Trials@uspto.gov
571-272-7822

Paper 66
Date: February 22, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NETFLIX, INC.
Petitioner,[1]

v.

DIVX, LLC,
Patent Owner.

IPR2020-00558
Patent 10,225,588 B2

Before KEVIN F. TURNER, BART A. GERSTENBLITH, and IFTIKHAR AHMED, *Administrative Patent Judges*.

Opinion for the Board filed by AHMED, *Administrative Patent Judge*.

Opinion dissenting filed by TURNER, *Administrative Patent Judge*.

AHMED, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision on Remand
Determining No Challenged Claims Unpatentable
35 U.S.C. §§ 314, 318

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[1] Hulu, LLC ("Hulu") also was a petitioner in this proceeding, but is no longer a party to this proceeding. *See* Paper 63 (ORDER Settlement as to Hulu, LLC).

I. INTRODUCTION

This case is on remand from the United States Court of Appeals for the Federal Circuit to address the patentability of claims 1–24 of U.S. Patent No. 10,225,588 B2 (Ex. 1001, "the '588 patent"). *Netflix, Inc. v. DivX LLC*, No. 2022-1083, 2023 WL 2298768 (Fed. Cir. Mar. 1, 2023) (nonprecedential). For the reasons discussed herein, we determine that Petitioner has not shown, by a preponderance of the evidence, that claims 1–24 are unpatentable.

A. Procedural Background

Netflix, Inc. ("Petitioner") and Hulu filed a Petition (Paper 3, "Pet.") requesting institution of *inter partes* review of claims 1–24 (the "challenged claims") of the '588 patent.

Pursuant to 35 U.S.C. § 314(a), on August 26, 2020, we instituted *inter partes* review on the ground of:

Claims Challenged	35 U.S.C. §[2]	References
1–24	103(a)	Chen,[3] Lindahl,[4] Hurst[5]

See Pet. 12; Paper 10 ("Inst. Dec."). Petitioner relies upon a Declaration by Dr. Patrick McDaniel (Ex. 1003).

[2] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112–29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103. Because the effective filing date of the challenged claims of the '558 patent is before March 16, 2013 (the effective date of the relevant amendment), the pre-AIA version of § 103 applies. *See* Ex. 1001, codes (60), (63).
[3] U.S. Patent Application Publication No. US 2011/0096828 A1, published April 28, 2011 (Ex. 1006, "Chen").
[4] U.S. Patent Application Publication No. US 2007/0083467 A1, published April 12, 2007 (Ex. 1007, "Lindahl").
[5] U.S. Patent No. 8,683,066 B2, issued March 25, 2014 (Ex. 1008, "Hurst").

DivX, LLC ("Patent Owner") filed a Patent Owner Response (Paper 17, "PO Resp."), along with a Declaration of Dr. Seth Nielson (Ex. 2012) to support its positions. Petitioner filed a Reply (Paper 29, "Pet. Reply") to the Patent Owner Response, along with a Reply Declaration of Dr. McDaniel (Ex. 1031). Patent Owner filed a Sur-reply to Petitioner's Reply (Paper 40, "PO Sur-reply"), along with a Declaration of Dr. Chandrajit Bajaj (Ex. 2027), that had been made of record in another proceeding between Petitioner and Patent Owner, IPR2020-00646. An oral hearing was held on May 25, 2021. A transcript of the hearing is included in the record. Paper 49 ("Tr.").

We issued a Final Written Decision determining that Petitioner had not proven by a preponderance of evidence that claims 1−24 are unpatentable. Paper 50 ("Final Decision" or "Final Dec."), 36. In particular, our Final Written Decision addressed one of three main arguments raised by Patent Owner—whether Petitioner established that one of ordinary skill in the art would have been motivated to combine the teachings of the references as proposed by Petitioner with a reasonable expectation of success.[6] *Id.* at 9–28. We did not decide two other issues raised by Patent Owner—(1) the proper construction of limitation [l] of claim 1 ("locating encryption information that identifies encrypted portions of frames of video within the requested portions of the selected stream of protected video") and (2) whether the combination would have rendered obvious video frames in alternative streams that are encrypted using a set of common keys. *See, e.g.*, PO Resp. i–ii (table of contents identifying the arguments raised in the

[6] Patent Owner's argument also contested motivation to combine. *See, e.g.*, PO Resp. 1–24.

Patent Owner Response); *see also* Final Dec. 8 (explaining that "we need not resolve the issue" as to the proper meaning of limitation [l] of claim 1 because "we determine that Petitioner has not shown . . . that the challenged claims are unpatentable on another basis").

Petitioner filed a Notice of Appeal of the Final Written Decision with the Federal Circuit. Paper 52. On March 1, 2023, the Federal Circuit issued a decision in the appeal vacating our Final Decision and remanding for further proceedings consistent with its decision. *Netflix*, 2023 WL 2298768, at *6. The Federal Circuit determined that "the Board committed a fundamental legal error in defining the combination it was evaluating as Lindahl with Chen's 'system,' *i.e.*, with the system Chen teaches as its advance over the prior art (its inventive system)." *Id.* at *4. The Federal Circuit left it to our discretion on remand "whether to reconsider the issue of motivation to combine," but also set forth certain contours for our reconsideration if we chose to undertake it. *Id.* at *7. The Federal Circuit, however, did not address the other two issues raised by Patent Owner since we did not decide either of those issues in the Final Written Decision and they were not presented for appeal. *See generally Netflix*.

After the Federal Circuit issued its mandate on April 7, 2023, we conducted a conference call with the parties (Ex. 1036) and requested briefing specifically pointing out the issues that must be decided to reach a conclusion on the patentability of the challenged claims of the '588 patent. Paper 56 (Order, Conduct of the Proceeding). Subsequently, we issued an order with a remand briefing schedule permitting the parties to address the impact of the Federal Circuit's opinion but not permitting the parties to introduce new evidence. *Id.* The parties then filed the following briefs:

Petitioner's Brief on Remand (Paper 61, "Pet. Remand Br."), Patent Owner's Brief on Remand (Paper 62, "PO Remand Br."),[7] Petitioner's Response Brief on Remand (Paper 64, "Pet. Remand Resp. Br."), and Patent Owner's Response Brief on Remand (Paper 65, "PO Remand Resp. Br.").[8]

B. Related Matters

Petitioner and Patent Owner identify the following related matters: *DivX, LLC v. Netflix, Inc.*, No. 2:19-cv-01602 (C.D. Cal.); *DivX, LLC v. Hulu, Inc.*, No. 2:19-cv-01606 (C.D. Cal.) (dismissed Aug. 25, 2022). Pet. 84; Paper 5, 1; Paper 60, 3–4.

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[7] Patent Owner's Brief on Remand recognizes that there are two arguments Patent Owner raised in its Patent Owner Response that were not addressed in the Final Written Decision. *See* PO Remand Br. 1 (citing PO Resp. 24–37 (the construction of "locating encrypted information . . . within requested portions"), 38–58 (referring to Patent Owner's "common keys" argument)).

[8] The Final Decision also addressed Petitioner's Motion to Exclude (Paper 42). *See* Final Dec. 28–37 (granting-in-part, denying-in-part, and dismissing-in-part Petitioner's Motion). Our determinations on that Motion were part of Petitioner's appeal to the Federal Circuit. *See* Paper 52. Because the Federal Circuit did not address this aspect of the Final Written Decision and the Federal Circuit's decision does not impact our previous rulings on the Motion, we maintain those rulings here. Additionally, on remand, Petitioner requested authorization to file a motion for sanctions, which we held in abeyance until the parties' briefing on remand was complete. *See* Ex. 3003, 1. Petitioner requests sanctions because of the impropriety of Patent Owner's remand brief, including new claim construction arguments for limitations [1j] and [1k], and prejudice to Petitioner. *Id.* at 3, 5. Although we reserved further consideration of Petitioner's request, we expanded both the time and pages allowed for Petitioner's responsive brief, and also allowed Petitioner to address any related issues in its responsive brief. *Id.* at 1. Having considered the parties' briefing on remand, and given that we do not reach the claim construction arguments that Petitioner objected to in its request for authorization to file a motion for sanctions, we deny Petitioner's request.

C. The '588 Patent

The '588 patent is directed to "[s]ystems and methods for performing adaptive bitrate streaming using alternative streams of protected content." Ex. 1001, code (57). The Background section of the '588 patent details that "content can be divided into audio, video, and subtitle streams and some streams can be encoded as alternative streams that are suitable for different network connection bandwidths or comply with specific geographic restrictions and/or other restrictions." *Id.* at 1:54–58. That same section also details that adaptive bit rate streaming involves "detecting the present streaming conditions . . . in real time and adjusting the quality of the streamed media accordingly by selecting between different streams encoded for use at different network connection data rates." *Id.* at 1:60–64. The Background section of the '588 patent also details that "[i]n adaptive streaming systems, the source media is typically stored on a media server as a top level index file pointing to a number of alternate streams that contain the actual video and audio data. Each stream is typically stored in one or more container files." *Id.* at 2:12–16. The '588 patent also confirms that it was known to protect content "using cryptographic information such as (but not limited to) one or more encryption keys to encrypt *some or all* of the content." *Id.* at 2:52–54 (emphasis added).

The '588 patent describes, according to specific embodiments, that a system uses a top level index file identifying the alternative streams of protected video, with each including partially encrypted video frames encrypted using a set of common keys. Ex. 1001, 16:43–49, 23:24–28. A copy of the set of common keys is obtained and the streaming conditions for the playback device are detected. *Id.* at 23:46–51. A stream is selected,

based on those conditions, and a container index is used to determine the byte ranges for portions of those streams, which are then requested. *Id.* at 24:51–57, 25:6–10. Based on encryption information that identifies encrypted portions of the frames of video, the encrypted portions are decrypted using the set of common keys and the streamed video is played back. *Id.* at 25:10–21.

Challenged claims 1 and 12 are independent. Claim 1 is illustrative of the claimed subject matter and is reproduced below, with Petitioner's bracketing added for reference:

> 1. [a] A playback device for playing protected content from a plurality of alternative streams, comprising:
>
> [b] a set of one or more processors; and
>
> a non-volatile storage containing an application for causing the set of one or more processors to perform the steps of:
>
> [c] obtaining a top level index file identifying a plurality of alternative streams of protected video, [d] wherein each of the alternative streams of protected video includes partially encrypted video frames [e] that are encrypted using a set of common keys comprising at least one key, [f] and wherein the partially encrypted video frames contain encrypted portions and unencrypted portions of data;
>
> [g] obtaining a copy of the set of common keys;
>
> [h] detecting streaming conditions for the playback device;
>
> [i] selecting a stream from the plurality of alternative streams of protected video based on the detected streaming conditions;
>
> [j] receiving a container index that provides byte ranges for portions of the selected stream of protected video within an associated container file;
>
> [k] requesting portions of the selected stream of protected video based on the provided byte ranges;

> [l] locating encryption information that identifies encrypted portions of frames of video within the requested portions of the selected stream of protected video;
>
> [m] decrypting each encrypted portion of the frames of video identified within the located encryption information using the set of common keys; and
>
> [n] playing back the decrypted frames of video obtained from the requested portions of the selected stream of protected video.

Ex. 1001, 27:30–63.

II. ANALYSIS

A. Principles of Law

"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 grounds for the challenge to each claim")). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

As set forth in 35 U.S.C. § 103(a),

> [a] patent may not be obtained . . . if the differences between the subject matter sought to be patented 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.

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.[9] *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966). An obviousness analysis "need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *accord In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007). However, Petitioner cannot satisfy its burden of proving obviousness by employing "mere conclusory statements." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Instead, Petitioner must articulate a reason why a person of ordinary skill in the art would have combined the prior art references. *In re NuVasive, Inc.*, 842 F.3d 1376, 1382 (Fed. Cir. 2016).

We analyze the asserted grounds of unpatentability in accordance with these principles to determine whether Petitioner has met its burden of establishing unpatentability of the challenged claims by a preponderance of the evidence.

B. Level of Ordinary Skill in the Art

Petitioner, supported by Dr. McDaniel's testimony, proposes that a person of ordinary skill in the art at the time of the invention ("POSITA") would have had "a bachelor's degree in mechanical engineering, electrical engineering, computer science, or a similar field with at least two years of experience in video streaming and media security or . . . a master's degree in mechanical engineering, electrical engineering, computer science, or a

[9] Neither party presents evidence of objective considerations of non-obviousness.

similar field with a specialization in video streaming and media security." Pet. 14–15 (citing Ex. 1003 ¶¶ 65–67). Patent Owner does not refute Petitioner's assessment and appears to apply such a level of skill in its arguments against combining Chen, Lindahl, and Hurst to teach or suggest the elements of the challenged claims. *See generally* PO Resp.

As such, we continue to adopt and apply Petitioner's unopposed position as to the level of ordinary skill in the art for purposes of this decision. *See* Inst. Dec. 6; Final Dec. 6.

C. Claim Construction

In this *inter partes* review, "claims are construed using the same claim construction standard that would be used to construe the claim[s] in a civil action under 35 U.S.C. § 282(b)." *See* 37 C.F.R. § 42.100(b) (2019). The claim construction standard includes construing claims in accordance with their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc). In construing claims in accordance with their ordinary and customary meaning, we take into account the specification and prosecution history. *Phillips*, 415 F.3d at 1315–17. The specification is the single best guide to the meaning of a disputed term and is usually dispositive. *Id.* at 1315 (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

If the specification "reveal[s] a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess[,] . . . the inventor's lexicography governs." *Phillips*, 415 F.3d at 1316 (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002)). Another exception to the general rule that claims are

given their ordinary and customary meaning is "when the patentee disavows the full scope of a claim term either in the specification or during prosecution." *Uship Intellectual Props., LLC v. United States*, 714 F.3d 1311, 1313 (Fed. Cir. 2013) (quoting *Thorner v. Sony Computer Entm't Am., LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)).

Additionally, only terms that are in controversy need to be construed, and these need be construed only to the extent necessary to resolve the controversy. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that "only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy"); *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs.* in the context of an *inter partes* review).

> 1. *[l] locating encryption information that identifies encrypted portions of frames of video within the requested portions of the selected stream of protected video;*

The chronology is important for a complete understanding of the issue before us. In our Institution Decision, we noted that neither party presented any claim terms for construction at that stage of the proceeding. Inst. Dec. 8. Nonetheless, we understood that Patent Owner's argument pertaining to limitation [l] of claim 1 is based on Patent Owner's interpretation of the phrase. *Id.* at 28 ("Patent Owner's arguments . . . rely on a specific construction of limitation [l]"). On the record at that time, we disagreed with Patent Owner's construction. *Id.* at 28–30.

As explained above, our Final Written Decision was based on a different issue raised by Patent Owner. Although we stated that "we continue to find Patent Owner's arguments about limitation [l] to be

unpersuasive," we did not "resolve the issue as we determine[d] that Petitioner has not shown, by a preponderance of the evidence, that the challenged claims are unpatentable on another basis." Final Dec. 8. Thus, as both parties recognize, one of the issues remaining for our consideration on remand is the construction of limitation [l]—an issue that was thoroughly briefed by the parties in the Patent Owner Response, Petitioner's Reply, and Patent Owner's Sur-reply. Pet. Remand Br. 9–11; PO Remand Br. 1; *see* PO Resp. 26–34; Pet. Reply 20–23; PO Sur-reply 1–8.

Patent Owner argues that the clause "within the requested portions of the selected stream of protected video" in limitation [l] of claim 1 modifies "locating encryption information," and, properly construed, dictates that the "encryption information" must be "located," "within the requested portions of the selected stream of protected video." PO Resp. 26–39 (citing Ex. 2012 ¶ 85); PO Sur-reply 1–8. Petitioner asks us to reject Patent Owner's arguments, and adopt our preliminary determination at the institution stage that the "within" term of limitation [l] connotes where the particular encrypted portions of frames of video must be located, not necessarily where the encryption information must be located. Pet. Reply 20–23.

Even though we preliminarily construed this term differently, having fully considered the parties' arguments and the evidence presented during trial, we determine for the reasons explained below that the evidence overwhelmingly supports Patent Owner's reading of limitation [l]—that the encryption information is located within the *requested portions* of the selected stream of protected video.

"In determining the meaning of the disputed claim limitation, we look 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 (Fed. Cir. 2006). We begin our analysis with the claim language, which recites "locating encryption information that identifies encrypted portions of frames of video within the requested portions of the selected stream of protected video." Ex. 1001, 27:54–57. Relying upon Dr. Nielson's testimony, Patent Owner contends that a person of ordinary skill in the art would have understood that "the most natural reading of the claim is that the 'within' clause modifies the 'locating.'" PO Resp. 26–27 (citing Ex. 2012 ¶¶ 85–87). Dr. Nielsen testifies that the second clause of the claim limitation informs the person of ordinary skill in the art of the *function* of the "encrypted information," whereas the third clause informs where that encrypted information is located. Ex. 2012 ¶ 87.

We determine Patent Owner's reading of the claim limitation is the better one. The limitation begins with the verb "locating," and it therefore makes sense that the clause would recite what is located (i.e., encryption information) and where it is located (i.e., within the requested portions of the selected stream of protected video). In other words, it is reasonable that the second and third clauses of the limitation *both* modify the first clause (for example, as could perhaps be expressed through the use of commas as "locating encryption information, that identifies encrypted portions of frames of video, within the requested portions of the selected stream of protected video").[10] On the other hand, Petitioner's reading of the limitation,

[10] In general, we recognize that the use of commas to set off phrases in claim drafting is not consistent. We included commas above to illustrate Patent Owner's understanding of the claim limitation.

allowing *only* the second clause to modify the first, while not unreasonable, makes less sense. That is, the encrypted information identifies the encrypted portions of frames, which in turn are within the requested portions of the selected stream of protected video. Reading the claim in its entirety, the encrypted portions of frames would be understood to be located within the requested portions of the stream; it does not seem necessary for the claim to expressly recite that aspect. For example, the very next limitation—limitation [m] of claim 1—refers to "each encrypted portion of the frames of video" but does not expressly recite "within the requested portions of the selected stream." Ex. 1001, 27:58–60. Thus, when limitation [l] recites "within the requested portions of the selected stream," it seems more likely that the clause refers to where that encrypted information is located rather than simply to indicate the obvious location of the encrypted portion of the frames of video. We therefore view Patent Owner's reading of the claim language as the better one.

Next, we turn to the Specification, the single best guide to the meaning of a disputed term, *Phillips*, 415 F.3d at 1315, which we determine supports *only one* of the two proposed interpretations of the claim. Patent Owner argues, and we agree, that "in *every embodiment* of the '588 [patent], 'encryption information' is located within the 'requested portion' of the video." PO Resp. 27–28 (citing Ex. 1001, 9:23–29, 13:57-63, 16:33-49, 22:14-17, 25:10-21; Ex. 2012 ¶ 88; Ex. 2013, 47:2–49:20; 55:5–15); PO Sur-reply 1–2. For example, the Specification explains that "each of the Matroska container files containing an alternative stream of protected video *includes a DRMInfo element in a BlockGroup element* containing a protected frame of video, where the DRMInfo element indicates at least a

portion of the protected frames of video that is encrypted," and that the client application "*parse[s] the BlockGroup element* to obtain a DRMInfo element indicating at least a portion of the protected frame of video that is encrypted." Ex. 1001, 4:41–56. The BlockGroup element is parsed to locate the DRMInfo *within* the BlockGroup element, i.e., the requested portion of the video, not elsewhere. Other portions of the Specification confirm this requirement:

> In a number of embodiments, common cryptographic information is included within a DRM header element in each of the Matroska container files and references to the common cryptographic information are made using DRMInfo elements *within a BlockGroup element corresponding to* a specific frame of encrypted video.

Ex. 1001, 9:23–29 (emphasis added); *see also id.* at 13:57–63 (same).

Figure 4e of the '588 patent is reproduced below.

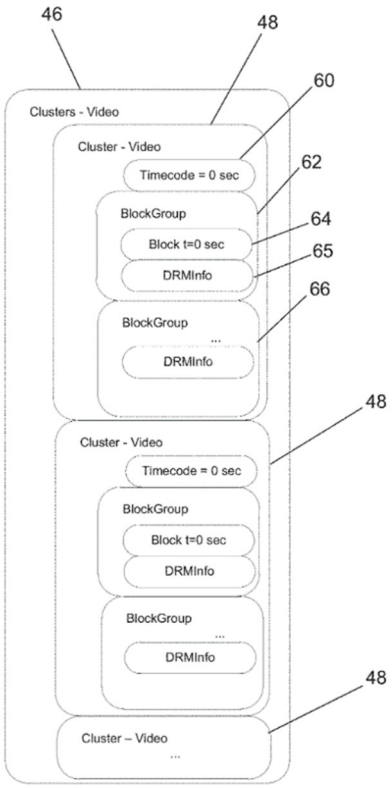

FIG. 4e

Figure 4e illustrates "the inclusion of a protected trick play track into the Clusters element of a Matroska container file." *Id.* at 7:58–62. The '588 patent discloses that

> The first BlockGroup element 62 includes a Block element 64, which specifies . . . a *DRMInfo element 65* that identifies a portion of the frame that is encrypted. . . . In other embodiments, any of a variety of information appropriate to identifying encrypted data *within a video frame* and decrypting the encrypted data can be stored w*ithin a DRMInfo element*.

Id. at 16:33–52; *see also id.* at 22:14–17 ("The DRMInfo element identifies the portion of the frame that is encrypted").

> Prior to decoding the encoded media, the playback device can check for the presence of a DRMInfo element *within each BlockGroup* of a video stream *to identify* whether the encoded media is protected. The playback device can use the information within the DRMInfo element to decrypt encrypted portions of the video prior to decoding.

Id. at 25:15-21.

According to Dr. Nielson, a person of ordinary skill in the art would have understood that "locating encryption information within the requested portions of the stream is one of the central aspects of the '588 [patent]'s inventive system." Ex. 2012 ¶ 90 (citing Ex. 1001, 11:45–50). Referring to Figure 4e (reproduced above), Dr. Nielson testifies that "the inventors did not simply utilize the industry standard Matroska container file which was not able to contain the necessary encryption information, but, rather, modified the Matroska file format to add this aspect of the invention." *Id.* We find Dr. Nielson's testimony credible and it helps explain why every embodiment disclosed in the '588 patent specification describes encryption information located within the requested portion of the video. *See id.* ¶ 88. Moreover, Petitioner's expert, Dr. McDaniel agrees that the embodiments

described in the Specification consistently locate the encryption information within the requested portion of the video *and* that there is no embodiment in the Specification where the encryption information is not within the requested portion of the video.[11] *See* Ex. 2013, 47:2–49:20; 55:5–15.

Petitioner points to the following portion of the Specification as supporting Petitioner's understanding of the claim limitation:

> Depending upon the structure of the [Uniform Resource Identifiers] contained within the top level index file, the playback device can either use information from the URIs or information from the headers of the Matroska container files *to request byte ranges* from the server that contain at least a portion of the index from relevant Matroska container files.

Ex. 1001, 24:63–25:2 (emphases added). This discussion, however, says nothing about locating encryption information that identifies encrypted portions of frames with a requested byte range; instead, it relates to an index of byte ranges of the streaming media that would allow the client to select *which byte ranges* of the streaming media *to request for viewing*.

Petitioner also argues that although embodiments disclosed in the '588 patent specification support Patent Owner's more restrictive construction, the same embodiments also support Petitioner's proposed construction. Pet. Reply 20; Pet. Remand Br. 9–11. That argument misses the point. In resolving the dispute between the parties, we need to look to where the Specification discloses the encryption information is located. There is no support in the Specification for locating encryption information

[11] As Patent Owner notes, Dr. McDaniel submitted two declarations in this proceeding but did not address this claim construction issue. PO Sur-reply 1–2 (citing Ex. 1003 ¶¶ 100–101, 182–187); *see also* Ex. 1031. Patent Owner contends that Dr. Nielsen's testimony concerning the correct construction is, thus, unrebutted. PO Sur-reply 2.

anywhere other than *within* the requested portions and Petitioner has not pointed us to any portion of the Specification that supports Petitioner's construction. Where, as here, "a patent repeatedly and consistently characterizes a claim term in a particular way, it is proper to construe the claim term in accordance with that characterization." *See Wisconsin Alumni Research Found. v. Apple Inc.*, 905 F.3d 1341, 1351–52 (Fed. Cir. 2018) (quoting *GPNE Corp. v. Apple Inc.*, 830 F.3d 1365, 1370 (Fed. Cir. 2016)).

Petitioner contends that it would be improper to import a limitation requiring encryption information to be located within the requested portion of the video (Pet. Reply 23), but nothing is being imported here. As discussed above, we read the claim language itself as specifying that the encryption information be located *within* the requested portions. In contrast to importing a limitation that is not expressly recited in the claim, what we address here is how to understand the interaction between words expressly recited in the claim.[12] *See Wisconsin Alumni Rsch. Found.*, 905 F.3d at 1351–52; *In re Donaldson Co., Inc.*, 16 F.3d 1189, 1195 (Fed. Cir. 1994).

[12] The dissent also makes a similar argument, that examples from the Specification may not be used to import a limitation into the claims. Dissent 5 (citing *Superguide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004); *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1303 (Fed. Cir. 2007)). We could not agree more. But importing a limitation requires that the limitation is not recited in the claims. For example, in *Verizon*, the rejected claim construction sought to construe the term "translation" as requiring "a change in protocol from a higher-level to a lower-level protocol," whereas there was no indication in the claims that translation meant a change in protocol, let alone a change from a higher-level to a lower-level protocol. *Verizon*, 503 F.3d at 1303. The claim construction issue presented here is entirely different.

And the Specification is the single best guide to the meaning of a disputed term and is usually dispositive. *Phillips*, 415 F.3d at 1315.

Additionally, Petitioner argues that Patent Owner could have amended the claim to reach the construction Patent Owner now advocates, noting that Patent Owner "chose different language for the '588 patent where the natural reading includes no such requirement, reinforcing the fact that, during prosecution, [Patent Owner] did not intend the convoluted interpretation it now advocates." Pet. Reply 21–22. We are not persuaded that Patent Owner was required to amend the claims or that Patent Owner's interpretation is convoluted.[13]

Petitioner also argues that, "[f]or the parent application of the '588 Patent, which shares an identical specification, [Patent Owner] obtained claims where the encryption (DRM) information is located in a top-level index file." Pet. Reply 20–21 (citing U.S. Patent No. 9,621,522 (the "'522 Patent," Ex. 1026), 27:35–41). Further, Petitioner points out that other patents in the '588 patent family include express limitations requiring the encryption (DRM) information to be *inside* the video container files, which is not recited by limitation [l]. *Id.* at 22–23 (citing Ex. 1027, 26:59–65; Ex. 1028, 26:52–58). Patent Owner responds that "Petitioner is comparing apples and oranges," and that there is no inconsistency between "locating" "encryption information" that "identifies encrypted portions of frames of

[13] Petitioner also points out that Patent Owner inserts the verb "is," in its explanations of how the limitation should be construed, to connect a subject at the beginning with a clause at the end, but the limitation contains no such verb. Pet. Reply 22 (citing PO Resp. 32). Although we agree with Petitioner that the insertion of the verb "is" makes the meaning clearer, we are persuaded that when read in light of the Specification, the meaning of the limitation as drafted is discernable to one of ordinary skill in the art.

video" "within the requested portions of the selected stream," on the one hand, and storing "DRM information that identifies protected portions of the alternative streams" in a "top-level index file" on the other. PO Sur-reply 5.

We agree with Patent Owner that Petitioner confuses different aspects of the disclosed invention. The claims here are directed to locating encryption information that *identifies encrypted portions of frames* within the requested portions of the selected stream, while claim 1 of the '522 patent recites "DRM information that identifies protected *portions of the alternative streams*." *See* PO Sur-reply 4–5 (explaining that the two claims concern two different things found in two different places). We fail to see the alleged inconsistency between these claims. As Patent Owner notes, claim 1 of the '522 patent does not require "partial frame encryption," and it therefore seems reasonable that it does not recite locating encryption information that identifies *encrypted portions of frames*. *Id.* at 4. Portions of alternative streams are not the same as portions of frames, and as discussed above, we find nothing in the Specification to suggest encryption information that *identifies encrypted portions of frames of video*, is found anywhere other than in the requested portions. Because the claims of the '588 patent and those of the '522 patent are directed to different aspects of the disclosed invention, the '522 patent's claims do not support Petitioner's interpretation of limitation [l]. *See ResQNet.com, Inc. v. Lansa, Inc.*, 346 F.3d 1374, 1383 (Fed. Cir. 2003) (finding a parent patent's prosecution history irrelevant where the two patents do not share the same claim language); *Advanced Cardiovascular Sys., Inc. v. Medtronic, Inc.*, 265 F.3d 1294, 1305 (Fed. Cir. 2001) ("The prosecution history of a related patent can

be relevant if, for example, it addresses a limitation in common with the patent in suit.").

The dissent looks to the prosecution history to determine that the original recitation of limitation [l] "makes it much clearer that the limitation sought to require using encryption parameters to identify encrypted portions," and runs counter to Patent Owner's reading of the limitation.[14] Dissent 3–4 (citing Ex. 1002, 575–76). We respectfully disagree. First, the original *and* the amended versions of limitation [l] each recite "locating encryption information that identifies encryption portions." *Compare* Ex. 1001, 27:54–57, *with* Ex. 1002, 565. Thus, we do not agree with the dissent that the original recitation of limitation [l] was clearer. Second, the Examiner's Interview Summary specifically states that the amendment was proposed in-part to "clarify the claim limitations." Ex. 1002, 576. Thus, the dissent's proposition that the original version was more clear runs contrary to the examiner's opinion. Third, as the examiner explains, the amendment was intended to overcome various rejections and objections, leaving the full context and precise reasoning unclear. *See* Ex. 1002, 576. What is clear, however, is that the claim amendments altered the claimed invention, including adding a container index that tracks portions of protected video by byte ranges and requesting portions of protected video by byte ranges. *Id.* at 565. Although altering several limitations, the amendments also reflect that

[14] As a threshold matter, this raises new arguments and evidence not contemplated by the parties in any argument presented to us, and therefore, fails to comport with the APA's notice requirements. *See Magnum Oil*, 829 F.3d at 1381 ("[T]he Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond.").

the changes to limitation [l] appear to be the result of tying back to (i.e., deriving antecedent basis from) previous recitations in the claim. *Compare id.* (amendment to limitation [i] adding "of protected video"), *with id.* (amendment to limitation [l] adding "of protected video"); *see also id.* (limitation [l] ("requested portions of the selected stream") and limitation [k] ("requesting portions of the selected stream")). The amendment also altered what is played back in the last limitation of the independent claims. *Id.* Given the extent of these amendments and lack of a clear explanation of the reasons for them, we decline to read much into the changes made to limitation [l]. *See Unique Concepts, Inc. v. Brown*, 939 F.2d 1558, 1563 (Fed. Cir. 1991) ("We do not know why Claim 9 was cancelled and cannot speculate on the reasons for the cancellation; we can only interpret the clear language of the claims as granted."). And, the most we can read from the prosecution history, if anything, supports Patent Owner's argument since the examiner proposed the amendments to clarify the claims.[15]

The dissent also prefers "to view that limitation according to a broader interpretation." Dissent 5. Although we may have agreed with the dissent under our prior broadest reasonable interpretation claim construction standard, we are now required to construe claims in *inter partes* review proceedings in accordance with their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention, under the *Phillips* standard, using the specification as the single best guide. *See* 37 C.F.R. § 42.100(b).

[15] In this regard, we note that Petitioner did not argue that the examiner's amendment supported its view of limitation [l].

Turning to extrinsic evidence, although we previously considered a common treatise on grammar in arriving at our preliminary claim construction (Inst. Dec. 30) and Patent Owner cites to different portions of the same treatise as well as to a different treatise as requiring a different reading of the claim (PO Resp. 32),[16] having reviewed the complete record, we are not persuaded that either of those guides conclusively establish that there is *only* one proper interpretation of the claim limitation based on rules of English grammar alone. In our Institution Decision, we looked to a treatise on grammar that taught that "[t]he position of words in a sentence is the principle means for showing their relationship," and that "[t]he writer must, therefore, bring together the words and groups of words that are related in thought and keep apart those that are not so related." Inst. Dec. 30 (citing William Strunk, Jr. & E.B. White, *The Elements of Style* 36 (4th ed. 2000)). On the full record, however, we determine that Patent Owner's interpretation does not violate that concept since the "within" clause of limitation [l] follows the "locating encryption information" clause and they are only spaced apart by another description of the encryption information (i.e., "that identifies encrypted portions of frames of video"). We recognize that this determination differs from our initial understanding discussed in the Institution Decision, but we were convinced to change our view after consideration of the complete record. *Fanduel, Inc. v. Interactive Games LLC*, 966 F.3d 1334, 1340 (Fed. Cir. 2020) (encouraging the Board to

[16] Patent Owner points to other examples in the same treatise as well as a different treatise that suggest that limitation [l] could be read as proposed by Patent Owner. PO Resp. 32 (citing The Elements of Style 87; Bryan Garner, *The Redbook, A Manual on Legal Style* (Ex. 2015, 5)) (listing for example, "[t]he lawn mower that is broken is in the garage").

change its view of the merits after further development of the record if convinced its initial inclinations were incorrect (citing *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016)).

Additionally, the parties' arguments comparing and contrasting different examples from the treatises illustrate that these are not conclusive guides in our effort to construction limitation [l]. PO Resp. 32–33 (providing two examples from two treatises that support Patent Owner's reading of the claim); Pet. Reply 22 (discussing how Patent Owner's examples can be read as supporting Petitioner's interpretation). Rather, the arguments further cement the importance of the intrinsic record and particularly the claim language and Specification in the construction we now reach.

In conclusion, we determine that the Specification and claims of the '588 patent require locating encryption information *within* the requested portions of the selected stream of protected video. As noted above, first, we determine that the language of limitation [l] supports Patent Owner's proposed construction and understanding thereof. Next, we find no support in the Specification for the placement of encryption information outside of the requested portions of the selected stream of protected video in contrast to Petitioner's construction. Lastly, as we are persuaded by Dr. Nielson's testimony that an ordinary skilled artisan would have understood the '588 patent specification as disclosing a modified Matroska file format and thus would have understood limitation [l] in the manner proposed by Patent Owner. Accordingly, we construe limitation [l] as requiring that the encryption information be within the requested portions of the selected stream of protected video.

The Federal Circuit has held that "in an IPR proceeding, the Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond." *Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374, 1381 (Fed. Cir. 2023) (internal quotations and citations omitted). The court has further explained that

> under the [Administrative Procedure Act (APA)] it is permissible for the Board to adopt a new construction, proposed either by the patent owner or by the Board itself, in a final written decision. But before the Board decides a case under a construction adopted after the institution decision, it must give a petitioner an opportunity to respond to the new construction, whether that construction was first proposed by the patent owner or the Board.

Id. (footnotes omitted) (citing *SAS Inst., Inc. v. ComplementSoft, LLC.*, 825 F.3d 1341, 1351 (Fed. Cir. 2016), *rev'd and remanded sub nom. SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348 (2018)). The court has however held that those requirements are met when the petitioner is able to respond in its reply or at oral argument to the construction proposed in the patent owner response. *Id.* at 1383 (citing *Hamilton Beach Brands, Inc. v. f'real Foods, LLC*, 908 F.3d 1328, 1338–39 (Fed. Cir. 2018)); *see also Google LLC v. EcoFactor, Inc.*, No. 2022-1750, 2024 WL 463231, at *5 (Fed. Cir. Feb. 7, 2024) (finding no APA violation where both parties recognized that the core issue related to the scope and boundaries of the claim limitation and, thus, were afforded both notice and opportunity to address the issue). In *Hamilton Beach*, prior to institution, neither party had proposed an express construction of the relevant terms, and the Board instituted trial under the parties' implicit understanding of the terms. *Hamilton Beach*, 908 F.3d at 1335. After institution, the patent owner response proposed a new construction, which the Board adopted in its final written decision. *Id*. at

1338–39. In rejecting petitioner's argument that the Board violated the APA in adopting its own constructions, the court held that petitioner had received adequate notice and opportunity to respond, "as shown by the fact that [petitioner] argued against [patent owner's] proposed constructions in its reply brief and during the oral hearing." *Id.* As in *Hamilton Beach*, Petitioner here has had adequate notice and opportunity to respond to Patent Owner's proposed construction, which was first raised in the Patent Owner's Preliminary Response and argued extensively in Patent Owner's Response. *See* PO Resp. 26–34; Pet. Reply 20–23; Tr. 17:1–24:14, 61:6–63:21. And Petitioner did respond, both in its Reply (Pet. Reply 20–23) and at oral argument (*see, e.g.*, Tr. 17:3–24:14 (addressing dispute number two)). Further, Petitioner addressed Patent Owner's proposed construction and reiterated its arguments in its Brief on Remand. *See* Pet. Remand Br. 9–11. Thus, Petitioner has had notice, the opportunity to respond, and has responded to Patent Owner's proposed claim construction.[17]

2. Remaining Claim Terms

We determine that it is not necessary to explicitly construe any other term or phrase for the purposes of this Decision, and we give all remaining claim terms their ordinary and customary meaning. *See Realtime Data*, 912 F.3d at 1375.

D. Overview of the Asserted Prior Art

1. Chen

Chen is directed to enhanced block-request streaming using scalable encoding, which provides for improvements in the user experience and

[17] Petitioner also did not request an opportunity to provide any additional briefing on this issue.

bandwidth efficiency. Ex. 1006, codes (54), (57). Chen details that video may be "encoded at multiple bitrates to form different versions, or representations," and those representations are broken into smaller pieces, "perhaps on the order of a few seconds each, to form segments," with each segment stored as a separate file. *Id.* ¶ 63. As a client device requests segments, it "switch[es] to different data rates based on available bandwidth," such that the client device may request multiple representations, each presenting a different media component. *Id.* ¶ 64. Chen also discloses that a media presentation description ("MPD") is used, which "describe[s] a media presentation that is a structured collection of segments, each containing media components such that the client can present the included media in a synchronized manner and can provide advanced features, such as seeking, switching bitrates and joint presentation of media components in different representations." *Id.* ¶ 66. Figure 5 of Chen is reproduced below:

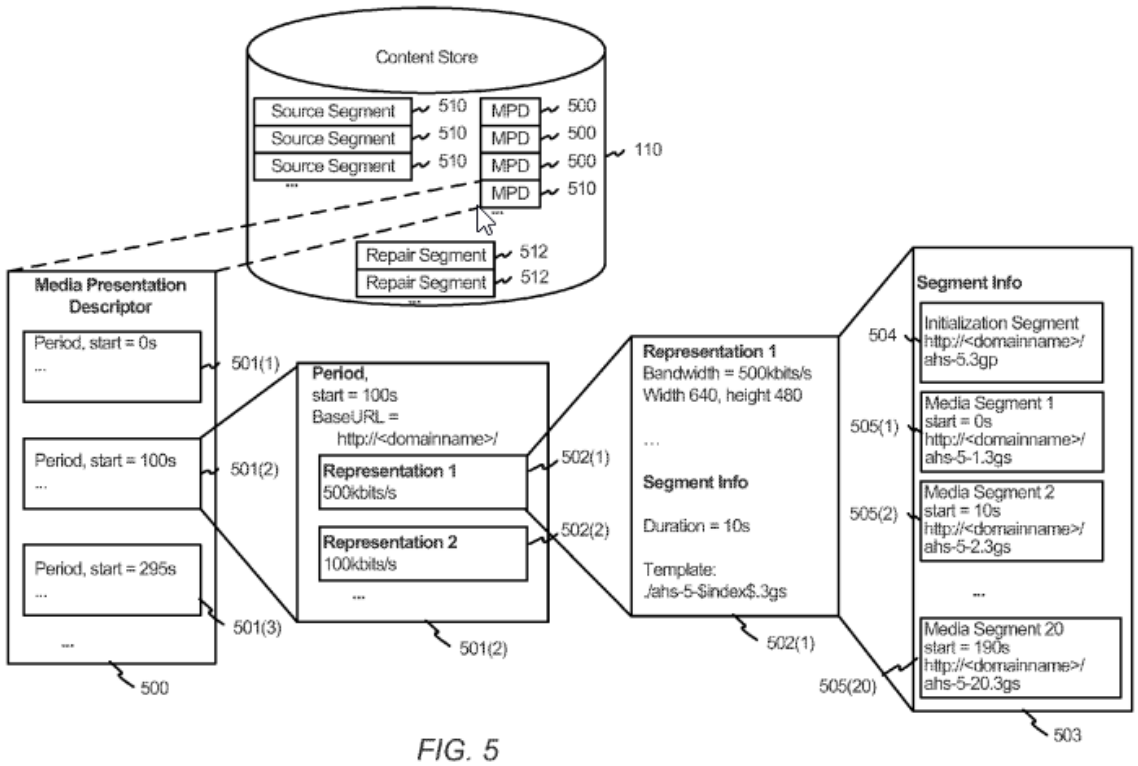

FIG. 5

Figure 5 of Chen provides possible structures of the content store with segments and MPD files, also illustrating a breakdown of segments, timing, and other structures in exemplary MPD file. *Id*. ¶ 216.

Chen also details that:

> The media presentation may be constructed to permit access by terminals with different capabilities, such as access to different access network types, different current network conditions, display sizes, access bitrates and codec support. The client may then extract the appropriate information to provide the streaming service to the user.

Ex. 1006 ¶ 68.

2. Lindahl

Lindahl is directed to partial encryption techniques for media data, providing that partially encrypted media files allow for decryption to be faster and less resource intensive. Ex. 1007, code (57), ¶ 95. Lindahl discloses that each block of a media file is encrypted in accordance with the

encryption parameters, and the process may utilize "one or more encryption keys when encrypting each block." *Id.* ¶ 54. Figures 5A–5C and 6A–6B of Lindahl are reproduced below:

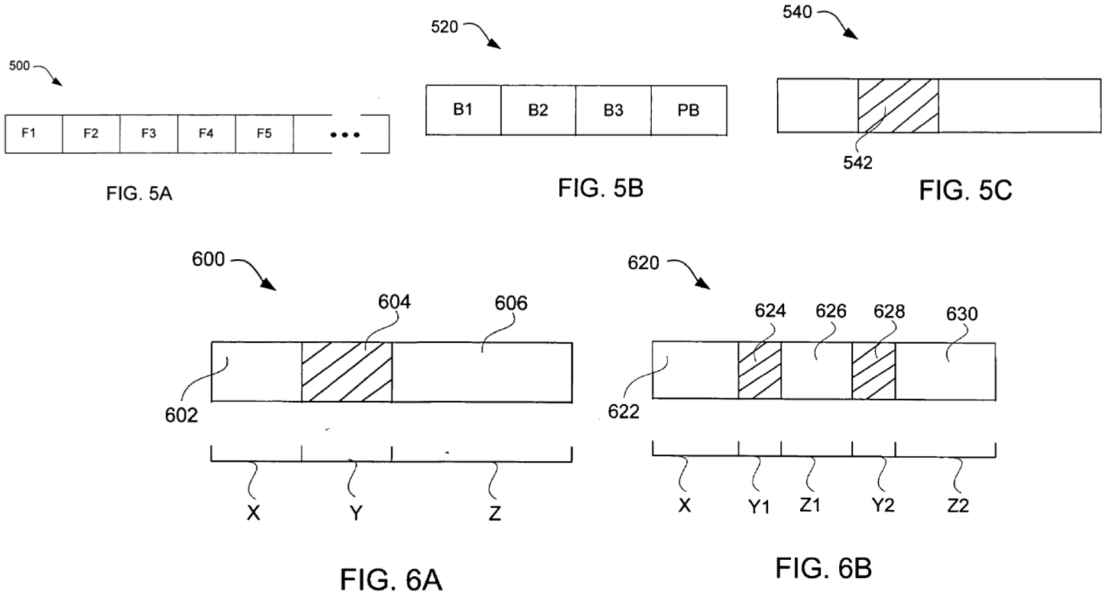

FIG. 5A FIG. 5B FIG. 5C

FIG. 6A FIG. 6B

Figures 5A–5C and 6A–6B of Lindahl illustrate examples of the media file encryption process. *Id.* ¶¶ 55–58.

Lindahl discloses that media file 500 includes frames F1, F2, etc., with each frame having header information and media data. Ex. 1007 ¶ 55. Representative media frame 520, shown in Figure 5B, is divided into blocks, B1, B2, B3, of the same size, as well as partial block PB. *Id.* In representative block 540, shown in Figure 5C, only portion 542 is encrypted, with the remainder being unencrypted. *Id.* Partially encrypted block 600 has initial unencrypted portion 602, followed by encrypted portion 604, and followed by unencrypted portion 606. *Id.* ¶ 57, Fig. 6A. In another embodiment, partially encrypted block 620 includes encrypted portions 624 and 628, and unencrypted portions 622, 626, and 630, with the portions having lengths X, Y1, Z1, Y2, and Z2, measured in a number of bits or bytes. *Id.* ¶ 58, Fig. 6B.

Lindahl's system allows for client machines to access a media server to browse, select, download, and play purchased media files, where encryption processes impose limitations on access to those files. Ex. 1007 ¶ 40. Lindahl also discloses that a user may "receive a global key or other cryptographic key when a media file is purchased." *Id.* ¶ 64. Lindahl further discloses that the download of the media file "can be performed by streaming the media file through the data network to the user." *Id.* ¶ 65. Lindahl also discloses that "[a]ny cryptographic keys being used with respect to the encrypted media file are also stored in the client machine." *Id.* ¶ 66.

3. Hurst

Hurst is directed to the maintenance of a programming lineup of adaptive-bitrate content streaming, using a timeline module and a plurality of streamlets. Ex. 1008, code (57). Figures 2b, 3a, and 3b of Hurst are reproduced below.

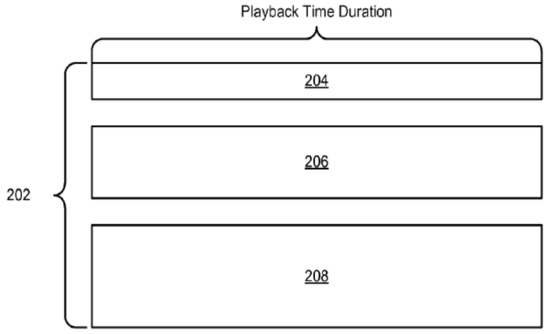

FIG. 2b

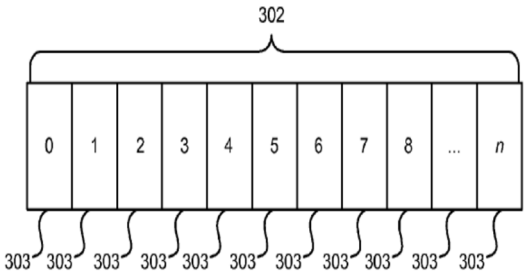

FIG. 3a

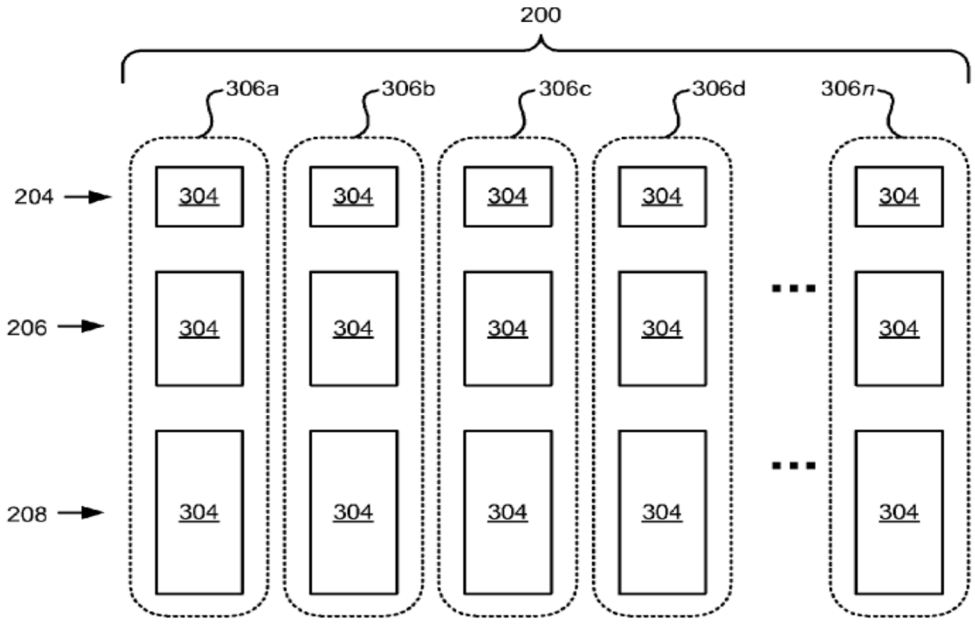

FIG. 3b

Figures 2b, 3a, and 3b of Hurst illustrates a plurality of streams divided into a plurality of source streamlets. *Id.* at 6:46–7:8, 7:9–20.

Figure 2b illustrates plurality of streams 202 having varying degrees of quality and bandwidth, with low quality, medium quality, and high quality streams 204, 206, and 208, respectively, containing encoded representations of a content file encoded and compressed to varying bitrates. Ex. 1008, 6:46–53. Figure 3a illustrates stream 302 divided into a plurality of source streamlets 303, each encapsulated as an independent media object. *Id.* at 6:59–64. Figure 3b illustrates sets of streamlets 304, having identical time indices and durations but varying bitrates, such that set 306a includes encoded streamlets 304 having low 204, medium 206, and high 208 bitrates. *Id.* at 7:9–16. Hurst also discloses that its system uses a digital rights management ("DRM") server that is configured to maintain keys used to decrypt content and determine whether a client device is allowed to access content. *Id.* at 18:62–64. Hurst further discloses that the streamlets may be

encrypted with the same key or may be configured to encrypt each bit rate with a different set of encryption keys. *Id.* at 18:66–19:2.

E. Obviousness of Claims 1–24 over Chen, Lindahl, and Hurst

Petitioner contends that claims 1–24 would have been obvious over the combination of Chen, Lindahl, and Hurst. Pet. 17–83. For the reasons that follow, we are not persuaded that Petitioner has established by a preponderance of the evidence that these claims are unpatentable under § 103 in view of the combination of Chen, Lindahl, and Hurst.

1. Independent Claim 1

Patent Owner argues that that the combination of Lindahl and Chen fails to teach the "locating encryption information that identifies encrypted portions of frames of video within the requested portions of the selected stream of protected video" limitation of independent claims 1 and 12. PO Resp. 24–37. We begin our discussion with the parties' arguments on this limitation.

a. Limitation [l]

Limitation [l] recites the step of locating encryption information that identifies encrypted portions of frames of video within the requested portions of the selected stream of protected video. Petitioner relies on Lindahl to teach or suggest this limitation of independent claim 1. Pet. 52–55.[18] Petitioner argues that Lindahl teaches using encryption parameters to identify encrypted portions, including X, Y, and Z, measured

[18] Although Petitioner's first sentence addressing this limitation states that "[t]he *combination* teaches or suggests" limitation [l], the entire discussion in the Petition relies on Lindahl and does not rely on Chen or Hurst for this limitation. Pet. 52–55.

in a number of bits or bytes. *Id.* at 52–53 (citing Ex. 1007 ¶¶ 56–59, Figs. 6A, 6B; Ex. 1003 ¶¶ 182–183). Petitioner argues that Lindahl teaches that the encryption parameters are "retrieved" to decrypt the media. *Id.* at 54 (citing Ex. 1007 ¶ 72). Petitioner also argues that a person of ordinary skill in the art "would have been motivated to use encryption parameters, as taught by Lindahl, because it provides flexibility and facilitates different levels of security by controlling the amount and portions of each frame that is encrypted." *Id.* (citing Ex. 1007 ¶¶ 57–58; Ex. 1003 ¶ 186).

Patent Owner responds that "the 'locating' limitation, properly construed, requires, *inter alia*, that 'encryption information' be 'locat[ed]' 'within the requested portions of the selected stream of protected video,'" and that the combination of Lindahl and Chen fails to teach or render obvious limitation [l]. PO Resp. 24–38; PO Sur-reply 1–8. Patent Owner contends that "the concepts of 'portions' of a video and 'alternative streams' simply do not exist in Lindahl." PO Resp. 35–36 (citing Ex. 2012 ¶ 97; Ex. 2013, 69:18–20). Patent Owner thus argues that "even if Lindahl is combined with Chen, and even if Chen does request portions of a video, there is nothing in the record to disclose locating encryption information 'within the requested portions of the selected stream,' as opposed to some other location." *Id.* at 36.

As discussed above (Section II.C.1), we are persuaded by Patent Owner's arguments as to how limitation [l] of claim 1 should be interpreted. We determine that the "within" term of limitation [l] most clearly connotes where the encryption information must be located. Petitioner's contentions as to Lindahl's teachings rest solely on its own interpretation, which we do not adopt. *See* Tr. 23:6–23 (Petitioner's counsel acknowledging that

Petitioner did not propose an alternative argument based on Patent Owner's construction); Pet. Reply 20–23 (addressing Patent Owner's claim construction position without raising an alternative argument that Lindahl satisfies limitation [l] under that construction). We therefore we do not agree with Petitioner's contention that Lindahl teaches limitation [l].

b. Conclusion Regarding Independent Claim 1

Because we determine that Petitioner has not shown by a preponderance of the evidence that the combination of Chen, Lindahl, and Hurst teaches limitations [l], we do not consider whether one of ordinary skill in the art would have had a motivation to combine, and a reasonable expectation of success in achieving the combination of Chen, Lindahl, and Hurst sufficient to render claim 1 obvious, or evaluate the Petition's showings with respect to the other elements of the challenged claims.

On the complete record, we determine, that Petitioner has not established by a preponderance of the evidence that the combined teachings of Chen, Lindahl, and Hurst meet limitation [l] of independent claim 1.

2. Independent Claim 12

Independent claim 12 is directed to a "method for playing protected content from a plurality of alternative streams on a playback device." Ex. 1001, 28:61–62. Petitioner asserts that independent claim 12 recites the same limitations as claim 1 "except for 'using a decoder' and is obvious for the same reasons." Pet. 78. Patent Owner focuses its discussion on claim 1, addressing claims 1 and 12 together, based on the language common to both claims. *See* PO Resp. 1, 24–25, 35, 38.

We agree with the parties that claims 1 and 12 recite analogous limitations. We have reviewed Petitioner's argument and evidence directed

to claim 12, *see* Pet. 78–79, and we determine that Petitioner has not shown, by a preponderance of the evidence, that the subject matter of independent claim 12 would have been obvious to one of ordinary skill in the art for the reasons discussed above with respect to claim 1.

3. Dependent Claims 2–11 and 13–24

Petitioner contends dependent claims 2–11 and 13–24 would have been obvious over the combination of Chen, Lindahl, and Hurst. Pet. 58–78, 79–83. Claims 2–11 and 23 depend directly or indirectly from claim 1, and claims 13–22 and 24 depend directly or indirectly from claim 12, and therefore, include the "locating" limitation discussed above. Ex. 1001, 27:64–28:30, 29:24–30:49. Accordingly, for the same reasons discussed above, Petitioner has not established by a preponderance of the evidence that the combination of Chen, Lindahl, and Hurst would have rendered the subject matter of claims 2–11 and 13–24 obvious to one of ordinary skill in the art at the time of the invention.

4. Summary

We determine that Petitioner has not shown by a preponderance of evidence that claims 1–24 would have been obvious over Chen, Lindahl, and Hurst.

III. CONCLUSION

For the reasons discussed above, Petitioner has not demonstrated, by a preponderance of the evidence, that claims 1–24 are unpatentable. Our conclusions regarding the challenged claims are summarized below:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–24	103	Chen, Lindahl, Hurst		1–24

IV. ORDER

For the reasons given, it is:

ORDERED that Petitioner has not established, based on a preponderance of evidence, that claims 1–24 of U.S. Patent No. 10,225,588 B2 are unpatentable as obvious under 35 U.S.C. § 103; and

FURTHER ORDERED that because this is a final written decision, the 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.

Trials@uspto.gov
571-272-7822

Paper 66
Date: February 22, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NETFLIX, INC.
Petitioner,[19]

v.

DIVX, LLC,
Patent Owner.

IPR2020-00558
Patent 10,225,588 B2

Before KEVIN F. TURNER, BART A. GERSTENBLITH, and IFTIKHAR AHMED, *Administrative Patent Judges*.

TURNER, *Administrative Patent Judge*, dissenting.

I respectfully dissent from the majority's decision ("majority decision"[20]) that Petitioner has not shown by a preponderance of the evidence that claims 1–24 are unpatentable.

[19] Hulu, LLC ("Hulu") also was a petitioner in this proceeding, but is no longer a party to this proceeding. *See* Paper 63 (ORDER Settlement as to Hulu, LLC).

[20] This dissent assumes the reader is familiar with the facts set forth in the majority decision.

A. Claim Construction

As discussed in the majority decision (Sections I.C, II.C.1), limitation [l] recites "locating encryption information that identifies encrypted portions of frames of video *within* the requested portions of the selected stream of protected video." Ex. 1001, 27:54–57 (emphasis added). The analysis in the Petition reflects that Petitioner understood this limitation to require using encryption parameters to identify encrypted portions. Pet. 52–55. Contrary to Petitioner's understanding, Patent Owner takes the "within" portion of that limitation as determinative of *where* the encryption information is found, i.e., "within the requested portions." PO Resp. 25; PO Sur-reply 1. Patent Owner contends that a person of ordinary skill in the art would have understood the "within" clause as modifying the "locating" clause of limitation [l]. *Id*. at 26–27 (citing Ex. 2012 ¶ 87). I dissent from the majority's determination that "that the evidence overwhelmingly supports Patent Owner's reading of limitation [l]," for several reasons provided below, as well as considering additional information and evidence.

I do not find it surprising that Patent Owner seeks a narrow construction in defending a claim in view of the prior art. It is perhaps axiomatic that patent owners seek to read a claim broadly for purposes of infringement and narrowly for purposes of validity or patentability. As the majority notes, Petitioner's interpretation was accepted from institution through the final written decision, and it is only upon remand that reconsideration is given. We all appear to accept that the claim limitation in question is amenable to multiple interpretations, but we determine differently which interpretation comports with the evidence and arguments.

The majority asserts that Patent Owner's interpretation, where latter limitations modify the first clause, can be understood through the use of commas, and "seems more likely," and that Petitioner's interpretation "makes less sense." The majority opinion acknowledges that limitation [l] of independent claim 1 contains no commas, such that their placement would have been helpful to understand Patent Owner's intent in creating and amending such a limitation.

It should be noted, however, that the claim language in question, came not from the inventor or the Patent Owner, but arrived in the claims, and ultimately issued with the '588 patent, because of an examiner's amendment. In the Examiner-Initiated Interview Summary, the examiner asserted that "proposed an examiner amendment to the claims, to recite the claim limitations in [a] specific order [to] clarify the claim limitations and to remove 101, 112(b), Double Patenting (DP) rejection and objection issues." Ex. 1002, 575–576. Prior to that examiner's amendment, limitation [l] appeared as identified below:

> locating encryption information that identifies encrypted portions of frames of video within the selected stream;

whereas, the amended limitation is provided below:

> locating encryption information that identifies encrypted portions of frames of video within the <u>requested portions of the</u> selected stream <u>of protected video</u>.

As such, the original intent of the claim was not what Patent Owner now asserts to be "one of the central aspects of the '588's inventive system," i.e., "locating encryption information within the requested portions of the selected stream." PO Resp. 29 (citing Ex. 2012 ¶ 90). The original recitation of the claim limitation makes it much clearer that the limitation

sought to require using encryption parameters to identify encrypted portions. This evidence also sheds light on the majority decision's assertion that the next limiation, limitation [m], "does not expressly recite 'within the requested portions of the selected stream.'" The next limitation does not have such an express recitation because the examiner did not amend it to read as such.

Overall, I do not find that Patent Owner's interpretation to be more persuasive of how the claim limitation should be read. I continue to determine that, as we have determined previously, that a more reasonable construction of the same limitation is that the term "within" modifies the "frames of video," i.e., identifies what portions are encrypted portions of frames of video within the requested portions of the selected stream. *See* Inst. Dec. 28–29. That interpretation allows for the encryption information to be located elsewhere and used to determine which portions of the selected stream are encrypted, which is necessary with partial encryption.

I also determine that although the examples cited by Patent Owner in the Specification of the '588 Patent do not exclude Patent Owner's construction, neither do they compel such a restricted construction.

Patent Owner cites to the following, with Patent Owner's emphases provided:

> [E]ach of the Matroska container files containing an alternative stream of protected video includes ***a DRMInfo element in a BlockGroup*** element containing a protected frame of video, where ***the DRMInfo element indicates at least a portion of the protected frames of video that is encrypted*** …, and the client application configures the processor to access video frames in a stream of protected video using the common cryptographic information by configuring the processor to: obtain a BlockGroup containing a protected frame of video; ***parse the***

> ***BlockGroup element to obtain a DRMInfo element indicating at least a portion of the protected frame of video that is encrypted*** using an encryption key from the set of encryption keys.

PO Resp. 28 (quoting Ex. 1001, 4:39–58) (emphases in original). Patent Owner also argues that locating encryption information within the requested portions of the stream is one of the central aspects of the '588 Patent's inventive system and "is evidenced by the fact that the inventors did not simply utilize the industry standard Matroska container file, but, rather, modified the Matroska file format to add this aspect of the invention." *Id.* at 29 (citing Ex. 1001, 11:45–50; Ex. 2012 ¶ 90). Patent Owner further contends that every embodiment detailed in the Specification of the '588 Patent supports its construction or interpretation of limitation [l]. *Id.* at 30–31; *see also id.* at 28 (citing Ex. 2013 47:2–49:20; 55:5–15); PO Sur-reply 1–2.

Even though I agree with Patent Owner that the embodiments detailed in the Specification include encryption information within the requested portions of the selected stream of protected video, that does not end our inquiry because "a particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment." *Superguide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004); *see also Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1302–03 (Fed. Cir. 2007) ("The mere fact that the specification's examples of translation may involve a change in protocol from a higher to a lower level protocol does not establish that such a limitation should be imported into the claims."). With respect to limitation [l] of claim 1, I continue to view that limitation according to a broader interpretation. Further, other portions of the Specification and the

prosecution history of patents related to the '588 Patent support Petitioner's interpretation of the plain and ordinary meaning.

First, the following portion of the Specification suggests Petitioner's understanding is more correct:

> Depending upon the structure of the [Uniform Resource Identifiers] contained within the top level index file, the playback device can *either* use information from the URIs *or* information from the headers of the Matroska container files to request byte ranges from the server that contain at least a portion of the index from relevant Matroska container files.

Ex. 1001, 24:63–25:2 (emphases added). In particular, this discussion suggests that information regarding ranges in the files need not come from the files themselves, at least in some embodiments. Patent Owner disagrees, arguing that this portion of the Specification does not relate to the location of encryption information that identifies which portions of the frames within those requested byte ranges are encrypted. PO Resp. 31 (citing Ex. 2012 ¶¶ 84, 91). Although Patent Owner is correct with respect to the distinction it raises, the Specification overall still provides support that information regarding ranges in the files need not come from the files themselves. Thus, the Specification of the '588 Patent supports Patent Owner's narrower interpretation of limitation [l] as well as the more natural reading of the plain and ordinary meaning of the claim language.

Petitioner also argues that, "[f]or the parent application of the '588 Patent, which shares an identical specification, [Patent Owner] obtained claims where the encryption (DRM) information is located in a top-level index file." Pet. Reply 20–21 (citing Ex. 1026, 27:35–41). Further, Petitioner points out that other patents in the '588 Patent family include express limitations requiring the encryption (DRM) information to be *inside*

the video container files, which is not recited by limitation [l]. *Id.* at 22–23. Patent Owner insists that "Petitioner is comparing apples and oranges," and that there is no inconsistency between "locating" "encryption information" that "identifies encrypted portions of frames of video" "within the requested portions of the selected stream," on the one hand, and storing "DRM information that identifies protected portions of the alternative streams" in a "top-level index file" on the other. PO Sur-reply 5.

As discussed above, I continue to find that the Specification and claims of the '588 Patent do not require locating encryption information *within* the requested portions of the selected stream of protected video. Although I agree with Patent Owner that encryption information and DRM information need not be the same, the fact that the Specification can support placement of DRM information in different places (i.e., not only in the requested portions of the selected stream of protected video) supports Petitioner's understanding of limitation [l] of claim 1. Further, I continue to determine that the natural language of that limitation also supports Petitioner's proposed construction and understanding thereof, as discussed above. Lastly, as I adopt Petitioner's proposed interpretation of limitation [l] of claim 1, that interpretation continues to read on all disclosed embodiments, such that no disclosed embodiments are excluded from that interpretation.

In addition, I continue to determine that the more natural interpretation of limitation [l] is that the "encrypted portions of frames of video" are "within the requested portions of the selected stream of protected video," as one would understand from the basic nature of the grammar involved in the limitation. *See* Inst. Dec. 30. A common treatise on

grammar teaches that "[t]he position of words in a sentence is the principle means for showing their relationship," and "[t]he writer must, therefore, bring together the words and groups of words that are related in thought and keep apart those that are not so related." William Strunk, Jr. & E.B. White, *The Elements of Style* 36 (4th ed. 2000). The "within," therefore, most clearly connotes where the particular encrypted portions of frames of video must be located, not necessarily where the encryption information must be located.

Patent Owner cites to other examples of the cited style guide, as well as another guide, to dispute this interpretation. PO Resp. 32–33 (citing Ex. 2014, 87; Ex. 2015, 5). Patent Owner argues that when two clauses modify the first clause, they cannot both immediately follow the first one, arguing that "[t]he limitation certainly would not be clearer if the limitation were written such that the third clause followed the first." *Id*.

In response, I conclude that the most natural reading of limitation [l] results from examination of the entire limitation: "locating encryption information that identifies encrypted portions of frames of video within the requested portions of the selected stream of protected video." Ex. 1001, 27:54–57. The "within" most naturally connotes where the encrypted portions of frames of video occur, as opposed to determining where the encryption information may be located. This is further buttressed by the reasons the claim language of the limitation was adopted, per the discussion above. Patent Owner's interpretation is not wrong, i.e., the limitation could be read as Patent Owner suggests, leading to a narrower construction, but I am not persuaded that the construction of limitation [l] must be so limited, on the basis of the words themselves.

I continue to reject Patent Owner's interpretation that limitation [l] requires locating encryption information *within* the requested portions of the selected stream of protected video. *See* Inst. Dec. 27–30; Final Dec. 8. Although it is apparent that encryption information *can* be found within the requested portions, I am not persuaded that the claim language or '588 Patent implicitly or explicitly requires such a relationship. Likewise, although embodiments disclosed in the Specification of the '588 Patent are consistent with Patent Owner's more restrictive construction, the Specification also is consistent with the more grammatically correct construction as well. Thus, I construe limitation [l] as requiring that the encrypted portions of frames of video be within the requested portions of the selected stream of protected video, but I do not construe limitation [l] as requiring that the encryption information be within the requested portions of the selected stream of protected video.

B. Alleged Obviousness of Claims 1–24 over Chen, Lindahl, and Hurst

Petitioner contends that claims 1–24 would have been obvious over the combination of Chen, Lindahl, and Hurst. Pet. 17–83. I reference the brief discussions of the cited references in the majority's decision, consider Petitioner's proffered motivation to combine those references and Patent Owner's arguments of lack of motivation to combine and no reasonable expectation of success in achieving the combination in accordance with the Federal Circuit's instructions on remand, then turn to Petitioner's assertions regarding the challenged claims and their elements, and Patent Owner's arguments traversing this ground of unpatentability.

I note that Patent Owner's arguments address elements of independent claims 1 and 12, and the motivation proffered by Petitioner to combine the

cited references, but do not address the subject matter of any of the dependent claims separately. *See* PO Resp.; PO Sur-Reply; PO Remand Br.; PO Remand Resp. Br.

1. Petitioner's Proffered Motivation to Combine the References

Petitioner argues that a person of ordinary skill in the art would have been motivated to combine the teachings of Lindahl and Hurst with Chen, such that the DRM processes, including partial encryption and key management, of Lindahl and Hurst, would have been employed in adaptive streaming systems that Chen teaches were known. Pet. 17. Petitioner asserts that such technologies were commonly used together and were recognized as complementary, and would have been combined for their known and conventional purposes. *Id.* (citing Ex. 1003 ¶ 114). Petitioner also asserts that it was "widely known for video streaming to include these features to account for bandwidth variability over the Internet and address piracy." *Id.* (citing Ex. 1010 ("Chen-924"), Abstract; Ex. 1006 ¶¶ 103–104; Ex. 1007 ¶¶ 36, 39; Ex. 1008, 3:12–23, 6:6–58).

Petitioner acknowledges that although Chen discloses DRM (Ex. 1006 ¶ 522), it does not disclose any particular implementation. Pet. 18. According to Petitioner, one of ordinary skill in the art would have used Lindahl and Hurst to supplement Chen's DRM requirements. *Id.* Petitioner asserts that Lindahl prevented unauthorized access to media while improving computational efficiency through its partial encryption teachings that would have been "well-suited for video streaming applications," and its key management teachings "provided security, simplicity and efficiency

benefits." *Id.* (citing Ex. 1003 ¶¶ 115, 119–122; Ex. 1007 ¶ 95).

Petitioner further asserts that Hurst discloses that alternative streams are encoded at different bitrates and encrypted as a group in the same manner, such as by using the same key, and thus providing a natural and obvious approach to DRM for adaptive streaming. Pet. 19 (citing Ex. 1006 ¶¶ 63–64; Ex. 1003 ¶ 116).

Petitioner argues that one of ordinary skill in the art would have been motivated to apply teachings of Lindahl and Hurst to Chen to address piracy concerns, improve the efficiency of adaptive streaming, optimize the balance between bitrate and bandwidth, and improve the end-user experience with fast startup and seek. Pet. 18–19. Petitioner also asserts that ordinarily skilled artisans would have had a reasonable expectation of success in combining the teachings of Chen, Lindahl, and Hurst because "they were widely known in the art and widely recognized as complementary and compatible techniques that were intended to be used together, and which a [person of ordinary skill in the art] would have been familiar with." *Id.* at 21 (citing Ex. 1003 ¶ 126).

2. Patent Owner's Arguments Countering Motivation to Combine the References, Petitioner's Responses, and Our Analysis

Patent Owner asserts that Petitioner has failed to demonstrate that a person of ordinary skill in the art would have been motivated to combine the references as proposed by Petitioner because Petitioner's arguments are conclusory, not supported by sufficient evidence, and Petitioner has not demonstrated "that its proffered goals would be better achieved through its combination over Chen's existing system." PO Resp. 2–3. Patent Owner also argues that aspects of Chen's system are incompatible with partial

frame encryption, or at least beyond the capability of ordinarily skilled artisans to ensure a reasonable likelihood of success, and that the proposed modifications of Chen would actually deteriorate the efficiency of its system, negating Petitioner's proffered goal in its stated reason to combine the references. *Id.* at 3. I address Patent Owner's motivational arguments below and then address the compatibility arguments thereafter.

Patent Owner begins by arguing that Petitioner's purported motivation for combining the references "is not supported by any cognizable evidence," and the unexplained citations to its expert's declaration cannot be relied upon. PO Resp. 4 (citing Consolidated Trial Practice Guide (Nov. 2019), 35–36; *Cisco Sys., Inc. v. C-Cation Techs., LLC*, IPR2014-00454, Paper 12 at 9–10 (PTAB Aug. 29, 2014) (informative)) (emphasis omitted). Patent Owner also argues that "[b]ecause Petitioner's motivation is not supported by any evidence, it fails as a matter of law." *Id.* at 5 (citing *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016)). Petitioner responds that the Petition provides "ample motivation to combine," and that Patent Owner is misrepresenting the Petition's analysis by ascribing it to a single sentence. Pet. Reply 3–4. On this point, I agree with Petitioner.

I determine that Petitioner has sufficiently established that an ordinarily skilled artisan would have had some motivation to combine the teachings of Chen, Lindahl, and Hurst. I am not persuaded by Patent Owner's arguments directed solely to whether Petitioner's motivation to combine the references is unsupported by any evidence.

As Petitioner points out, beyond the exemplary sentence on which Patent Owner's argument focuses, the Petition provides preceding and subsequent paragraphs regarding the reasons for combining Chen, Lindahl,

and Hurst, i.e., more than "to address privacy concerns and improve efficiency." *See* Pet. 17–22. Petitioner discusses express motivations in the secondary references, as well as benefits found in those secondary references, and applies those as reasons to combine elements of the teachings. *Id.* Additionally, I am not persuaded that the Petition's citations to Dr. McDaniel's testimony (Ex. 1003 ¶¶ 114–116, 119–120, 126) in the Petition were "unexplained," and I find that testimony beneficial in considering the proffered motivation to combine Chen, Lindahl, and Hurst.

Patent Owner next argues that Petitioner's proffered motivation is made with the assumption that Chen "did not require any particular DRM implementation." PO Resp. 6 (quoting Pet. 18). Patent Owner counters that Chen discloses fragment-level encryption, such that a person of ordinary skill in the art would have understood that the entire fragment or block is encrypted as a singular unit. *Id.* (citing Ex. 1006 ¶ 522; Ex. 2012 ¶¶ 49–50). Patent Owner distinguishes such encryption from frame or partial-frame encryption, such as disclosed in Lindahl, with encrypted fragments in Chen encompassing between 12 and 30 frames. *Id.* at 6–8 (citing Ex. 2013, 108:5–9, 106:21–107:3; Ex. 1006 ¶ 66, Fig. 9(a); Ex. 2012 ¶¶ 52–53). Patent Owner argues that Petitioner does not identify any fault in Chen's existing system, or show that replacing those aspects with Lindahl's partial frame encryption method would address piracy or improve efficiency when compared to Chen's existing system. *Id.* at 8–9 (citing *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1369 (Fed. Cir. 2012); *Nichia Corp. v. Everlight Ams., Inc.*, 855 F.3d 1328, 1339 (Fed. Cir. 2017), *cert. denied*, 139 S. Ct. 183 (2018)).

Petitioner counters that Patent Owner has misrepresented Chen's encryption discussion, arguing that paragraph 522 of Chen concerns a "hypothetical exercise that Chen uses 'to simplify the discussion' for concurrent HTTP/TCP requests." Pet. Reply 11. Petitioner argues that it would be improper to limit Chen to an embodiment, especially one that is a hypothetical or optional embodiment. *Id.* at 12. Petitioner also argues that "it would be improper under Federal Circuit case law to require proof that Lindahl's partial encryption is superior to other known encryption techniques." *Id.* at 8 (citing *Novartis Pharm. Corp. v. W.-Ward Pharm. Int'l Ltd.*, 923 F.3d 1051, 1059 (Fed. Cir. 2019)).

Petitioner also emphasizes that the Federal Circuit held that we must have "a specific focus on the petition-asserted combination with Chen['s] disclosures (not with the Chen 'system')." Pet. Remand Br. 2 (citing *Netflix*, slip op. at 11–12) (emphasis omitted). Petitioner also asserts that Chen-924 (U.S. Patent No. 8,243,924 B2, issued Aug. 14, 2012 (Ex. 1010, "Chen-924")) provides independent, unrebutted motivation to combine the references. *Id.* at 3. The Federal Circuit discusses much of Chen-924, as reproduced below:

> Chen-924 (not one of the three references asserted as the combination that would have been obvious to a skilled artisan) describes ABS [adaptive bitrate streaming] with partial frame encryption using various container file formats (none of which are the Matroska file format). Chen-924, col. 1, lines 21–27; *id.*, col. 2, line 66, through col. 3, line 6. The Chen-924 streaming system may "be configured and arranged to monitor network conditions over which the container is received and dynamically modify the downloading based on some predefined criteria of the network conditions." *Id.*, col. 14, lines 61–65. In the Chen-924 system, "encryption may be selectively applied to at least a portion of a video . . . stream . . . of the real-time streamed,

> progressively, or adaptively downloaded container . . . . Selective encryption may further include selectively encrypting at least a portion of [a frame] . . . within the container stream." *Id.*, col. 6, lines 1–9.

Netflix, slip op. at 5–6 (alterations in original). Petitioner asserts that "Chen-924 stands ***unrebutted***," with Patent Owner failing to mention it in its briefing.[21] Pet. Remand Br. 3. Petitioner also asserts that Patent Owner argued that "Petitioner must prove that Lindahl's partial encryption was 'better than Chen's existing system' of fragment-level encryption," but those arguments are contrary to the proper legal standard. *Id.* at 4 (citing PO Resp. 6, 8–9, 19).

Patent Owner responds that Petitioner has still failed to prove why persons of ordinary skill in the art would have chosen "disparate features of Chen and Lindahl" to arrive at the claimed invention. PO Remand Resp. Br. 7. Patent Owner also argues that the Petition fails because it does not prove its proffered motivation of "address[ing] piracy concerns and improv[ing] efficiency" and because the combination requires skilled artisans to disregard "everything that Chen is saying as desirable," as well as "the potential problems" with the combination and "an alternative approach [that] might reduce those same problems." *Id.* at 7–8 (citing Pet. 18; Tr. 67:20–68:4; *Arctic Cat*, 876 F.3d at 1363 (Fed. Cir. 2017)) (alterations in original). With respect to Chen-924, Patent Owner argues that it is not in Petitioner's asserted combination of references, that the Petition provides no analysis of how Chen-924 relates to a combination, and that Chen-924 has no relevance to motivation to implement partial frame encryption in a combination that

[21] With respect to the Petition, we note that Chen-924 is recited only twice therein, both occurrences on page 20 of the Petition.

meets the claims. *Id.* at 8 (citing Tr. 80:21–81:2, 83:15–85:15; PO Sur-reply 21–22).

I am persuaded that the Petition demonstrates that one of ordinary skill in the art would have had a motivation to combine Chen, Lindahl, and Hurst, as asserted by Petitioner. As the Federal Circuit found, the Petition pointed to and relied upon the portions in Chen describing pre-Chen art, without scalability or FEC features that were part of what Chen describes as aspects of its own inventive system. *Netflix*, slip op. at 9–10 (citing Pet. 17–19, 69–70). I agree with Petitioner that "Chen-924 teaches several embodiments that adaptively stream alternative representations of a video using partially encrypted container files." Pet. 20 (citing Ex. 1010, 14:41–15:60). I determine that Chen-924 provides support for the rationale provided in the Petition, and that one of ordinary skill in the art would have been motivated to combine Chen and Lindahl in view of the disclosure of Chen-924. As discussed above, the Petition does not rely solely on privacy concerns and improvements to efficiency as its motivation to combine the references. *See* Pet. 18–19 (specifying piracy concerns, improvements to the efficiency of adaptive streaming, optimization of the balance between bitrate and bandwidth, and improvements to the end-user experience with fast startup and seek).

With respect to whether one of ordinary skill in the art would have had a reasonable expectation of success in achieving the combination, the Federal Circuit's clarification—that the Petition relies only on limited aspects of Chen—makes it more likely that such success would have been ascertained and achieved by ordinarily skilled artisans. *Netflix*, slip op. at 9–10 (focusing on the "combination of Lindahl with disclosures in Chen

of background art"). In other words, ignoring the scalability and FEC features disclosed in Chen removes reasons why one of ordinary skill in the art would have perceived a lack of reasonable expectation of success in achieving a combination of Chen, Lindahl, and Hurst. Petitioner asserts that persons of ordinary skill in the art would have had a reasonable expectation of success in combining teachings from Chen, Lindahl, and Hurst because those teachings "were widely known in the art and widely recognized as complementary and compatible techniques that were intended to be used together." Pet. Remand Br. 4 (quoting Pet. 21). Petitioner additionally argues that the Federal Circuit held that Patent Owner's arguments—(a) discussing implementing partial frame encryption in Chen's system, which also utilizes FEC and independent scalable layers, and (b) requiring the changes to standard file formats—are legally improper. *Id.* at 5–8. Lastly, Petitioner asserts that Chen-924 provides explicit evidence that there would have been a reasonable expectation of success. *Id.* at 8–9.

Patent Owner responds that Petitioner has failed to show a reasonable expectation of success to make the necessary file formats modifications, as acknowledged by Petitioner's declarant. PO Remand Resp. Br. 9 (citing Ex. 2013, 35:25–36:12). Patent Owner also argues that Petitioner's reliance on Chen-924 and other exhibits to show a reasonable expectation of success is untimely and Chen-924 and Petitioner's other exhibits do not prove that whatever modifications may have been required in the context of those different systems would be the same as, and could be transferred to, Petitioner's combination. *Id.* at 10 (citing PO Sur-reply 21–22).

I agree with Petitioner that there would have been a reasonable expectation of success in combining Chen, Lindahl, and Hurst into a system as asserted in the Petition. Patent Owner's arguments regarding timeliness, i.e., that it had no right to submit sur-reply evidence, which Patent Owner asserts highlights the prejudice from the untimely reply analysis (PO Remand Resp. Br. 10), is unavailing because Chen-924 was cited in the Petition (Pet. 20), and was discussed in Petitioner's Reply (Pet. Reply 16). I determine that Patent Owner had the opportunity to respond but chose not to. Moreover, Petitioner's arguments and evidence were responsive to an issue raised by Patent Owner in its Patent Owner Response, and were therefore timely.[22] *See* PO Resp. 22–24.

With respect to the necessity of file format modifications, I revisit our prior determination in accordance with the Federal Circuit's instructions on remand. *Netflix*, slip op. at 13 (finding our analysis framed around the combination that the court held to be legally incorrect). I agree with Petitioner that Patent Owner and its declarant have not disputed the widespread modification of file formats or use of partial frame encryption with MP4 file format, in the relevant period. Pet. Remand Br. 7. Particularly, in light of the Federal Circuit's direction, I disagree with Patent Owner's arguments that Petitioner was also required to show that a person of ordinary skill in the art could transfer the various file format modifications known in the prior art to Chen (PO Sur-reply 22),

[22] Although I agree with Patent Owner that it had no automatic right to submit sur-reply evidence, Patent Owner could have sought leave to submit such evidence. Notably, Patent Owner did submit other sur-reply evidence without seeking leave. *See* Ex. 2025.

especially in view of the Chen-924's disclosure. *See* Reply 15–16 (citing Ex. 1010, 3:2-6, 4:14–15, 5:63–6:9, 14:41–15:60). Petitioner also points out that Patent Owner took issue with Dr. McDaniel's Declaration, citing only the "use" of file formats, as opposed to modifying file formats. *Id.* (citing PO Resp. 23–24; Ex. 2012 ¶ 80). Petitioner argues that Dr. McDaniel clarified his testimony during his deposition, explaining that students would have been able to modify file formats, and that including partial encryption parameters in a file format was as simple as writing data to a file and reading it back. *Id.* at 7–8 (citing Ex. 2013, 27:2–20; Ex. 1031 ¶ 9). I find Dr. McDaniel's testimony persuasive. *See Keynetik, Inc. v. Samsung Elecs. Co.*, No. 2022-1127, 2023 WL 2003932, at *2 (Fed. Cir. Feb. 15, 2023) (finding the expert's testimony detailing how software modifications would be "simple" and "straightforward" for a skilled artisan was sufficient to establish a reasonable expectation of success and noting that "[w]hile [the expert's] testimony is brief, in the absence of any contradictory evidence, it constitutes substantial evidence to support the Board's finding"). On the other hand, I find Dr. Nielsen's testimony (Ex. 2012 ¶ 80) conclusory and unpersuasive. I find the testimony of Petitioner's declarant, Dr. McDaniel, to be more persuasive, in that he cites to Chen-924, for its express teachings, that one of ordinary skill in the art would have been motivated to combine adaptive bitrate streaming, as taught by Chen, with partial encryption, as taught by Lindahl. Ex. 1031 ¶¶ 2–9. As such, I determine that Petitioner has demonstrated that one of ordinary skill in the art would have had a reasonable expectation of success in the combination of Chen, Lindahl, and Hurst, by a preponderance of the evidence.

Overall, I am persuaded that one of ordinary skill in the art would have had a motivation to combine, and a reasonable expectation of success in achieving the combination of Chen, Lindahl, and Hurst sufficient to render claims 1–24 obvious, as provided in the Petition, by a preponderance of the evidence. I now discuss the Petition's showings with respect to the elements of the challenged claims.

3. Independent Claim 1

a. Limitations [a] and [b]

With respect to limitation [a][23] (i.e., the preamble of independent claim 1), requiring a playback device that can play protected content from a plurality of alternative streams, Petitioner asserts that Chen and Lindahl teach a client device for playing multiple representations of partially encrypted content, and that Hurst refers to its client device as a media player and teaches that it plays protected content from a plurality of alternative streams. Pet. 22 (citing Ex. 1006 ¶¶ 61, 203, 366; Ex. 1007 ¶ 11; Ex. 1008, 1:15–19, 6:13–17, 8:47–49; Ex. 1003 ¶ 129).

With respect to limitation [b], requiring one or more processors and non-volatile storage containing an application for those processors, Petitioner asserts that the combination teaches a playback device with processors housed within a computer or device and non-volatile storage, such as disk storage or Read Only Memory ("ROM") having applications

[23] Limitation [a] is part of the preamble of claim 1. The parties do not express a position on whether the preamble is limiting. Petitioner, however, addresses each of these limitations in its analysis of the claim. *See, e.g.*, Pet. 22. Although we express no determination on whether the preamble is limiting, for the reasons noted herein, we find that Petitioner sufficiently establishes that limitation [a] is met by the combination of Chen, Lindahl, and Hurst.

causing the processors to perform steps associated with playback. Pet. 23–25 (citing Ex. 1006 ¶¶ 116–118, Fig. 4; Ex. 1007 ¶ 88, Fig. 11; Ex. 1008, 4:64–65, 5:26–39; Ex. 1003 ¶¶ 132–135).

Patent Owner does not raise any argument specifically addressing limitations [a] and [b] of independent claim 1. *See* PO Resp.; PO Sur-Reply; PO Remand Br.; PO Remand Resp. Br. I determine, on the complete record, that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet limitations [a] and [b] of independent claim 1, for the reasons explained by Petitioner, by a preponderance of the evidence.

b. Limitations [c] and [d]

With respect to limitation [c], obtaining a top level index file identifying a plurality of alternative streams of protected video, Petitioner cites to Chen's Media Presentation Description ("MPD") file, that identifies a plurality of alternative representations of a video, which are streamed to the client device, which can be encoded at different bitrates. Pet. 26 (citing Ex. 1006 ¶¶ 219, 225). Petitioner also cites to Hurst for its teachings of a plurality of alternative streams of protected video, including alternative representations of a content file encoded at varying bitrates and quality. *Id.* at 28 (citing Ex. 1008, 6:32–38, Fig. 2b; Ex. 1003 ¶ 139).

With respect to limitation [d], wherein each of the alternative streams of protective video includes partially encrypted video frames, Petitioner relies on the teachings of Lindahl, wherein portions of each frame are encrypted, while other portions remain unencrypted. Pet. 29–30 (citing Ex. 1007 ¶¶ 55–56, Figs. 5A–5C; Ex. 1003 ¶¶ 141–142).

Patent Owner does not raise any argument specifically addressing limitations [c] and [d] of independent claim 1. *See* PO Resp.; PO Sur-Reply; PO Remand Br.; PO Remand Resp. Br. I determine, on the complete record, that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet limitations [c] and [d] of independent claim 1, for the reasons explained by Petitioner, by a preponderance of the evidence.

c. Limitation [e]

With respect to limitation [e], claim 1 recites, in part, that encryption occurs using a set of common keys including at least one key. Petitioner argues that both Lindahl and Hurst teach or suggest this limitation, and either is sufficient by itself to render the limitation obvious. Pet. 30 (citing Ex. 1003 ¶¶ 143–151). Petitioner cites to Lindahl, wherein media files may be encrypted with a global key or some other cryptographic key. *Id.* at 31 (citing Ex. 1007 ¶ 66; Ex. 1003 ¶ 144). Petitioner argues that a person of ordinary skill in the art would have been motivated "to apply this teaching to encrypt all media files, including all alternative representations, using a global key to simplify key management particularly for content that is not particularly sensitive." *Id.* (citing Ex. 1003 ¶ 144). Petitioner also argues that "the application of Lindahl to Chen leaves only a finite number of possibilities: either (1) use the same set of keys for all representations of a video, or (2) use different sets of keys," and the use of the same set of keys (as recited in limitation [e]) would have been motivated by Hurst, which teaches that alternative streamlets may be encrypted with the same key. *Id.* at 32–35 (citing Ex. 1008, 18:64–67, Figs. 2b, 3a, 3b; Ex. 1003 ¶¶ 146–149).

Patent Owner does not raise any argument specifically addressing limitation [e] of independent claim 1. *See* PO Resp.; PO Sur-Reply; PO Remand Br.; PO Remand Resp. Br. I determine, on the complete record, that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet limitation [e] of independent claim 1, for the reasons explained by Petitioner, by a preponderance of the evidence.

d. Limitation [f]

With respect to limitation [f], detailing that the partially encrypted video frames contain encrypted portions and unencrypted portions of data, Petitioner relies on Lindahl for its teaching that each partially encrypted video frame contains partially encrypted blocks, which have encrypted and unencrypted portions. Pet. 36–37 (citing Ex. 1007 ¶¶ 55–56, 60–61, Figs. 5C, 6A, 6B).

Patent Owner does not raise any argument specifically addressing limitation [f] of independent claim 1. *See* PO Resp.; PO Sur-Reply; PO Remand Br.; PO Remand Resp. Br. I determine, on the complete record, that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet limitation [f] of independent claim 1, for the reasons explained by Petitioner, by a preponderance of the evidence.

e. Limitations [g], [h], and [i]

Limitation [g] details obtaining a copy of the set of common keys, and Petitioner asserts that Lindahl and Hurst teach or suggest this limitation of independent claim 1. Pet. 38–39. Lindahl discloses that as part of playback, "the associated encryption key is obtained 706 from the selected media file" so that "the encrypted media file can be decrypted 808 using the associated encryption key." Ex. 1007 ¶¶ 69–70. Similarly, Hurst discloses that "[t]he

DRM server 1204 is further configured to supply encryption keys to the end user upon authenticating the end user." Ex. 1008, 18:53–55. Petitioner argues that the keys associated with a particular piece of content would have been the set of common keys because the combination teaches symmetric encryption. Pet. 38 (citing Ex. 1007 ¶¶ 8, 49, 66).

Limitation [h] details the detection of the streaming conditions for the playback device, and Petitioner relies on Chen for this limitation. Pet. 39–40. Petitioner argues that Chen teaches the client device detects the available bandwidth so that a stream with a matching data rate can be selected. *Id.* at 39 (citing Ex. 1006 ¶¶ 81, 121).

Limitation [i] details the selection of a particular stream based on the streaming conditions, and Petitioner relies on Chen for this limitation. Pet. 40–41. Petitioner argues that Chen teaches a client device selects blocks from alternative representations, encoded at different bitrates, based on available bandwidth. *Id.* (citing Ex. 1006 ¶¶ 80–81, Fig. 5; Ex. 1003, ¶¶ 161–163).

Patent Owner does not raise any argument specifically addressing limitations [g], [h], and [i] of independent claim 1. *See* PO Resp.; PO Sur-Reply; PO Remand Br.; PO Remand Resp. Br. I determine, on the complete record, that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet limitations [g], [h], and [i] of independent claim 1, for the reasons explained by Petitioner, by a preponderance of the evidence.

f. Limitations [j] and [k]

Limitation [j] details receiving a container index that provides byte ranges for portions of the selected stream of protected video within an

associated container file, and Petitioner relies on Chen for this limitation. Pet. 42–47. Petitioner argues that Chen teaches that after a representation is selected, the client accesses associated segments for that representation. *Id.* at 43–44 (citing Ex. 1006 ¶¶ 63–64, Fig. 5). Petitioner also argues that Chen discloses that the segments are container files that follow 3GPP or ISO file formats, and that each container file contains an index that provides byte ranges for portions of the selected stream of protected video. *Id.* at 44 (citing Ex. 1006 ¶¶ 119–120, 129, 222; Ex. 1003 ¶¶ 165–166). Petitioner also argues that a person of ordinary skill in the art would have been motivated to provide byte ranges in a segment index to facilitate HTTP range requests for specific fragments within a segment file, as Chen teaches. *Id.* at 47 (citing Ex. 1006 ¶¶ 119–123, 129, 147–150, 201, Fig. 6; Ex. 1003 ¶¶ 167–168).

Limitation [k] details requesting portions of the selected stream of protected video based on the provided byte ranges, and Petitioner relies on Chen to teach this limitation. Pet. 48–52. Petitioner argues that Chen teaches that, after selecting a representation and receiving a segment index for an associated segment, the client requests a fragment of the associated segment based on byte ranges provided by the segment index, which is stored as metadata at the beginning of the file. *Id.* at 48–50 (citing Ex. 1006, ¶¶ 70, 74, 83, 147, 517, Fig. 5).

Patent Owner previously did not raise any arguments directed to limitations [j] and [k] in its Preliminary Response. *See* Inst. Dec. 27. In its Patent Owner Response and Sur-reply, Patent Owner did not address any constructions of any terms contained in limitations [j] and [k]. *See* PO Resp.; PO Sur-reply. On remand, Patent Owner raises arguments regarding

limitations [j] and [k], including that the Petition relies on portions of Chen that are not limited to Chen's "background" art, and cites our Final Written Decision, where Patent Owner asserts that we "correctly found scalability [to be] 'integral' to Chen's fragments/blocks, which are only disclosed as scalable." PO Remand Br. 1–5 (quoting *id.* at 5).

Petitioner responds that Patent Owner attempts to introduce new claim constructions though its argument that "limitation 1[k] requires portions of a file that are separately requestable based on the byte ranges provided in the index file," which Petitioner asserts that Patent Owner uses for various arguments regarding Chen's fragments/blocks. Pet. Remand Resp. Br. 4–5 (quoting PO Remand Br. 2) (citing *id.* at 2–6). Petitioner asserts that these arguments are raised for the first time on remand, where limitations [j] and [k] were not subject to explicit claim constructions previously, and Patent Owner's Response and Sur-reply did not mention the limitations at all. *Id.* at 5. Petitioner also asserts that Patent Owner's arguments with respect to those limitations are beyond the scope of the Remand Briefing Order (Paper 56). *Id.*

I agree with Petitioner that Patent Owner's Remand Brief, specifically pages 1–7, attempt to address aspects of claim 1 for the first time on remand. I also agree that Patent Owner's arguments attempt to recharacterize limitations [j] and [k] to raise issues that Patent Owner did not raise previously, in contravention of our Order that issues raised needed support from "where those issues were raised in previous briefings by the parties." Paper 56, 2. I have addressed whether scalability and FEC are integral to how Chen operates above, as well as whether the Petition relies on those aspects, *supra*. The questions about how Chen operates and what portions

of Chen are asserted in the ground of unpatentability were previously raised, but now are being considered or reconsidered, based on the Federal Circuit's decision. In Patent Owner's Remand Brief, pages 1–7, the citations to argument previously raised do not support the arguments now presented by Patent Owner on remand. As such, I determine Patent Owner's new arguments fall outside the scope of remand, and I dismiss these arguments seeking to distinguish limitations [j] and [k] from the cited prior art combination.[24]

I determine, on the complete record, that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet limitations [j] and [k] of independent claim 1, for the reasons explained by Petitioner, by a preponderance of the evidence.

g. Limitation [l]

Limitation [l] recites the step of locating encryption information that identifies encrypted portions of frames of video within the requested portions of the selected stream of protected video. Petitioner relies on Lindahl to teach or suggest this limitation of independent claim 1. Pet. 52–55. Petitioner argues that Lindahl teaches using encryption parameters to identify encrypted portions, including X, Y, and Z, measured in a number of bits or bytes. *Id.* at 52–53 (citing Ex. 1007 ¶¶ 56–59, Figs. 6A, 6B; Ex. 1003 ¶¶ 182–183). Petitioner argues that Lindahl teaches that the encryption

[24] I note that Petitioner had requested for authorization to file a motion for sanctions, which we held in abeyance until all briefs were filed. *See* Ex. 3003, 1. Petitioner requests sanctions "because of the impropriety of [Patent Owner's] remand brief and prejudice to [Petitioner]." *Id*. at 3. I would deny Petitioner's request as I am not persuaded that Petitioner is prejudiced by the inclusion and/or consideration of specific arguments in Patent Owner's briefs on remand, given the outcome of this proceeding.

parameters are "retrieved" to decrypt the media. *Id.* at 54 (citing Ex. 1007 ¶ 72). Petitioner also argues that a person of ordinary skill in the art "would have been motivated to use encryption parameters, as taught by Lindahl, because it provides flexibility and facilitates different levels of security by controlling the amount and portions of each frame that is encrypted." *Id.* (citing Ex. 1007 ¶¶ 57–58; Ex. 1003 ¶ 186).

Patent Owner argues that "the 'locating' limitation, properly construed, requires, *inter alia*, that 'encryption information' be 'locat[ed]' 'within the requested portions of the selected stream of protected video,'" and that the combination of Lindahl and Chen fails to teach or render obvious limitation [l]. PO Resp. 24–38; PO Sur-Reply 1–8 (quoting PO Resp. 35). As discussed above, I remain unpersuaded regarding Patent Owner's arguments as to how limitation [l] of claim 1 should be interpreted. I also remain persuaded that the "within" term of limitation [l] most clearly connotes where the particular encrypted portions of frames of video must be located, not necessarily where the encryption information must be located. Although it is apparent that encryption information *can* be found within the requested portions, I am not persuaded that the claim language or the '588 Patent explicitly requires such a relationship. *See* Inst. Dec. 27–31; Final Dec. 8. Patent Owner's arguments rest on an interpretation that I do not adopt and, thus, I do not agree that with Patent Owner's underlying premise for its arguments attempting to distinguish limitation [l] from the disclosures of Lindahl and Chen relied on by Petitioner.

On the complete record, I determine, that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet

limitation [l] of independent claim 1, for the reasons explained by Petitioner, by a preponderance of the evidence.

h. Limitation [m]

Limitation [m] details the decryption of each encrypted portion of the frames of video using the set of common keys, and Petitioner relies on Lindahl for this limitation. Pet. 55–56. Petitioner contends that Lindahl discloses that the encryption parameters are located and retrieved to decrypt the video stream, which is divided into frames and then blocks—each block is decrypted using the encryption parameters, which identify the encrypted portions of each frame, using a set of common keys. *Id.* (citing Ex. 1007 ¶ 72; Ex. 1003 ¶¶ 181–191). The Petition also discusses that Hurst teaches that the alternative streamlets of different bitrates may be encrypted with the same key. *Id.* at 32–33 (citing Ex. 1008, 18:64–67). Petitioner also asserts that by "applying Lindahl's teachings, it would have been obvious and straightforward to apply Hurst's key management teachings, with respect to the alternative streams, to Lindahl's teachings regarding cryptographic keys." *Id.* at 35 (citing Ex. 1007 ¶¶ 64–65; Ex. 1008, 18:64–67; Ex. 1003 ¶ 150).

Patent Owner argues that the Petition fails to demonstrate that Chen in view of Lindahl and Hurst renders this limitation obvious. PO Resp. 38–58. Patent Owner addresses the combination of Chen and Lindahl with respect to this limitation (*id.* at 39–52), but I focus on Patent Owner's arguments regarding the combination of Chen with Hurst because Patent Owner has acknowledged that Hurst teaches the use of a set of common keys. *See id.* at 52. Per the discussion above, I agree with Patent Owner and determine that

Hurst discloses the use of a set of common keys; as such I need not address Patent Owner's arguments traversing the combination of Chen and Lindahl.

Patent Owner argues that "[t]he question is whether Hurst teaches [using a set of common keys] for alternative streams of protected content, and Hurst teaches against doing such a thing," instead disclosing the use of a different specialized key for each alternative stream. PO Resp. 52–53. Patent Owner argues that Hurst discloses no benefit from using the same set of keys, but rather touts that using different sets of keys would have benefits. *Id.* at 53–54 (citing Ex. 2012 ¶ 117; Ex. 2013, 91:20–92:3); PO Sur-reply 25. Patent Owner also characterizes the Petition's motivation to combine Hurst with Chen as "essentially that because alternative streams of a video may be accessed as a group, it would be obvious to use the same key to encrypt alternative streams of the video," which Patent Owner argues is conclusory and legally insufficient. *Id.* at 54–55 (citing Pet. 19); PO Sur-reply 23–24. Patent Owner also argues that any implicit motivation to combine should be rejected "as its proffered rationale is a restatement of the '588's own teachings." *Id.* at 56–57 (citing Pet. 19; Ex. 1001, 13:11–21).

Petitioner responds that the Petition provided several motivations for using the same key, stating it was one of two known approaches for ABS, where access was often granted to alternate streams as a group, to switch between based on bandwidth conditions, and would have allowed access to be granted to the alternate streams, as a group, by providing a single key, to simplify the DRM while making the system more portable to diverse network environments. Pet. Reply 24 (citing Pet. 19, 35; Ex. 1006 ¶¶ 63–64; Ex. 1003 ¶ 116; Ex. 1031 ¶ 16). Petitioner also argues that the presence of two options does not amount to a teaching away from a lesser preferred but

still workable option, and that Patent Owner's assertions—that the use of the same key and partial encryption could negatively impact security—are speculative and not supported by evidence. *Id.* at 24–26 (citing Ex. 2012 ¶ 118; Ex. 1031 ¶¶ 13–14).

Looking to the evidence of record in this case, I am persuaded by Petitioner's arguments. The fact that Hurst provides for the same or different keys to be used is suggestive that one of ordinary skill in the art would have viewed the options as alternatives. The Federal Circuit has emphasized that it is "not necessary to show that a combination is 'the *best* option, only that it be a *suitable* option.'" *Netflix*, slip op. at 12 (quoting *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 800 (Fed. Cir. 2021)). I am persuaded that ordinarily skilled artisans would have viewed the use of a set of common keys as an option, in view of Hurst; indeed, I agree with Petitioner that Hurst teaches the natural and obvious approach to DRM for adaptive streaming, which persons of ordinary skill in the art would have been motivated to apply. *See* Ex. 1003 ¶ 116.

As such, on the complete record, I determine, that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet limitation [m] of independent claim 1, for the reasons explained by Petitioner and as discussed above, by a preponderance of the evidence.

i. Limitation [n]

Limitation [n] details the playback of the decrypted frames of video, and Petitioner cites to Chen and Hurst, arguing that Chen teaches that media delivery systems send content to users, who then play back and display the content on their devices, and Hurst discloses that the client device plays back

the content. Pet. 57 (citing Ex. 1006 ¶¶ 16–19; Ex. 1008, 1:15–19, 6:14–22; Ex. 1003 ¶¶ 192–193).

Patent Owner does not raise any argument specifically addressing limitation [n] of independent claim 1. *See* PO Resp.; PO Sur-Reply; PO Remand Br.; PO Remand Resp. Br. I determine, on the complete record, that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet limitation [n] of independent claim 1, for the reasons explained by Petitioner, by a preponderance of the evidence.

j. Conclusion Regarding Independent Claim 1

Neither party presents evidence of objective considerations of nonobviousness. I have reviewed the arguments and evidence and I determine that Petitioner has shown, by a preponderance of the evidence, that the combination of Chen, Lindahl, and Hurst teaches or suggests all of the limitations of independent claim 1 for the reasons explained above and that one of ordinary skill in the art would have been motivated to combine the teachings of the references as proposed by Petitioner with a reasonable expectation of success in so doing.

4. Independent Claim 12

Independent claim 12 is directed to a "method for playing protected content from a plurality of alternative streams on a playback device." Ex. 1001, 28:61–62. Petitioner asserts that independent claim 12 recites the same limitations as claim 1 "except for 'using a decoder' and is obvious for the same reasons." Pet. 78. Petitioner also asserts that Chen and Lindahl both teach decoders, and that Hurst's media player, which can play encoded streams, would have obviously been capable of decoding those streams to ensure playback. *Id.* at 78–79 (citing Ex. 1006 ¶ 106; Ex. 1007 ¶ 91;

Ex. 1008, 1:15–19, 8:19–25, 16:3–5; Ex. 1003 ¶¶ 221–222). Petitioner also asserts that the obviousness of the apparatus recited by claim 1 also renders the method of claim 12 obvious. *Id.* at 78 (citing Ex. 1003 ¶ 220).

Patent Owner focuses its discussion on claim 1, addressing claims 1 and 12 together, based on the language common to both claims. *See* PO Resp. 1, 24–25, 35, 38. Patent Owner has previously noted the material identity of the elements of independent claim 1 and 12. *See* Prelim. Resp. 27 n.6.

I agree with the parties that claims 1 and 12 recite analogous limitations. I have reviewed Petitioner's argument and evidence directed to claim 12, *see* Pet. 78–79, and I determine that Petitioner has shown, by a preponderance of the evidence, that the subject matter of independent claim 12 would have been obvious to one of ordinary skill in the art for the reasons discussed above, including the reasons discussed in our consideration of Petitioner's challenge to claim 1.

5. Dependent Claims 2–11 and 13–24

Aside from Patent Owner's arguments directed to claims 1 and 12, Patent Owner does not include additional argument directed explicitly to dependent claims 2–11 and 13–24. *See* PO Resp.; PO Sur-Reply; PO Remand Br.; PO Remand Resp. Br. As such, I discuss the dependent claims below in the context of whether Petitioner has demonstrated, by a preponderance of the evidence, that the dependent claims would have been obvious over the combination of the Chen, Lindahl, and Hurst.

Claim 2, which depends from independent claim 1, provides that a container file, with encryption information, containing protected video from at least one of the plurality of alternative streams is obtained, along with a

reference to at least one key. Petitioner asserts that the combination of Chen and Lindahl teaches or suggests this limitation. Pet. 58–62. Petitioner argues that Chen teaches that after a representation is selected, the client obtains associated segments for that representation, which are stored as container files on the server, and Lindahl teaches encryption parameters that identify encrypted portions of video frames and can "be provided on a per file basis" including "in the media file itself," or on a per frame or per block basis. *Id.* at 58–59 (citing Ex. 1006 ¶¶ 63–64; Ex. 1007 ¶ 53). Petitioner also argues that Lindahl teaches locating the appropriate cryptographic key for decryption and playback, and that it would have been obvious to include a reference to that key, such as a key ID. *Id.* at 60–61 (citing Ex. 1007 ¶¶ 8, 83; Ex. 1003 ¶ 198). I determine that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst render obvious claim 2 for the reasons explained by Petitioner, by a preponderance of the evidence.

Claim 3, which depends from independent claim 1, recites that the located encryption information comprises a reference to the start of an encrypted block of data. Petitioner asserts that claim 3 is taught or suggested by the combination of Chen, Lindahl, and Hurst, where Lindahl's encryption parameters identify encrypted portions of video frames, including variable X, which is an offset to where an encrypted portion of data begins. Pet. 62–63 (citing Ex. 1007 ¶¶ 57–59, Figs. 6A, 6B; Ex. 1003 ¶ 200). I determine, that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst render obvious claim 3 for the reasons explained by Petitioner, by a preponderance of the evidence.

Claims 4–6 detail that the encryption information of claim 3 can be the size of the encrypted block of data, and can be cryptographic information

that can be utilized to access the encrypted portion of the frame, and can provide a reference to a key of the set of common keys. Petitioner argues that Lindahl discloses variable Y that provides the size of the encrypted block of data, as well as discussion of key information, such as a key ID. Pet. 64–65 (citing Ex. 1007 ¶¶ 57, 83, Figs. 6A, 6B). I determine that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst render obvious claims 4–6 for the reasons explained by Petitioner, by a preponderance of the evidence.

Claim 7, which depends from independent claim 1, recites the detection of a change in streaming conditions, identifying a second alternative stream, receiving a new container file and requesting portions of the second alternative stream, decrypting the received portions, and playing back the decrypted frames of video. Petitioner argues that Chen teaches detecting changes in available bandwidth to select a stream with a matching data rate, thus switching to a different representation. Pet. 66–67 (citing Ex. 1006 ¶¶ 63–65, 81; Ex. 1003 ¶¶ 205–206). Petitioner identifies the remaining steps after the selection of the second alternative stream to be the same as provided in claim 1, and argues that analogous limitations would have been obvious over Chen, Lindahl, and Hurst for the same reasons. *Id.* at 67–69. I determine that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst render obvious claim 7 for the reasons explained by Petitioner, by a preponderance of the evidence.

Claim 8, which depends from independent claim 1, and claim 9, which depends from claim 8, are directed to further steps of transmitting a request for content to a set of one or more content distribution servers, transmitting a request for cryptographic information to a set of one or more

DRM servers, and receiving information back in each case. Petitioner argues that Chen teaches requesting streaming media over a channel from one or more media servers, and that Hurst teaches a DRM server authenticating a user and supplying the user with appropriate encryption keys. Pet. 69–73 (citing Ex. 1006 ¶¶ 72, 79, 452; Ex. 1008, 18:51–55, 19:5–8; Ex. 1003 ¶¶ 210–215). I determine that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst render obvious claims 8 and 9 for the reasons explained by Petitioner, by a preponderance of the evidence.

Claims 10 and 11, which depend from independent claim 1, detail that an associated container file and a separate file containing the selected stream of protected content may be obtained, and that the set of keys may be a plurality of keys. Petitioner argues that Chen teaches that the container index is typically placed at the beginning of the segment file, that the segment index may be provided in a separate file, and that Lindahl teaches using more than one key to encrypt and decrypt the blocks in a video file. Pet. 73–78 (citing Ex. 1006 ¶ 123; Ex. 1007 ¶ 54). I determine that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst render obvious claims 10 and 11 for the reasons explained by Petitioner, by a preponderance of the evidence.

Claim 23, which depends from independent claim 1, recites that the container index is part of a hierarchical index, and that a lower layer index identifies the location of frames within a specific requested portion of the selected stream of protected video. Petitioner argues that Chen teaches hierarchical indexing. Pet. 80–83 (citing Ex. 1006 ¶¶ 148, 164, 197, Fig. 7(b); Ex. 1003 ¶¶ 234–237). I determine that Petitioner sufficiently

establishes that the combined teachings of Chen, Lindahl, and Hurst render obvious claim 23 for the reasons explained by Petitioner, by a preponderance of the evidence.

With respect to claims 13–22 and 24, Petitioner asserts that those claims recite the same limitations as claims 2–11 and 23, respectively, but as method claims. Pet. 79, 83. Petitioner asserts that claims 13–22 and 24 would have been obvious over Chen, Lindahl, and Hurst for the same reasons discussed above with respect to claims 2–11 and 23. *Id.* I agree that claims 13–22 and 24 recite, in method claims, substantially the same limitations as claims 2–11 and 23. Thus, for the same reasons discussed in our consideration of claims 2–11 and 23, I determine that Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst render obvious claims 13–22 and 24 for the reasons explained by Petitioner, by a preponderance of the evidence.

C. Summary

I determine that Petitioner has shown by a preponderance of evidence that claims 1–24 would have been obvious over Chen, Lindahl, and Hurst.

For PETITIONER:

Harper Batts
Jeffrey Liang
Chris Ponder
SHEPPARD, MULLIN, RICHTER & HAMPTON LLP
hbatts@sheppardmullin.com
cponder@sheppardmullin.com
jliang@sheppardmullin.com
LegalTm-DivX-IPR@sheppardmullin.com

For PATENT OWNER:

Kenneth J. Weatherwax
Nathan Lowenstein
Bridget Smith
Flavio Rose
Edward Hsieh
Parham Hendifar
Patrick Maloney
Jason C. Linger
LOWENSTEIN & WEATHERWAX LLP
weatherwax@lowensteinweatherwax.com
DivX_IPRs@lowensteinweatherwax.com