer, but there is no disclosure in Hill of keeping a record of *when* the frames were received, or which one was *last*

one to be received.” PO Resp. 32 (citing Ex. 2007 ¶ 81). Patent Owner also argues that “the highest frame number received may not be the *last frame* that was received” in light of Hill’s disclosures on changing the direction of play. *Id.* at 32 n.8 (citing Ex. 1006, 10:54–65). Patent Owner also argues that Petitioner’s normal operation theory “*assumes* the frames are received in the order that they are requested . . . [b]ut the internet simply does not guarantee timely delivery . . . and thus there can be no expectation that the highest frame number received is necessarily the *last* frame received in time.” PO Sur-reply 14–15 (citing Ex. 2007 ¶ 17; Ex. 2021, 77:19–25).

We are persuaded by Petitioner’s showing for claim 2. Hill defines “normal operation” as “playing the movie at a normal play speed in the forward direction.” Ex. 1006, 6:50–53; *see also* Ex. 1111 ¶ 59 (discussing same). Petitioner’s evidence establishes that, while in normal operation, Hill’s buffer manager 118 can identify the last frame received via the highest frame number, which shows that it “maintain[s] . . . a record.”¹¹ *See, e.g.*, Ex. 1002 ¶¶ 151–152; Ex. 1006, 7:39–47, 12:27–34; Ex. 1111 ¶ 85. Patent Owner’s arguments based on “changing the direction of play” (*see* PO

¹¹ At the oral hearing, Patent Owner criticized this analysis based on Hill as relating only to buffer manager 118’s internal request for a *global* frame number. *See* Tr. 25:1–25. Patent Owner contrasts this with requests made to an external source, which use a *local* frame number. *See id.* Yet nothing in claim 2 requires the recited “record” to be in the same format as the external request. And, even if it did, Petitioner has established that “[t]he global frame number and clip number/local frame number are different ways to represent the same identification of each frame.” Pet. 29 n.6; *see also* Ex. 1006, 7:46–50 (“[T]he buffer manager 118 will then request global frame 31. This request is sent to the cliplist manager, which maps the global frame number to a clip number and local frame number and forwards the request to the appropriate source.”).

Resp. 32 n.8) do not detract from Petitioner’s showing with respect to normal operation because “combinations of prior art that sometimes meet the claim elements are sufficient to show obviousness.” *Unwired Planet*, 841 F.3d at 1002. We also note that claim 2 does not require maintaining a record of *when* a frame was received, so we do not agree with Patent Owner’s arguments to the extent they would require the same.

For these reasons and the reasons mentioned above for claim 1, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of claim 2 would have been obvious over the combination of Hill and Aharoni.

5. *Claim 3*

Claim 3 depends from claim 1 and further recites that “the serial identifiers are sequential.” Ex. 1001, 16:62–63. As stated above, Petitioner relies on Hill’s global frame number or clip number and local frame number for teaching the serial identifier. *See* Pet. 29; *supra* § II.D.3.b. Petitioner cites Hill for additionally teaching that these serial identifiers are sequential. Pet. 29–30 (citing Ex. 1002 ¶¶ 154–155; Ex. 1006, 5:66–6:2, Fig. 7). Patent Owner does not dispute Petitioner’s analysis of the added limitation of claim 3, and Patent Owner relies on the same arguments it makes with respect to claim 1. *See* PO Resp. 34.

Hill discloses that “[f]rames may either be referenced according to their position within the global playback sequence (i.e., global frame number), or according to their position within the clip from which they originate (i.e., local frame number).” Ex. 1006, 5:66–6:2. We find that the references to “position within the global playback sequence” and “position

within the clip from which they originate” at least suggest a sequential system. *See, e.g.*, Ex. 1002 ¶ 154. Further, as noted by Petitioner, Figure 7 of Hill shows frame numbers “starting at 1 and going up sequentially.” Pet. 29 (citing, *inter alia*, Ex. 1006, Fig. 7). In light of these teachings, we are persuaded that Hill teaches sequential serial identifiers.

For these reasons and the reasons mentioned above for claim 1, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of claim 3 would have been obvious over the combination of Hill and Aharoni.

6. *Claims 4 and 5 (and Further Rationale for the Combination)*

Claim 4 depends from claim 1 and further recites that “the receiving is via a reliable transmission protocol.” Ex. 1001, 16:64–65. Claim 5 depends from claim 4 and further recites that “the reliable transmission protocol is TCP.” Ex. 1001, 16:66–67. For both of these claims, Petitioner cites Aharoni’s teaching of sending frames of video/audio data using TCP, which Aharoni calls “a reliable mechanism.” Pet. 36 (quoting Ex. 1008, 9:64–66). Petitioner notes that Aharoni’s teachings are applicable “to any type of network including those that utilize the Internet Protocol (IP) such as the Internet or other TCP/IP networks.” *Id.* (quoting Ex. 1008, 2:12–15). Building on its rationale for combining Aharoni with Hill discussed above (*see supra* § II.D.3.d), Petitioner contends that an ordinarily skilled artisan “would have been motivated to adopt Aharoni’s teachings of sending data via TCP for Hill’s streaming and playback system.” *Id.* at 38. Because TCP is “a well-known and reliable transport protocol,” Petitioner contends that an ordinarily skilled artisan “would have been motivated to use such a protocol

in Hill’s system, where ensuring frames of movie data arrive to client workstations in a reliable manner would have been advantageous.” *Id.* (citing Ex. 1002 ¶ 187).

Patent Owner makes arguments similar to those discussed above for claim 1 with respect to limitation 1b(ii). In particular, Patent Owner argues that Aharoni’s teachings about TCP relate only to key frames, and that Aharoni teaches the use of UDP for all other frames. PO Resp. 35 (citing Ex. 1008, 9:62–66, 10:5–21). Patent Owner also argues that “TCP was not preferred at the time for streaming.” *Id.* (citing Ex. 2007 ¶ 84).

We are persuaded by Petitioner’s contentions. Aharoni teaches that TCP is a reliable protocol that can be used for transporting video over the Internet. *See, e.g.*, Ex. 1008, 2:12–15, 9:64–66. Contrary to Patent Owner’s arguments, Petitioner has established that TCP was known to be suitable for transporting video in at least some situations, which is sufficient to establish obviousness. *See Intel*, 21 F.4th at 800. Furthermore, for reasons similar to those discussed above (*see supra* § II.D.3.d), we are persuaded that an ordinarily skilled artisan (1) would have been motivated to incorporate TCP, as taught by Aharoni, into Hill’s system to ensure reliable transport for video sources on the Internet; and (2) would have expected success in making the combination. *See, e.g.*, Ex. 1002 ¶¶ 185–187.

For these reasons, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of claims 4 and 5 would have been obvious over the combination of Hill and Aharoni.

7. *Claim 6*

Claim 6 is an independent claim that recites “[a] device comprising a media player,” which itself comprises “a processor, memory accessible to the processor, and a data connection.” Ex. 1001, 17:1–6. The recited device further comprises a series of “machine-readable, executable routine[s] containing instructions to cause the processor” to perform steps similar to those recited in the method of claim 1. *Id.* at 17:7–40. For the recited device, Petitioner cites Hill’s workstation 104, which “may be a conventional personal computer, a high performance workstation, or dedicated hardware specially suited for audio/video playback.” Pet. 31 (quoting Ex. 1006, 3:29–32). Petitioner contends an ordinarily skilled artisan would have known that “a conventional personal computer or workstation would including [sic] a processor, memory accessible to the processor, and a data connection.” *Id.* (citing Ex. 1002 ¶ 160). Petitioner relies on the same analysis from claim 1 for teaching each of the “machine-readable, executable routine[s].” *Id.* at 31–32.

Patent Owner relies on the same arguments we have discussed above with respect to claim 1. *See* PO Resp. 19–31. We are persuaded that Hill’s workstation 104 teaches the recited device with a processor, memory accessible to the processor, and a data connection.¹² *See, e.g.,* Ex. 1002 ¶ 160; Ex. 1006, 3:29–32. As to the “machine-readable, executable routine[s]” recited in claim 6, we are persuaded by Petitioner’s analysis for the same reasons mentioned with respect to claim 1. *See supra* § II.D.3.

¹² We need not decide whether the preamble is limiting because Petitioner establishes that Hill teaches the preamble. *See Realtime Data*, 912 F.3d at 1375.

Thus, we determine that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 6 would have been obvious over the combination of Hill and Aharoni.

8. *Claims 7–10*

Claims 7–10 depend directly or indirectly from claim 6, and Petitioner relies on the same analysis from claims 2–5. Pet. 32. Patent Owner also relies on the same arguments discussed above for claims 2–5. *See* PO Resp. 31–34. We are persuaded by Petitioner’s analysis for the same reasons discussed above with respect to claims 2–5. *See supra* §§ II.D.4–6. Thus, for reasons similar to those discussed above for claims 2–5, we determine that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claims 7–10 would have been obvious over the combination of Hill and Aharoni.

9. *Claim 11*

The preamble of claim 11 recites “[a] computer program product . . . having a processor and a memory . . . comprising a non-transitory computer readable storage medium having program instructions” to perform program steps similar to the method steps recited in claim 1. Ex. 1001, 17:52–18:35. Petitioner contends that the preamble “corresponds to the software and hardware of Hill’s workstation 104 that is programmed to carry out the method outlined in claim 1.” Pet. 33 (citing Ex. 1002 ¶¶ 170–171). Petitioner relies on the same analysis of hardware in workstation 104 discussed above for claim 6. *Id.* Similarly, for the recited program steps in claim 11, Petitioner relies on the same analysis from claim 1. *Id.* Patent

Owner relies on the same arguments we have discussed above with respect to claim 1. *See* PO Resp. 19–31.

We are persuaded that the hardware and software of Hill’s workstation 104 teach the preamble of claim 11.¹³ *See, e.g.*, Ex. 1002 ¶¶ 160, 170–171; Ex. 1006, 3:29–32; *see also supra* §§ II.D.3.a, II.D.7. Regarding the program steps recited in claim 11, we are persuaded by Petitioner’s analysis for the same reasons mentioned with respect to claim 1. *See supra* § II.D.3.b–g. Thus, we determine that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 11 would have been obvious over the combination of Hill and Aharoni.

10. Claims 12, 13, 16, and 17

Claims 12, 13, 16, and 17 depend directly or indirectly from claim 11, and Petitioner relies on the same analysis from claims 2–5. Pet. 33. Patent Owner also relies on the same arguments discussed above for claims 2–5. *See* PO Resp. 31–34. We are persuaded by Petitioner’s analysis for the same reasons discussed above with respect to claims 2–5. *See supra* §§ II.D.4–6. Thus, for reasons similar to those discussed above for claims 2–5, we determine that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claims 12, 13, 16, and 17 would have been obvious over the combination of Hill and Aharoni.

¹³ We need not decide whether the preamble is limiting because Petitioner establishes that Hill teaches the preamble. *See Realtime Data*, 912 F.3d at 1375.

11. Claims 14 and 15

Claim 14 depends from claim 11 and recites that “the computer program product is provided as a software application for the media player.” Ex. 1001, 18:43–45. Claim 15 also depends from claim 11 and recites that “the computer program product is incorporated in the media player.” Ex. 1001, 18:46–48. According to Petitioner, these claims “recite the different ways the computer program product recited in claim 11 may be implemented in a user computer.” Pet. 34. Petitioner contends that an ordinarily skilled artisan would have found it obvious that “Hill’s system could be either provided as a software application that could be used by a personal computer’s media player or incorporated into a media player on a personal computer.” *Id.* (citing Ex. 1002 ¶ 176). In support, Petitioner explains that “the internal components of Hill’s client-side media player, from the user interface 124 and display 108, to the source manager 120, are neatly cabined and could be easily implemented either via a software application used by a media player or as components of a media player architecture.” *Id.* Patent Owner relies on the same arguments we have discussed above with respect to claim 1. *See* PO Resp. 34.

We are persuaded by Petitioner’s analysis that it would have been obvious to implement Hill’s system—as modified by Aharoni—as a software application used by the media player or as components of the media player architecture. *See, e.g.*, Ex. 1002 ¶ 176. Thus, we determine that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claims 14 and 15 would have been obvious over the combination of Hill and Aharoni.

E. Other Obviousness Grounds Based on Hill

Petitioner contends the subject matter of claims 1–17 would have been obvious over (1) Hill alone; and (2) the combination of Hill and Ravi. Pet. 11–40. Because the Hill–Aharoni obviousness ground is dispositive as to all challenged claims, we do not reach Petitioner’s other grounds based on Hill. *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. Obviousness Grounds Based on Carmel

Petitioner contends the subject matter of claims 1–17 would have been obvious over the combinations of (1) Carmel and Hill; (2) Carmel and Galensky; (3) Carmel, Hill, and Ravi; and (4) Carmel, Galensky, and Ravi. Pet. 41–68. Because the Hill–Aharoni obviousness ground is dispositive as to all challenged claims, we do not reach the grounds based on Carmel. *See SAS*, 138 S. Ct. at 1359; *Bos. Sci. Scimed*, 809 F. App’x at 990.

G. Petitioner’s Motion to Exclude

Petitioner moves to exclude Exhibits 2010, 2015, 2018, 2020, 2636, and 2824 as being inadmissible hearsay and as being irrelevant. Exclude Mot. 1–12. As noted by both parties, Patent Owner and Mr. Hoarty cite these exhibits to bolster certain statements related to how an ordinarily skilled artisan would have interpreted Carmel. Exclude Mot. 6–7, 10–12;

Exclude Opp. 4 & n.2, 6–7, 11; Exclude Reply 1, 4. We do not reach the grounds including Carmel in this Decision (*see supra* § II.F), so we need not consider the admissibility of Exhibits 2010, 2015, 2018, 2020, 2636, and 2824. Accordingly, we *dismiss as moot* Petitioner’s Motion to Exclude.

III. CONCLUSION

Petitioner has shown, by a preponderance of the evidence, that the subject matter of claims 1–17 of the ’594 patent would have been obvious over the combination of Hill and Aharoni.

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not shown Unpatentable
1–17	103(a)	Hill ¹⁴		
1–17	103(a)	Hill, Aharoni	1–17	
1–17	103(a)	Hill, Ravi ¹⁵		
1–17	103(a)	Carmel, Hill ¹⁶		
1–17	103(a)	Carmel, Galensky ¹⁷		
1–17	103(a)	Carmel, Hill, Ravi ¹⁸		
1–17	103(a)	Carmel, Galensky, Ravi ¹⁹		
Overall Outcome			1–17	

¹⁴ We do not reach this ground because we have determined the challenged claims to be unpatentable under the Hill–Aharoni ground. *See supra* § II.D.

¹⁵ We do not reach this ground because we have determined the challenged claims to be unpatentable under the Hill–Aharoni ground. *See supra* § II.D.

¹⁶ We do not reach this ground because we have determined the challenged claims to be unpatentable under the Hill–Aharoni ground. *See supra* § II.D.

¹⁷ We do not reach this ground because we have determined the challenged claims to be unpatentable under the Hill–Aharoni ground. *See supra* § II.D.

¹⁸ We do not reach this ground because we have determined the challenged claims to be unpatentable under the Hill–Aharoni ground. *See supra* § II.D.

¹⁹ We do not reach this ground because we have determined the challenged claims to be unpatentable under the Hill–Aharoni ground. *See supra* § II.D.

IV. ORDER

Accordingly, it is
ORDERED that claims 1–17 of the '594 patent are unpatentable;
FURTHER ORDERED that Petitioner's Motion to Exclude is
dismissed as moot; and

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

IPR2022-01411
Patent 9,729,594 B2

PETITIONER:

Eamonn Gardner
Orion Armon
COOLEY LLP
egardner@cooley.com
oarmon@cooley.com

PATENT OWNER:

Ronald Abramson
Mord Michael Lewis
Ari J. Jaffess
Gina K. Kim
LISTON ABRAMSON LLP
ron.abramson@listonabramson.com
michael.lewis@listonabramson.com
ari.jaffess@listonabramson.com
gina.kim@listonabramson.com