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Paper 10
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NETFLIX, INC. and HULU, LLC,
Petitioner,

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*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background

Netflix, Inc. and Hulu, LLC ("Petitioner") filed a Petition (Paper 3, "Pet.") requesting institution of *inter partes* review of claims 1–24 of U.S. Patent No. 10,225,588 B2 (Ex. 1001, "the '588 Patent"). DivX, LLC ("Patent Owner") filed a Preliminary Response (Paper 7, "Prelim. Resp."). We additionally authorized the filing of a Reply by Petitioner to Patent Owner's Preliminary Response (Paper 8, "Pet. Prelim. Reply") and a Sur-reply by Patent Owner (Paper 9, "PO Prelim. Sur-reply") to further consider the arguments of the parties with respect to the application of our discretion under 35 U.S.C. § 325(d).

An *inter partes* review may be instituted only if "the information presented in the petition . . . and any [preliminary] response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). For the reasons given below, Petitioner has established a reasonable likelihood that it would prevail in showing the unpatentability of at least one of the challenged claims of the '588 Patent. Accordingly, we institute an *inter partes* review of claims 1–24 of the '588 Patent on the ground of unpatentability raised in the Petition.

B. Related Proceedings

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.). Pet. 84; Paper 5, 1.

C. The '588 Patent

The '588 Patent is directed to "systems and methods for performing adaptive bitrate streaming using alternative streams of protected content." Ex. 1001, code (57). In the Background section of the '588 Patent, it 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 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.

D. The Asserted Ground of Unpatentability and Declaration Evidence

Petitioner challenges the patentability of claims 1–24 of the '588 Patent on the following ground:

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

Petitioner supports its challenge with a Declaration by Dr. Patrick D. McDaniel (Ex. 1003, "McDaniel Decl.").

[1] 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 '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).
[2] U.S. Patent Application Publication No. US 2011/0096828 A1, published April 28, 2011 (Ex. 1006, "Chen").
[3] U.S. Patent Application Publication No. US 2007/0083467 A1, published April 12, 2007 (Ex. 1007, "Lindahl").
[4] U.S. Patent No. 8,683,066 B2, issued March 25, 2014 (Ex. 1008, "Hurst").

E. Illustrative Claim

Claims 1 and 12 are the independent claims challenged in this proceeding. 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 (emphases added).

II. ANALYSIS

A. 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 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 person with a master's degree in mechanical engineering, electrical engineering, computer science, or a similar field with a specialization in video streaming and media security." Pet. 14–15 (citing Ex. 1003 ¶¶ 65–67). Patent Owner does not appear to take a position as to the level of ordinary skill in the art in its Preliminary Response. *See generally* Prelim. Resp.

At this stage of the proceeding, we find Petitioner's proposal consistent with the level of ordinary skill in the art reflected by the prior art of record, *see Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978), and, therefore, we adopt Petitioner's unopposed position as to the level of ordinary skill in the art for purposes of this decision.

B. Claim Construction

In this *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b). *See* 37 C.F.R. § 42.100(b) (2019). The

claim construction standard includes construing claims in accordance with the ordinary and customary meaning of such claims as 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.

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).

Petitioner does not present any specific claim terms for construction. Petitioner contends that "the challenged claims are invalid under their plain and ordinary meaning." Pet. 16 (citing Ex. 1003 ¶¶ 100–101). Patent Owner, likewise, does not proffer any specific constructions for claim terms. *See generally* Prelim. Resp. As such, we apply the plain and ordinary meaning of each claim term in the analysis below. We remind the parties that any implicit claim constructions made at this stage of the proceeding are preliminary. Our ultimate interpretation of the claim terms will be based on the complete record developed during trial.

C. Legal Standards – Obviousness

The U.S. Supreme Court set forth the framework for applying the statutory language of 35 U.S.C. § 103 in *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966):

> Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.

As explained by the Supreme Court in *KSR International Co. v. Teleflex Inc.*:

> Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion

> claimed by the patent at issue. To facilitate review, this analysis should be made explicit.

550 U.S. 398, 418 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.")).

"Whether an ordinarily skilled artisan would have been motivated to modify the teachings of a reference is a question of fact." *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1327 (Fed. Cir. 2016) (citations omitted). "[W]here a party argues a skilled artisan would have been motivated to combine references, it must show the artisan 'would have had a reasonable expectation of success from doing so.'" *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1360–61 (Fed. Cir. 2017) (quoting *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1068–69 (Fed. Cir. 2012)).

D. Obviousness over Chen, Lindahl, and Hurst

Petitioner asserts that the combination of Chen, Lindahl, and Hurst would have rendered the subject matter of claims 1–24 obvious to one of ordinary skill in the art at the time of the invention. Pet. 17–83. We begin with brief discussions of the cited references, consider Petitioner's proffered motivation to combine those references, and then consider Petitioner's arguments with respect to the references' teachings applied to the instant claims, as well as Patent Owner's arguments asserting deficiencies in the ground of unpatentability.

1. Chen

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

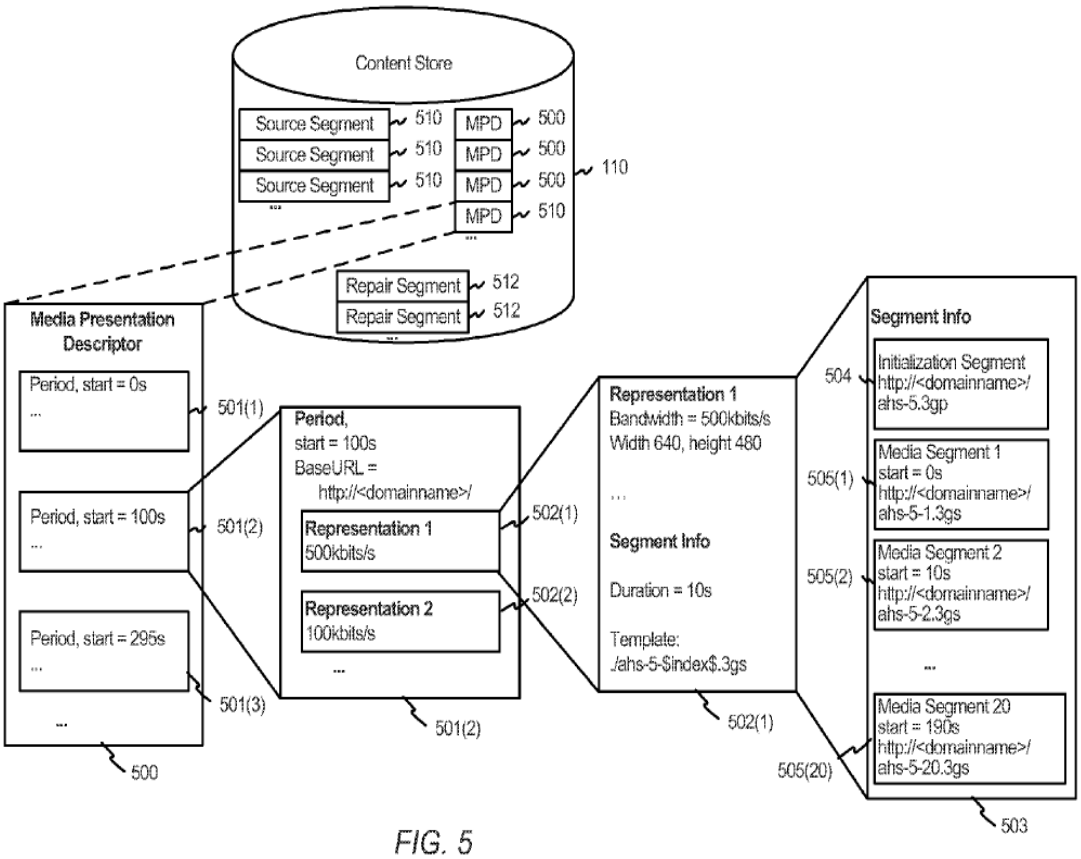

FIG. 5

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.

Id. ¶ 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:

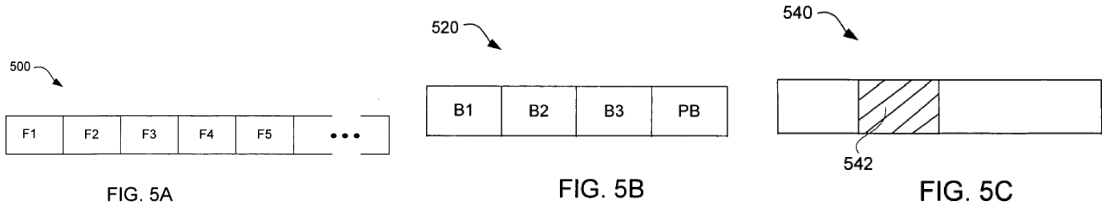

FIG. 5A FIG. 5B FIG. 5C

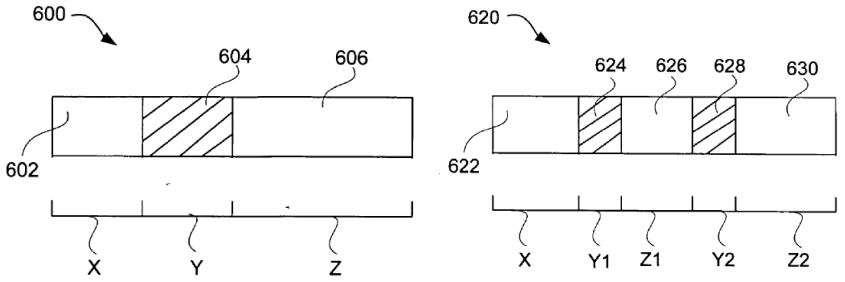

FIG. 6A FIG. 6B

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. *Id.* ¶ 55. Representative media frame 520, shown in Figure 5B, is divided in to blocks, B1, B2, B3, of the same size, as well as partial block PB. 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. *Id.* ¶ 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.

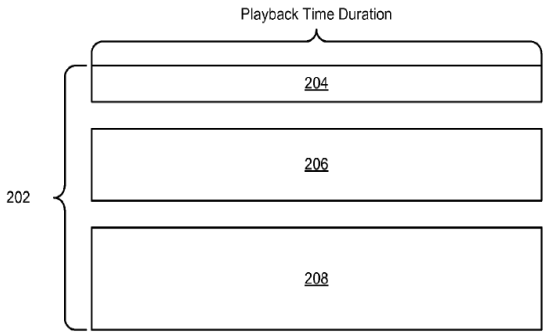

FIG. 2b

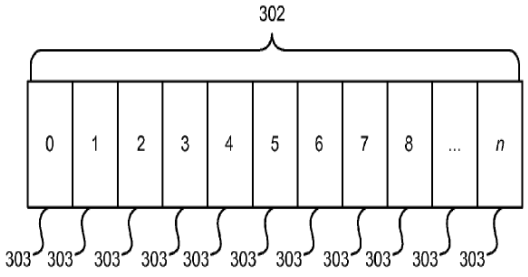

FIG. 3a

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

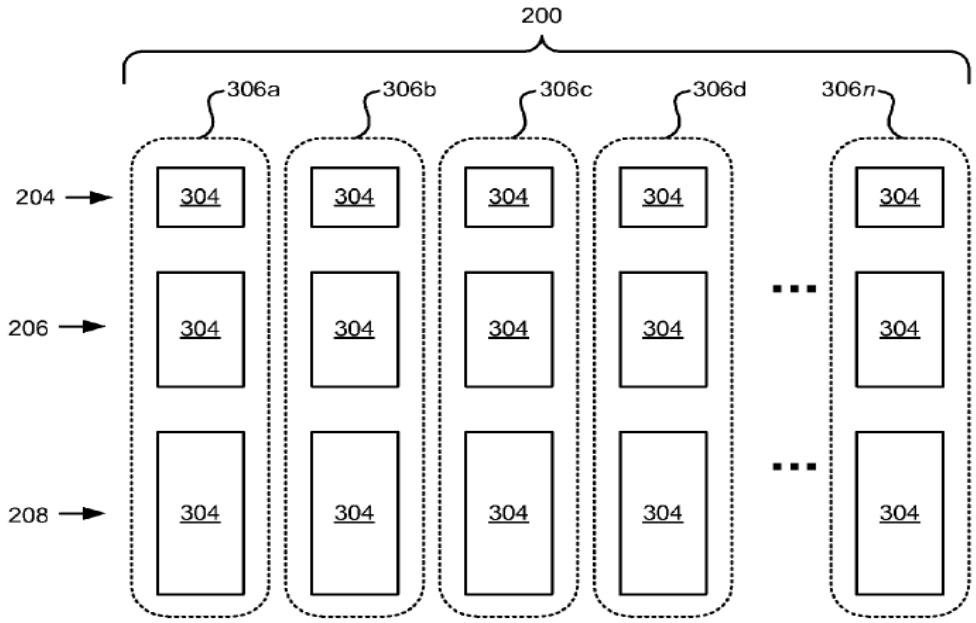

FIG. 3b

Figure 3b of Hurst illustrates a plurality of streams divided into a plurality of source streamlets. *Id.* at 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 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.

4. 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 Chen's adaptive streaming system. 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, 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 discloses any particular implementation, which one of ordinary skill in the art would have used Lindahl and Hurst to supplement Chen's DRM requirements. Pet. 18. Petitioner asserts that Lindahl prevented unauthorized access to media while improving the 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, 119–120; 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. *Id.* at 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. *Id.* at 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).

At this stage of the proceeding, on the present record, we determine that Petitioner has sufficiently established that an ordinarily skilled artisan would have had a rationale to combine the teachings of Chen, Lindahl, and Hurst, and would have had a reasonable expectation of success from that combination. At this stage, Patent Owner does not raise any argument specifically addressing the motivation to combine the references generally (*see generally* Prelim. Resp.), but does dispute that specific limitations of the claims are taught or suggested by that combination, as discussed below, and disputes that Petitioner provides sufficient motivation to combine the references to teach or suggest those specific aspects (*see* Prelim. Resp. 40–41, 52–58). As such, we address Patent Owner's arguments regarding whether proper motivation to combine to teach or suggest those specific limitations of the claimed invention in the sections below directed to the specific aspects.

5. Independent Claim 1

a. Limitations [a] and [b]

With respect to the limitation [a][5] (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 causing the processors to perform steps associated with playback. *Id.* at 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] in the Preliminary Response.

[5] 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.

We find that at this stage of the proceeding, on the present record, 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.

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, 6:32–8, 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. *Id.* at 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] in the Preliminary Response. We find that at this stage of the proceeding, on the present record, 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.

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 argues that the combination of Chen, Lindahl, and Hurst fails to teach or suggest this limitation, arguing that neither Lindahl nor Hurst, each of which is relied upon in the Petition for this limitation, provides support for Petitioner's arguments. Prelim. Resp. 39–58.

With respect to Lindahl, Patent Owner argues that "[a]t most, Lindahl discloses that comparatively unimportant meta data [sic] within a file, not streams of video frames, can be encrypted using a global key." Prelim. Resp. 40. Patent Owner also argues that because Lindahl does not address

adaptive media streaming, Lindahl has no occasion to teach anything connected with encryption of adaptive alternative streams of the same content. *Id.* at 42–43. Patent Owner also argues that to the extent that Lindahl does provide any relevant disclosure, it teaches against utilizing a set of common keys for different media files. *Id.* at 41. We are not persuaded by Patent Owner's arguments.

First, Patent Owner argues that Lindahl mentions "stream[ing]," but that such streaming is neither real-time nor adaptive streaming, intends to encompass mere transmission for download, and references "backend network" processes rather than user consumption of content. Prelim. Resp. 43 n.8. Patent Owner's arguments are speculative, supported only through attorney argument, urging us to not take Lindahl's teaching of "stream[ing] media files" (Ex. 1007 ¶ 39) in a manner not sufficiently supported on the present record. We review Lindahl's disclosure from the view of one of ordinary skill in the art and take its recitation of "stream[ing]" as having the scope that such ordinarily skilled artisans would have given it, which includes Petitioner's application of the term.

Next, Patent Owner argues that Lindahl never suggests encrypting an entire file, and particularly never suggests encrypting the sensitive and valuable video data within a file, with a global key. Prelim. Resp. 43–45. We do not agree. The section of Lindahl cited by Petitioner (*see* Pet. 71 (citing Ex. 1007 ¶ 66)), states that "[o]nce the media file is downloaded 708, the media file can then be decrypted 710 at the user's local machine using the cryptographic key. The global key or other cryptographic key may also be used." The next sentence in Lindahl discusses encryption of the metadata of the media file, but we do not find Lindahl limited to addressing only that

portion's encryption. Lindahl's statement that the "media file" is "decrypted" implies that the entire file is encrypted and decrypted, not just the metadata because Lindahl does not limit its discussion to metadata. Lindahl also discloses that "the media file is encrypted 306 with the cryptographic key corresponding to that particular media file," and "[t]he metadata of the media file is *optionally* encrypted." Ex. 1007 ¶¶ 48–49. The portion that Patent Owner points to (*id.* ¶ 66) suggests that the metadata encryption is optional: "*If* the metadata of the media file itself is encrypted." Taken as a whole, Lindahl suggests more than just encrypting the metadata of a media file.

Additionally, even if we were to assume that the entire file may not be encrypted in Lindahl, such considerations go beyond the bounds of limitation [e]. Limitation [d], discussed above, recites that "each of the alternative streams of protected video includes partially encrypted video frames," where that encryption occurs using a set of common keys. Thus, independent claim 1 does not require the encryption of "entire file[s]," as argued by Patent Owner. Additionally, Petitioner does not suggest that the encryption of metadata is the same as encryption of the rest of the file, only that one of ordinary skill would have been motivated to apply Lindahl's teaching to all media files, including alternative representations, as discussed below.

Patent Owner next argues 1) that Lindahl's teaching with respect to metadata cannot be expanded to all data, 2) that even if the same key were applied to an entire file, the same key would not necessarily be used for alternative streams of the same media content, and 3) that Petitioner's analysis ignores Lindahl's intent to provide common key encryption only to

portions that are "not that sensitive." Prelim. Resp. 45–48 (citing Ex. 1007 ¶ 48). We do not agree with Patent Owner's arguments on this record.

First, we disagree that Lindahl applies its encryption solely to metadata of the media files, for the reasons discussed above. Additionally, we find persuasive Petitioner's declaration testimony that a person of ordinary skill in the art would have understood Lindahl's teaching to refer to reusing a global (e.g., single) key for many videos to provide sufficient protection for content. Ex. 1003 ¶¶ 144–145. We further agree with Petitioner that "the application of Lindahl to Chen leaves only a finite number of possibilities" (Pet. 32), such that a person of ordinary skill in the art would have found it obvious to use the same set of keys for all representations of a media file. We agree with Petitioner that Chen in view of Lindahl would have suggested to one of ordinary skill in the art that a common cryptographic key could be used for all representations of a media file.

With respect to Hurst, Patent Owner argues that Hurst "discloses the possibility of using a common key, but solely in a single brief paragraph on key encryption, and does so solely as a point of contrast to explain why to use a different approach." Prelim. Resp. 40; *see also id.* at 48–52 (expanded arguments). Patent Owner continues that Hurst "teaches against doing such a thing," and provides "a prolonged discussion of why it is better to ***not*** use a single key and to use a specialized key instead." *Id.* at 49. Lastly, Patent Owner argues that "[t]he Petition's sole mention of reasonable expectation of success is a single conclusory paragraph," that provides only a simple conclusory assertion. *Id.* at 51–52 (citing Pet. 21). We do not agree.

We note first that Patent Owner does not deny that Hurst teaches that the same key can be used to encrypt all streams; rather, Patent Owner argues one of ordinary skill in the art would not have been motivated to adopt such a process in view of Hurst. We do not agree that Hurst teaches away from the use of the same key for different streamlets, as we do not find that Hurst necessarily discourages such an embodiment.

A reference teaches away "when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Mouttet*, 686 F.3d 1322, 1333–34 (Fed. Cir. 2012)). Hurst does not suggest that the use of the same key to encrypt all streams would be ineffective, nor does it criticize, discredit, or discourage the technological efficacy of the use of the same key. We agree with Patent Owner that Hurst discloses a preference and adopts the use of different keys, but we are not persuaded that Hurst "teaches away" from the use of the same key to encrypt all streams. Additionally, although Petitioner's assertion about combining Chen and Lindahl with Hurst is brief in the context of this limitation, i.e., "it would have been obvious and straightforward to apply Hurst's key management teachings, with respect to the alternative streams" (Pet. 35), we determine it to be sufficient on this record to support Petitioner's combination.

Lastly, Patent Owner argues that the Petition improperly relies on the '588 Patent itself for motivation to modify Chen in view of Lindahl and Hurst. Prelim. Resp. 52–58. Patent Owner continues that the "Petition cites and relies upon the benefits of utilizing a set of common keys that was

actually disclosed by the inventors in the '588 Patent specification." *Id.* at 54 (citing Pet. 19). Patent Owner also argues that

> Petitioner's alleged reasons that it would have been obvious to combine prior art elements to arrive at the invention are so similar to the Patent's own inventors' description of the reasons they realized it was beneficial to combine elements to make the invention is strong evidence that these putative "obvious" reasons to combine are nothing more than the hindsight that the Federal Circuit and the Board have both rejected in many cases.

Id. at 56. We do not agree with Patent Owner's arguments.

As discussed above, we determine that Petitioner has provided sufficient motivation to incorporate the teachings of Lindahl and Hurst into the teachings of Chen. The fact that Petitioner's arguments are similar to points made in the Specification of the '588 Patent (*see* Prelim. Resp. 54–55), should not be surprising in the context that the same claim element is being discussed. The requirements and costs of switching between streams, as discussed in Chen and Hurst, would be a necessary consideration to one of ordinary skill in the art, just as it was to the inventors of the '588 Patent. Given that Hurst, as discussed above, provides for different options in whether to use the same or different keys, it would be expected that consideration would be given to which option would be implemented in any content streaming system. As such, we are not persuaded that the similarities in arguments made by Petitioner and the inventors' description demonstrate that the Petition is relying on improper hindsight reasoning to proffer the combination to teach or suggest limitation [e].

Accordingly, we find that at this stage of the proceeding, on the present record, 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.

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] in the Preliminary Response. We find that at this stage of the proceeding, on the present record, 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.

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

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).

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).

Patent Owner does not raise any argument specifically addressing limitations [g], [h], [i], and [j] in the Preliminary Response. We find that at this stage of the proceeding, on the present record, Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet limitations [g], [h], [i], and [j] of independent claim 1 for the reasons explained by Petitioner.

f. Limitation [k]

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 does not raise any argument specifically addressing limitation [k] in the Preliminary Response. We find that at this stage of the proceeding, on the present record, Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet limitation [k] of independent claim 1 for the reasons explained by Petitioner.

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 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 Lindahl does not teach or suggest this limitation. Prelim. Resp. 26–39. Patent Owner argues that "to the extent Lindahl does locate any encryption information, it does not locate the information 'within the requested portions of the selected stream of protected video,' as the claims require." *Id.* at 27. Patent Owner also argues that because Lindahl teaches a system where media files are downloaded in their entirely, the concept of storing encryption information in requested portions of media content does not exist within Lindahl's system. *Id.* We do not agree with Patent Owner's arguments as they rely on a specific construction of limitation [l] that is not supported in view of the disclosure of the '588 Patent.

The entire 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." Patent Owner takes the "within" portion of that limitation as determinative of where the encryption information is found, i.e., "within the requested portions." An equally, if not more reasonable, construction of the same limitation is that the term

"within" modifies the "frames of video," i.e., specifies what portions are encrypted portions within the requested stream. The latter 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. Although cited portions of the Specification of the '588 Patent could support Patent Owner's construction, we are not persuaded that the cited portions require or compel such a restricted construction.

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

> [w]hen the Cluster elements are received, the playback device can extract encoded media from the **BlockGroup elements within the Cluster element**, and can decode and playback the media within the BlockGroup elements in accordance with their associated Time coded attributes. 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.

Prelim. Resp. 29 (quoting Ex. 1001, 25:10–21). However, the portion just before the cited section recites more generally:

> 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 suggests that information regarding ranges in the files need not come from the files themselves, at

least in some embodiments. Patent Owner additionally cites to another portion of the Specification of the '588 Patent, detailing the structure of the Matroska container file (Prelim. Resp. 30 (citing Ex. 1001, 9:18–29)), but that is specifically identified as being directed to "several embodiments," and does not require that all container files must contain DRM elements, nor that the "encryption information" must be obtained from the requested portion.

More natural to the language of claim 1, the "frames of video" are denoted as coming from those "within the requested portions," where those requested portions are parts "of the selected stream of protected video." 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. Although it is apparent that encryption information *can* be found within the requested portions, we are not persuaded that the claim language or '588 Patent explicitly requires such a relationship. Likewise, although embodiments disclosed in the Specification of the '588 Patent support Patent Owner's more restrictive construction, the same embodiments also support the more grammatically correct construction as well.

With respect to Patent Owner's additional arguments regarding this limitation, specifically that Lindahl teaches a system where media files are

downloaded in their entirely, with the concept of storing encryption information in requested portions of media not existing within Lindahl's system (Prelim. Resp. 31–39), we determine that those arguments rest upon Patent Owner's claim construction that we determine to be too restrictive. Patent Owner has acknowledged that "*Lindahl* only teaches how to deliver this information in a separate file" (*id.* at 31), such that limitation [l] is acknowledged as being disclosed by Lindahl, under the claim construction we determine to be proper and commensurate with the disclosure of the '588 Patent on the present record.

Accordingly, we find that at this stage of the proceeding, on the present record, Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet limitation [l] of independent claim 1.

h. Limitations [m] and [n]

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. 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).

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 limitations [m] and [n] in the Preliminary Response. We find that at this stage of the proceeding, on the present record, Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet limitations [m] and [n] of independent claim 1 for the reasons explained by Petitioner.

i. Conclusion Regarding Independent Claim 1

Neither party presents evidence of objective considerations of nonobviousness at this stage of the proceeding. We have reviewed the arguments and evidence and find that at this stage of the proceeding, on the present record, Petitioner sufficiently establishes that the combination of Chen, Lindahl, and Hurst teaches or suggests all of the limitations of independent claim 1 for the reasons explained by Petitioner.

6. 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, per claim 1, renders the method of claim 12 obvious. *Id.* at 78 (citing Ex. 1003 ¶ 220).

Patent Owner focuses its discussion on claim 1, noting that claims 1 and 12 are "materially identical for purposes of the decision whether to institute." Prelim. Resp. 27 n.6. Patent Owner also asserts that "the Petition's deficiencies with respect to claim 1 applies [sic] equally to claim 12 and all other claims." *Id.*

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 find that, on the present record, Petitioner's challenge is supported sufficiently for the reasons provided by Petitioner, including those discussed above in the context of considering Petitioner's challenge to claim 1.

7. Dependent Claims 2–11 and 13–24

As noted above, Patent Owner does not explicitly argue whether the limitations of dependent claims 2–11 and 13–24 are met by the combined teachings of Chen, Lindahl, and Hurst; instead, Patent Owner's arguments focus on claim 1. *See* Prelim. Resp. 26–27. As such, we discuss the dependent claims below in the context of whether Petitioner's challenge is supported sufficiently for the reasons provided by Petitioner.

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 Chen and Lindahl teach or suggest 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).

We find that at this stage of the proceeding, on the present record, Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet the limitations of dependent claim 2 for the reasons explained by Petitioner.

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). We find that at this stage of the proceeding, on the present record, Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet the limitations of dependent claim 3 for the reasons explained by Petitioner.

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). We find that at this stage of the proceeding, on the present record, Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet the limitations of dependent claims 4–6 for the reasons explained by Petitioner.

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 are obvious over Chen, Lindahl, and Hurst for the same reasons. *Id.* at 67–69. We find that at this stage of the proceeding, on the present record, Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet the limitations of dependent claim 7 for the reasons explained by Petitioner.

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). We find that at this stage of the proceeding, on the present record, Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet the limitations of dependent claims 8 and 9 for the reasons explained by Petitioner.

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). We find that at this stage of the proceeding, on the present record, Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet the limitations of dependent claims 10 and 11 for the reasons explained by Petitioner.

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). We find that at this stage of the proceeding, on the present record, Petitioner sufficiently establishes that the combined teachings of Chen, Lindahl, and Hurst meet the limitations of dependent claim 23 for the reasons explained by Petitioner.

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 are obvious over Chen, Lindahl, and Hurst for the same reasons discussed above with respect to claims 2–11 and 23. *Id.* We agree that claims 13–22 and 24 recite, in method claims, the same limitations as claims 2–11 and 23. Thus, for the same reasons discussed in our consideration of claims 2–11 and 23, we find that on the present record, Petitioner's challenge to claims 13–22 and 24 is supported sufficiently.

E. Discretion under 35 U.S.C. § 325(d)

Institution of *inter partes* review is discretionary. *See Harmonic Inc. v. Avid Tech, Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) ("[T]he PTO is permitted, but never compelled, to institute an IPR proceeding."); 35 U.S.C. § 314(a). Pursuant to 35 U.S.C. § 325(d), in determining whether to institute an *inter partes* review, "the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office." In evaluating arguments under § 325(d), we use

> [a] two-part framework: (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of first part of

> the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential); *see also Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (precedential as to Section III.C.5, first paragraph) (listing factors (a)–(f) to consider in evaluating the applicability of § 325(d)).

Patent Owner contends that we should deny the Petition under § 325(d) because Petitioner relies on the same (Chen) or substantially the same prior art (Lindahl and Hurst) as the prior art that was presented and expressly considered during prosecution (Braness[6] and Amini[7]). Prelim. Resp. 5–25. Patent Owner asserts that there are no material differences between the asserted art in the Petition and the art previously considered and relied upon to reject claims during examination. *Id.* at 12–25. Patent Owner also alleges that Petitioner does not argue that the examiner erred during prosecution of the '558 Patent. *Id.* at 25–26.

Petitioner responds that "of the three references combined in the Petition, two were never presented to the USPTO, and one (Chen) was listed in an IDS along with more than 1,000 other references." Pet. Prelim. Reply 1. Petitioner also notes that "[n]one of the Petition's references were ever cited in an Office action or rejection, and the USPTO has never

[6] U.S. Patent No. 8,806,188 B2, issued August 12, 2014 (Ex. 2009, "Braness").
[7] U.S. Patent Application Publication No. US 2009/0290706 A1, published November 26, 2009 (Ex. 2011, "Amini").

considered this combination of references or the supporting expert testimony." *Id.* Petitioner also responds that the references relied upon in the Petition are not cumulative of those considered during prosecution, and that Patent Owner's comparisons fail to consider the actual disclosures of the references. *Id*. Lastly, Petitioner asserts that the prosecution history contained material errors because its consideration of the prior art was cursory at best. *Id.* at 8–10.

Patent Owner responds that Petitioner's arguments are untimely and mischaracterize the prosecution history. PO Prelim. Sur-reply 1. Patent Owner argues that Petitioner has "cherry-pick[ed] words from *Chen*" but has not shown that those words are in the claims or add anything to the references cited in the prosecution history. *Id.* at 3 (citing Pet. Prelim. Reply 6). Additionally, Patent Owner argues that Petitioner has failed to show that Hurst and Lindahl are not cumulative of Amini. *Id.* at 4–5. Patent Owner also argues that there is substantial overlap in arguments between those made in the Petition and those made in the prosecution history, and Petitioner's untimely arguments regarding "supposed error by the Examiner" are unavailing. *Id.* at 5–8.

Under *Advanced Bionics*, *Becton Dickinson* factors (a), (b), and (d) are considered in the evaluation of whether the same or substantially the same art or arguments were previously presented to the Office. *Advanced Bionics*, Paper 6 at 10. *Becton, Dickinson* identifies these three factors as (a) the similarities and material differences between the asserted art and the prior art involved during examination; (b) the cumulative nature of the asserted art and the prior art evaluated during examination; and (d) the extent of the overlap between the arguments made during examination and

the manner in which Petitioner relies on the prior art. *Becton, Dickinson*, Paper 8 at 17–18.

Addressing Chen first, Patent Owner argues that "*Chen* itself was presented and considered by the Examiner while these claims were before him." Prelim. Resp. 24. Although that is true, the prosecution history of the '588 Patent (Ex. 1002) does not detail that the examiner ever applied Chen to any of the claims before the examiner. To that extent, the most we can conclude from the prosecution history is that the examiner considered whether Chen alone rendered any of the pending claims anticipated or obvious. Because the combination of Chen, Lindahl, and Hurst set forth in the Petition was not considered by the examiner, we find consideration of the references and arguments based thereon to be materially different than the examiner's previous consideration of Chen during prosecution. Simply put, we do not find that the teachings of Chen, Lindahl, and Hurst set forth in the Petition are cumulative to the teachings of the art evaluated by the examiner during prosecution, as discussed further below.

Patent Owner also supplies claim charts comparing citations to Braness and Amini made during the prosecution of the '588 Patent with citations to Chen, Lindahl, and Hurst made in the Petition. *See* Prelim. Resp. 13–17, 20–24. Although the information provided is particular, it is not directly reflective of whether the references necessarily are cumulative. For example, Chen and Braness are compared via citations for limitations [a]–[c] of independent claim 1, but those limitations of claim 1 are disclosed in the Background section of the '588 Patent, as discussed in Section I.C above. *Id.* at 13. Overlap in disclosing limitations [a]–[c] is of limited import because disclosing those limitations may reflect simply that

the references are in the same field of endeavor as the '588 Patent, not necessarily that the references are cumulative. Similarly, Patent Owner asserts that Braness was determined by the examiner to be "the closest prior art" to the claims, in the examiner's Notice of Allowability, with "Braness's disclosure [being] extremely similar in many respects, in many places word for word, to the disclosure of the '588 patent." *Id.* at 12 (citing Ex. 1002, 571).

That a reference was cited as teaching the same limitation of a claim as another reference does not, in and of itself, mean that the references are cumulative. Rather, determining the cumulative nature of references involves examining allegedly overlapping disclosure, with particular focus on the material relied upon. This is preferable, as a claim may read upon references with little overlap or cumulative natures, if the scope of the claim is sufficiently large.

As Petitioner points out, Chen discloses adaptive streaming based on MPD files and segment indices, with a segment index that provides byte ranges for portions of a selected stream of protected video. Pet. Prelim. Reply 6 (citing Ex. 1006 ¶¶ 63–64, 66–68, 119–120, 124, 148). Petitioner also points out that those aspects of Chen are relied upon in parts of its analysis. *Id.* (citing Pet. 10, 46–47). Petitioner contrasts this with Braness that "teaches an SMIL file that can be used to obtain an index to encoded media but does not explicitly disclose what that index contains." *Id.* (citing Ex. 2009, 16:41–47). With respect to Lindahl and Hurst, in comparison to the disclosure of Amini, Petitioner asserts that Amini does not explicitly disclose partially encrypted video, with encrypted and unencrypted portions of video frames, but that Lindahl and Hurst teach partially encrypted frames

that are encrypted using a set of common keys. *Id.* at 7 (citing Ex. 1007 ¶¶ 55–56, 60, 66; Ex. 1008, 18:64–67; Ex. 2011). Petitioner also points out that those aspects of Lindahl and Hurst are relied upon in parts of its analysis. *Id.* (citing Pet. 29–35).

Patent Owner disputes that the differences are significant, arguing that Petitioner has "cherry-pick[ed]" words from Chen, "without showing that these buzzwords are anywhere in the claims or add anything material to what Braness teaches." PO Prelim. Sur-reply 3. In contrast to Patent Owner's arguments, however, the "buzzwords" identified contributed to the analysis of different claim limitations, as discussed above. Patent Owner also argues that "Petitioner fails to show that Chen's 'provid[ing] byte ranges' adds anything material to that *finding of the Office*" (*id.* (emphasis added)), but that again misses the point of the comparison to determine whether Chen is cumulative over Braness; in determining the degree of cumulative disclosure, we look to the disclosures of each reference and not merely to how each might have been applied in the prosecution history. As such, we are persuaded of the distinctions between Chen and Braness, and are persuaded that the former is not fully cumulative to the disclosure of the latter.

With respect to the comparison of Lindahl and Hurst with Amini, Patent Owner disputes Amini does not disclose partially encrypted video, as argued by Petitioner (Pet. Prelim. Reply 7), and cites to an Office Action from the prosecution history that Amini taught "identifying at least a portion of the common cryptographic information used to access the encrypted portions of the frames of video," "where the streams are encrypted" with "the same keys used for different streams." PO Prelim. Sur-reply 4 (citing

Ex. 1004, 941). A review of the cited sections of Amini, namely paragraphs 54, 31, and 32, along with figure 2, does not, however, provide the support alleged by Patent Owner. Ex. 2011 ¶¶ 31–32, 54, Fig. 2. Paragraph 54 does disclose using the same key for alternate streams, but paragraph 31 is directed to "encoding," as opposed to encryption, and paragraph 32 only recites that "streams are input into encrypter 240, where they are encrypted." *Id.* We discern no description of "partially encrypted frames," as was alleged by Petitioner to be missing from Amini. Similarly, the additional portions of Amini cited by Patent Owner (PO Prelim. Sur-reply 4–5) fail to disclose "partially encrypted frames," which are specifically relied upon in Petitioner's analysis. *See* Pet. 29–35. As such, we are persuaded of the distinctions between Lindahl and Hurst, in comparison to Amini, and are persuaded that the former are not fully cumulative to the disclosure of the latter.

With respect to the overlap between arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art, it is expected that some overlap in arguments may occur because the same claims are being analyzed. Viewing the prior art through the lens of the claims would usually produce similarities in arguments, even in the case of a broad claim reading on multiple types of prior art, with similar arguments being made that aspects of the prior art teach or suggest the same claim limitations.

With respect to the Petition, the prosecution of the '588 Patent, and the arguments applied in each, we find salient differences. As Petitioner identifies, "Petitioner relies on different prior art, combined in different ways, by combining Chen's MPEG-DASH teachings with partial encryption

and DRM from Lindahl and Hurst. The Examiner never combined teachings in this manner or analyzed the motivation to combine presented in the Petition." Pet. Prelim. Reply 7 (citing Ex. 1003, 558–74). Additionally, as Petitioner notes, Braness was never used as a basis for a rejection during prosecution, and Amini was combined with different references in the rejections as part of the prosecution of parent applications. *Id.* at 8 (citing Prelim. Resp. 13–17, 20–24).

Patent Owner responds that "[b]ut if there was substantially the same art, as there was, there is no requirement to also show substantially the same ***arguments***." PO Prelim. Sur-reply 5 (citing Prelim. Resp. 7; *Advanced Bionics*, Paper 6 at 8). As discussed above, however, we are not persuaded that substantially the same art is being applied. Patent Owner also argues that "[i]n the Patent's Notice of Allowability, the Examiner expressly found that '[n]one of the prior art of record, either taken by itself or in any combination, would have anticipated or made obvious the invention of the present application at or before the time it was filed.'" *Id.* (citing Ex. 1002, 572). That does not, however, address the different aspects of Chen, Lindahl, and Hurst, relied upon in the sole ground of unpatentability in the Petition, which were not before the examiner when the Notice of Allowability was issued.

Accordingly, we do not find that any of *Becton Dickinson* factors (a), (b), and (d) are met for Petitioner's challenge based on the combination of Chen, Lindahl, and Hurst, and we find that the ground of unpatentability does not rely upon the same or substantially the same prior art or arguments considered during examination of the '588 Patent. *Oticon Medical AB v. Cochlear Ltd.*, IPR2019-00975, Paper 15 at 20 (PTAB Oct. 16, 2019)

(precedential) (declining to exercise discretion when new, noncumulative prior art was asserted in the Petition). Having failed the first prong under *Advanced Bionics*, we need not determine whether Petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims. We conclude that the circumstances presented here do not warrant our exercise of discretion to deny institution based on § 325(d).

III. CONCLUSION

For the foregoing reasons, Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that at least one claim of the '588 Patent is unpatentable.

IV. ORDER

Accordingly, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), *inter partes* review is instituted as to claims 1–24 of the '588 Patent on the sole ground of unpatentability set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '588 Patent shall commence on the entry date of this Decision, and notice is hereby given of the institution of a trial.

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