

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NETFLIX INC.,
Petitioner,¹

v.

DIVX, LLC,
Patent Owner.

IPR2020-00646
Patent 8,472,792 B2

Before BART A. GERSTENBLITH, MONICA S. ULLAGADDI, and
IFTIKHAR AHMED, *Administrative Patent Judges*.

AHMED, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision on Remand
Determining All Challenged Claims Unpatentable
Denying Patent Owner's Motion to Exclude
35 U.S.C. §§ 144, 318

¹ The caption is updated to remove Petitioner Hulu, LLC ("Hulu") because Hulu is no longer a party to this proceeding. See Paper 60 (Termination due to Settlement After Institution of Trial Only 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, 5, 8, 9, 13–15, 18, and 21–23 (the “Challenged Claims”) of U.S. Patent No. 8,472,792 B2 (Ex. 1001, “the ’792 patent”). *Netflix, Inc. v. DivX LLC*, 80 F.4th 1352 (Fed. Cir. 2023). For the reasons discussed herein, we determine that Petitioner has shown, by a preponderance of the evidence, that the Challenged Claims are unpatentable.

II. BACKGROUND

A. Procedural History

Netflix, Inc. (“Petitioner”) filed a Petition (Paper 3, “Pet.”) requesting institution of *inter partes* review of the Challenged Claims. DivX, LLC (“Patent Owner”) filed a Preliminary Response (Paper 7). Applying the standard set forth in 35 U.S.C. § 314(a), we instituted an *inter partes* review of the Challenged Claims. Paper 12 (“Inst. Dec.”).

After institution, Patent Owner filed a Response. Paper 20 (“PO Resp.”). Petitioner filed a Reply. Paper 28 (“Pet. Reply”). Patent Owner filed a Sur-reply. Paper 37 (“PO Sur-reply”). On June 14, 2021, we held an oral hearing, the transcript of which is in the record. Paper 46 (“Tr.”).

We issued a Final Written Decision determining that Petitioner had not proven by a preponderance of evidence that the Challenged Claims are unpatentable. Paper 47 (“Final Written Decision” or “Final Dec.”), 36. In particular, our Final Written Decision addressed one of four main arguments raised by Patent Owner—whether Petitioner established that Kaku is analogous art to the ’792 patent. *Id.* at 13–33. We did not decide three other issues raised by Patent Owner—(1) the proper construction of limitation [g]

of claim 1 (“the first and second indexes enabling trick play functionality”); (2) whether the combination of Zetts and Kaku discloses or renders obvious an index that “includes information . . . indicative of characteristics of each encoded video frame”; and (3) whether a person of ordinary skill in the art would have been motivated to combine Zetts and Kaku (to include two indexes in a multimedia file) with a reasonable expectation of success. *See, e.g.*, PO Resp. i–ii (table of contents identifying the arguments raised in the Patent Owner Response); *see generally* Final Dec. (rejecting Petitioner’s obviousness grounds because we determined that Petitioner had not established that Kaku is analogous art to the ’792 patent).

Petitioner filed a Notice of Appeal of the Final Written Decision with the Federal Circuit. Paper 49. On September 11, 2023, the Federal Circuit issued a decision in the appeal vacating our Final Written Decision and remanding for further proceedings consistent with its decision. *Netflix*, 80 F.4th at 1362. The Federal Circuit determined that we abused our discretion in finding that Petitioner had failed to articulate a field of endeavor. *Id.* at 1359. The Federal Circuit remanded to allow us to decide the “factual question of whether Kaku is directed to the same field of endeavor as the patent-in-suit.” *Id.* at 1361. The Federal Circuit, however, did not address the other three issues raised by Patent Owner since we did not decide 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 October 18, 2023, we conducted a conference call with the parties (Ex. 1027) and requested the parties identify the issues that must be decided to reach a conclusion on the patentability of the Challenged Claims of the ’792 patent. Paper 54 (Order,

Conduct of the Proceeding). We specifically asked the parties to file a joint table listing the issues that remain to be decided on remand, with corresponding citations to the parties' respective arguments and evidence in the record. *Id.* The parties then filed the joint table identifying the issues to address on remand. Paper 56 (Joint List of Issues on Remand).²

B. Related Proceedings

The '792 patent is asserted in *DivX, LLC v. Netflix, Inc.*, No. 2:19-cv-01602 (C.D. Cal.), and *DivX, LLC v. Hulu, LLC*, No. 2:19-cv-01606 (C.D. Cal.) (dismissed Aug. 25, 2022). Pet. 87; Paper 5 (Patent Owner's Mandatory Notices), 1; Paper 58 (Joint Motion to Terminate Hulu LLC), 2–3.

C. The '792 Patent (Ex. 1001)

The '792 patent, titled "Multimedia Distribution System," was filed on October 24, 2005, and is a continuation-in-part of an application filed December 17, 2004, which is a continuation-in-part of another application

² In addition to the issues discussed above, the joint list also identifies Patent Owner's Motion to Exclude (Paper 39). *See* Paper 56. The Final Written Decision addressed this Motion. *See* Final Dec. 34–35 (dismissing Patent Owner's Motion as moot in light of our determination as to analogous art). Because the Federal Circuit vacated our decision, we revisit Patent Owner's Motion below. *See infra* § IV. The joint list does not identify Petitioner's objection to Patent Owner's oral hearing arguments, which the Final Written Decision also dismissed as moot. *See* Final Dec. 36. Because the Federal Circuit vacated our decision, we revisit Petitioner's objection below. The Final Written Decision also addressed Patent Owner's objections to Petitioner's demonstrative slide 53. *See id.* at 35–36 (sustaining Patent Owner's objections). We see no reason to disturb our prior ruling sustaining Patent Owner's objection to Petitioner's demonstrative slide 53. Accordingly, we have not considered Petitioner's demonstrative slide 53 in reaching this Decision on Remand.

filed December 8, 2003. Ex. 1001, codes (22), (54), (63). The '792 patent issued on June 25, 2013. *Id.* at code (45).

The '792 patent concerns methods of generating, distributing, and using a multimedia file that includes a series of encoded video frames along with two separate indexes to the encoded video frames. *Id.* at code (57). The first index “includes information indicative of the location within the file and characteristics of each encoded video frame,” and the separate second index “includes information indicative of the location within the file of a subset of the encoded video frames.” *Id.* at 1:48–53.

The '792 patent explains that multimedia files “can be structured to be compliant with the Resource Interchange File Format (‘RIFF file format’), defined by Microsoft Corporation,” typically comprising a “RIFF header,” identifying the file, followed by various “chunks” and “lists.” *Id.* at 5:33–50. An Audio-Video Interleave (“AVI”) file is a RIFF file that “include[s] various chunks and lists with defined identifiers that contain multimedia data in particular formats.” *Id.* at 5:51–55; 6:26–36 (listing a file header chunk (hdr1), a metadata chunk (DXDT), a junk chunk, a movie chunk (“movi”), and an index chunk (“idx1”). In order to “enable rapid location of a specific video frame,” the '792 patent provides a second “*index*” chunk that, like idx1, can be used to index data in the movi chunk corresponding to specific frames in an encoded video. *Id.* at 15:11–21.

Figure 2.3.2 of the '792 patent is reproduced below.

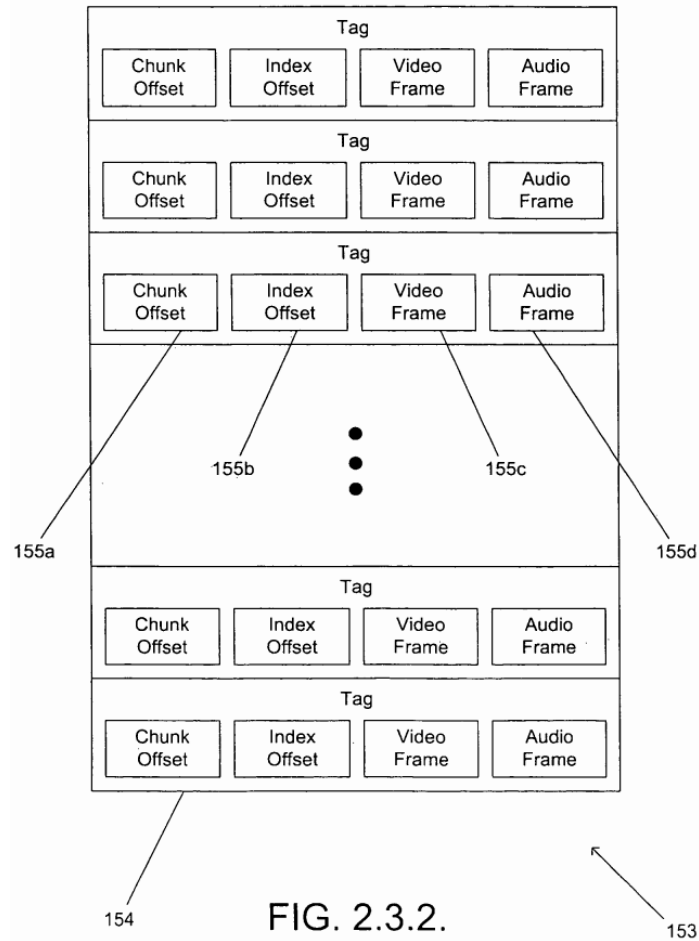


Figure 2.3.2 is a conceptual diagram of the *index* chunk, which includes a list of “tag” chunks, each of which “contains information that can be used to locate a particular encoded frame of video within a multimedia file.” *Id.* at 15:22–27. These tag chunks can be used to identify frames that are the start of specific scenes and/or chapters within a sequence of video frames. *Id.* at 15:38–40.

“The ‘index’ chunk can be differentiated from the ‘idx1’ chunk on the basis that the ‘index’ chunk does not include information concerning every ‘data’ chunk in the ‘movi’ list chunk,” only a subset of the data chunks. *Id.* at 15:15–19. This index chunk can be a separate chunk or can be included in

some other chunk *preceding* the movi chunk, e.g., the DXDT chunk or the junk chunk, to allow “a device to start playing and performing other functions, such as fast forward, rewind and scene skipping, *prior to* the downloading of the ‘idx1’ chunk,” which comes after the movi chunk in the multimedia file. *Id.* at 15:11–15, 16:26–36.

D. Challenged Claims

Claims 1, 9, and 15 are the independent claims challenged in this proceeding. Claim 1 is illustrative of the claimed subject matter and is reproduced below.

1. A decoder for decoding a multimedia file comprising at least one video track and at least one audio track, the decoder comprising:
 - a processor; and
 - memory having a multimedia file including:
 - a series of encoded video frames;
 - a first index that includes information indicative of the location within the file and characteristics of each encoded video frame; and
 - a separate second index that includes information indicative of the location within the file of a subset of the encoded video frames, the separate second index located prior to the series of encoded video frames and the first index, the first and second indexes enabling trick play functionality.

Ex. 1001, 51:31–45.

E. Prior Art and Instituted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1, 5, 8, 9, 13–15, 18, and 21–23 of the ’792 patent on the following grounds:

Claims Challenged	35 U.S.C. § ³	Reference(s)/Basis
1, 5, 8, 9, 13–15, 18, 21–23	103(a)	Zetts, ⁴ Kaku ⁵
5, 18, 21	103(a)	Zetts, Kaku, Seo ⁶

Pet. 16–82. Petitioner supports its challenge with two declarations by Clifford Reader, Ph.D., dated March 6, 2020 (Ex. 1003) and April 8, 2021 (Ex. 1023).

Patent Owner supports its arguments with a declaration by Chandrajit Bajaj, Ph.D., dated January 8, 2021 (Ex. 2005).

III. 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.

³ Although Petitioner asserts the Challenged Claims “are not entitled to a priority date before October 24, 2005” (Pet. 15), whether we use the December 8, 2003, filing date of the earliest-filed related application or the October 24, 2005, filing date of the ’792 patent, the effective filing date of the ’792 patent is before March 16, 2013, and, therefore, patentability is governed by the versions of 35 U.S.C. §§ 102 and 103 preceding the Leahy-Smith America Invents Act (“AIA”), Pub L. No. 112–29, 125 Stat. 284 (2011). We need not determine the precise effective filing date of the ’792 patent because this issue does not affect our consideration of the other issues before us.

⁴ U.S. Patent No. 7,212,726 B2, issued May 1, 2007 (Ex. 1004, “Zetts”).

⁵ U.S. Patent No. 6,671,408 B1, issued Dec. 30, 2003 (Ex. 1005, “Kaku”).

⁶ U.S. Patent No. 8,286,213 B2, issued Oct. 9, 2012 (Ex. 1006, “Seo”).

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. *Graham v. John Deere Co.*, 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*, 842 F.3d 1376, 1382 (Fed. Cir. 2016). The scope of the prior art includes all analogous art.

Donner Tech., LLC v. Pro Stage Gear, LLC, 979 F.3d 1353, 1359 (Fed. Cir. 2020).

Petitioner asserts that Zetts in combination with Kaku or in combination with Kaku and Seo would have rendered the subject matter of the Challenged Claims of the '792 patent obvious to one of ordinary skill in the art at the time of the invention. Pet. 16–82. We analyze the asserted grounds of unpatentability in accordance with these principles to determine whether Petitioner has met its burden to demonstrate by a preponderance of the evidence that the Challenged Claims are unpatentable.

B. Level of Ordinary Skill in the Art

In the Final Written Decision, we stated the following:

Petitioner, supported by Dr. Reader's testimony, proposes that a person of ordinary skill in the art "would have had a bachelor's degree in electrical engineering, computer science, or a similar field with at least two years of experience in video playback and file formats," or "a master's degree in electrical engineering, computer science, or a similar field with a specialization in video playback and file formats." Pet. 21 (citing Ex. 1003 ¶¶ 131–133). Patent Owner does not propose any particular skill level in its Response. *See generally* PO Resp. In our institution decision, we adopted Petitioner's proposed level (Inst. Dec. 8), and do the same for the purposes of this Decision.

Final Dec. 8. Our finding as to the level of ordinary skill in the art was not disturbed on appeal and we see no reason to reach a different result on essentially the same record. Thus, we again find that one of ordinary skill in the art at the time of the invention "would have had a bachelor's degree in electrical engineering, computer science, or a similar field with at least two years of experience in video playback and file formats," or "a master's

degree in electrical engineering, computer science, or a similar field with a specialization in video playback and file formats.” *Id.*

C. 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.

Petitioner proposes constructions for three claim terms, including the term “trick play functionality.” Pet. 22–23. Patent Owner argues for construction of the related claim limitation “the first and second indexes enabling trick play functionality.” *See* PO Resp. 41–49.

1. “the first and second indexes enabling trick play functionality”

In our Institution Decision, we preliminarily determined that this claim limitation “allows for trick play to be accomplished using either of the indexes for each trick play function” and that “the Specification is permissive as to whether both indexes have to be used *together* or *separately* for accomplishing trick-play functionality.” *See* Inst. Dec. 23, 25. In the Final Written Decision, we determined that it was not necessary to provide an express interpretation of this or any other claim term “because construction of the proposed terms does not impact our determination that

Petitioner has not shown that one of the prior art references is analogous to the claimed invention.” Final Dec. 9. On remand, the construction of this claim is an issue that must be decided to reach a conclusion on the patentability of the Challenged Claims of the ’792 patent.

Patent Owner argues that “the claims require trick play functionality that utilizes both the first and the second indexes,” that is, “the claims require that the two indexes *together* enable trick-play functionality.” PO Resp. 41–42 (emphasis added) (citing Pet. 50; Ex. 1001, claims 1, 9, 15; Ex. 2005 ¶ 92). Patent Owner argues its interpretation is supported by the Specification, which discloses various embodiments that utilize both indexes to enable trick play functionality. *Id.* at 42. For example, Patent Owner points out that, in one embodiment, the decoder first utilizes the “index chunk” to narrow the location of the requested frame between two of the frames indexed by the second, abridged index, and then utilizes the “idx1” chunk to refine the search and locate the particular frame desired. *Id.* (citing Ex. 1001, 49:7–29, Figs. 4.0.1, 4.0.2; Ex. 2005 ¶ 93).

In another embodiment highlighted by Patent Owner, the information within the “index chunk” can be used to locate the “associated information” of the video within the “idx1” chunk. *Id.* at 42–43 (citing Ex. 1001, 48:50–55; Ex. 2005 ¶ 94). Citing Dr. Bajaj’s testimony, Patent Owner further argues that each indexed frame in the abridged index has a “tag chunk,” which in turn contains various information associated with the indexed frame, such as information that can be used to locate information about a particular video frame in the idx1 chunk. *Id.* at 44 (citing Ex. 1001, 15:57–61, Fig. 2.3.2 (reproduced above); Ex. 2005 ¶¶ 95–96).

Patent Owner argues that “its construction is no narrower than the construction provisionally adopted by the Board,” and that “[t]he two constructions differ, but one is not broader or narrower than the other.” PO Resp. 46–47 (citing Ex. 2005 ¶ 98). According to Dr. Bajaj and Patent Owner, the Specification “does not provide any teaching that the first index alone enables trick play functionality,” and “a [person of ordinary skill in the art] would understand from the Specification that the first index enabling trick play functionality was not a focus of the inventive system.” *Id.* at 47–48 (citing Ex. 2005 ¶¶ 99–101).

Patent Owner further contends that the claims “require a memory containing a multimedia file that includes both the first and second indexes,” and in that situation, “the two indexes are complimentary and better facilitate trick play functionality together.” *Id.* at 48. And because the claims require a second index that is located prior to the first index and the dependent claims recite functionalities that the second index must perform alone, Patent Owner argues, “the abridged or second index lies at the heart of each of the claims.” *Id.* at 48–49.

Petitioner responds that Patent Owner’s construction requires inserting a new limitation that “the two indexes *together* enable trick play functionality,” whereas the claims allow the first and second indexes to enable trick play *separately*. Pet. Reply 20. Petitioner asserts that dependent claim 22 requires enabling trick play separately but Patent Owner’s proposal would exclude claim 22 and its embodiments by requiring that the first and second indexes must enable trick play together. *Id.* (citing Ex. 1001, 54:16–18).

Referring to Figure 2.3.2 (reproduced above), Petitioner argues that the tag for each indexed frame includes a “chunk offset” that “can be used to locate . . . the particular encoded video frame” by providing the location of the frame “relative to the start of the ‘movi’ list chunk.” *Id.* at 20–21 (citing Ex. 1001, 15:50–56). Petitioner contends that the Specification “describes an embodiment for locating the closest preceding video frame, where the ‘index chunk’ (the second index) provides ‘information concerning the location of the encoded video frame . . . within the multimedia file.’” *Id.* at 21 (citing Ex. 1001, 48:43–50). Petitioner further points to dependent claims 4 and 19 as additional support for its interpretation. *Id.* at 22 (citing Ex. 1001, 51:62–67, 54:3–6). Petitioner also argues that Patent Owner’s construction excludes some of the disclosed embodiments, including an embodiment where the second index enables trick play by itself. *Id.* at 22–23 (citing Ex. 1001, 48:43–50).

Patent Owner responds that “[i]t is undisputed that the ’792 [patent’s] specification does not provide any teaching that the first index alone enables trick play functionality,” and therefore, Petitioner’s construction is unsupported. PO Sur-reply 14–15. Patent Owner argues that “the *only* role the first index has with respect to trick play functionality in the [’792 patent specification] is when working together with the second index, as reflected in the claims.” *Id.* at 15. Patent Owner contends that none of the embodiments are excluded because the claims are open-ended, and thus, the second index may also enable certain trick play functionality. *Id.* at 16 (citing Ex. 1001, 15:37–40; 16:26–36; 48:31–37; 49:24–29). Patent Owner further contends claim 22 is “mostly irrelevant to the question-at-hand” because the language in claim 22 pertains to a different clause than the

recitation of enabling trick play. *Id.* at 16–17 (citing Ex. 1001, claims 15, 22). Patent Owner argues dependent claim 4, which recites the use of “tags,” is not relevant because Patent Owner’s construction does not require any tags. *Id.* at 17. Likewise, Patent Owner contends that claim 19’s requirement that each reference in the second index also includes a reference to the first index relates to details about how the two indexes may work together and therefore does not conflict with Patent Owner’s proposed construction for the trick play limitation. *Id.*

We have determined previously that a more reasonable construction of this claim limitation is that the first and second indexes *both* enable trick play functionality, without further requiring that both indexes must actually be used together to perform trick play functionality. Inst. Dec. 23–26. Our interpretation allows for trick play to be accomplished using either of the indexes individually for trick play functionality, as well as allowing for trick play to be accomplished by using both indexes together. *Id.* at 23, 25. As we explained, the types of trick play functionality listed in the Specification include functions such as fast forward, rewind, and scene skipping, and there is no reason to read the claim narrowly such that each instance of those functions would necessarily require the use of both indexes together (*id.* at 23 (citing Ex. 1001, 52:12–14)), especially where the Specification discloses an embodiment that enables trick play functionality using the second index *without* the first index (*id.* at 25 (citing Ex. 1001, 16:26–30)). For the reasons discussed below, we maintain our preliminary claim construction.

“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. Taking claim 1 as illustrative, for example, it is directed to a decoder that comprises a processor and a memory having a multimedia file. The multimedia file has a series of encoded video frames and two indexes. Each index includes information indicative of the location within the file of either each encoded video frame (first index) or a subset of the encoded video frames (second index).⁷ The last clause of claim 1 recites “the first and second indexes enabling trick play functionality.” Based on the use of the conjunction “and,” this last clause specifically requires that *both* indexes, i.e., *each* of the two indexes (the first and the second), enable trick play functionality. Nothing in the claim language, however, specifically states or suggests that to perform a trick play function, both indexes must actually be used *together*. Rather, the claim language requires the indexes to merely *enable* trick play functionality.⁸

⁷ Claim 1 recites other details regarding the indexes as well, including that the second index is located prior to the encoded video frames and first index.

⁸ Although we recognize and agree with Petitioner that claims 4 and 19 add additional limitations as to how the first and second indexes work together, we do not find that they shed light on the specific claim construction issue before us. *See, e.g.*, Pet. Reply 22 (discussing claims 4 and 19). We do, however, agree with Petitioner that claim 22 is informative to some degree because claim 22 (which depends from claim 15, which in turn is similar to claim 1 and also recites “the first and second indexes enabling trick play functionality”) recites that “the processor is configured to locate and playback the sequence of encoded video frame *without receiving the complete index*,” i.e., the first index. Ex. 1001, 54:16–18 (emphasis added). And, as discussed further herein, the Specification explains that the way in

Fundamentally, Patent Owner's interpretation and its argument focus on *how* the indexes are *used*, i.e., together, whereas the claim requires only that the indexes *enable* trick play functionality.

Turning to the Specification, "the single best guide to the meaning of a disputed term" (*Phillips*, 415 F.3d at 1315), we find that it discloses that the first and second indexes can *each enable* trick play individually and separately. Also, we do not agree with Patent Owner that the Specification compels a contrary interpretation where both indexes must be used together to enable trick play functionality.

In asserting that both indexes must be used together to enable trick play functionality, Patent Owner cites to the following portion of the Specification:

When a next 'tag' chunk can be located from within the 'index' chunk, the process compares (143e) the positions of the encoded video frame referenced by the next 'tag' chunk and the desired video chunk. A decision (143f) is then made based upon whether the desired video frame lies between the encoded video frames in the sequence referenced by the current and next 'tag' chunks. If the desired video frame lies between the referenced frames, then the position of the video frame and any audio referenced by the current 'tag' chunk within the multimedia file are returned (143g) by the process.

When the desired video frame is not located between the frames referenced by the current and next 'tag' chunks, then the next 'tag' chunk becomes (143h) the current 'tag' chunk. The process repeats (143a) until the condition that the desired video frame be located between the encoded video frames referenced by the current and next 'tag' chunks is satisfied (143g) or all of the 'tag' chunks have been inspected (143d).

which each index enables trick play functionality is by locating and playing the sequence of encoded video frames.

In further embodiments, the location of a desired frame can be further refined by using the references within the ‘index’ chunk to the corresponding information within the ‘idx1’ chunk to search for a reference within the ‘idx1’ chunk to a specifically desired encoded video frame that is not referenced in the ‘index’ chunk.

PO Resp. 42 (citing Ex. 1001, 49:7–29, Figs. 4.0.1, 4.0.2; Ex. 2005 ¶ 93).

Patent Owner argues that this portion of the Specification shows that “the decoder first utilizes the ‘index chunk’ (*i.e.*, the second, abridged index) to narrow the location of the requested frame between two of the frames indexed by the second, abridged index,” and then “utilizes the ‘[idx1] chunk’ (*i.e.*, the first, complete index) to refine the search and locate the particular frame desired.”⁹ *Id.*

We view this disclosure differently than Patent Owner. First, the disclosure makes clear that “[i]f the desired video frame lies between the referenced frames, then the position of the video frame and any audio referenced by the *current ‘tag’ chunk* within the multimedia file *are returned* (143g) by the process.” Ex. 1001, 49:13–16 (emphasis added), Fig. 4.0.2. That is, at times, the search may simply return the position of the video frame utilizing only the index chunk (second index), without utilizing the idx1 chunk (first index). Second, in the above-disclosure, when the idx1 chunk is used (in the last-quoted paragraph), the Specification prefaces that paragraph by referring to “further embodiments,” reflecting that the use of the idx1 chunk (first index) in combination with the index chunk (second index) is a distinct embodiment from the previously described embodiment

⁹ As Patent Owner’s argument reflects, the critical aspect that allows the indexes to enable trick play functionality is that they provide *location information* regarding the encoded frames.

that uses only the index chunk (second index) to identify the location of the desired frame. *See, e.g., id.* at 49:24–25 (stating that “[i]n *further embodiments*, the location of a desired frame *can be further* refined” using the *idx1* chunk (first index)). This portion of the Specification therefore does not mandate the use of both indexes to locate the desired frame (i.e., the critical information needed for trick play functionality).

Moreover, the Specification’s description of Figure 4.0.1., a figure cited by Patent Owner, states that “[o]nce the closest video frame has been located, *information within the ‘tag’ chunk can be used to provide (641c) information concerning the location of the encoded video frame referenced by the ‘tag’ chunk within the multimedia file.*” Ex. 1001, 48:46–50 (emphases added) (referring to Fig. 4.0.1). This portion also suggests that information from the tag chunk itself (i.e., information from the second index) may suffice to determine the location of the video frame being sought, or at least a video frame closest to the frame being sought, without having to reference the *idx1* chunk (first index).

Next, Patent Owner cites to another portion of the Specification of the ’792 patent detailing the structure of the “tag” chunk:

In many embodiments, the index offset 155*b* can be used to locate information about a particular video frame in the ‘*idx1*’ chunk. In one embodiment, the index offset 155*b* is the location of the relevant piece of information relative to the beginning of the ‘*idx1*’ chunk.

PO Resp. 44 (citing Ex. 1001, 15:57–61; Ex. 2005 ¶¶ 95, 96). However, Patent Owner’s citation omits the immediately preceding paragraph, which specifically provides that the chunk offset portion of the tag chunk *alone* may suffice to locate a particular video frame without having to reference the *idx1* chunk (first index). *See* Ex. 1001, 15:50–53 (“In many

embodiments, the *chunk offset* 155a can be used to locate the ‘data’ chunks within the multimedia file corresponding to the particular encoded video frame and/or accompanying audio track(s) referenced by the ‘tag’ chunk.” (emphasis added)); *see also id.* at 16:17–20 (“In many embodiments of ‘tag’ chunks in accordance with the present invention, *various pieces of information* are used to identify the ‘data’ chunk within a multimedia file corresponding to a specific encoded video frame.” (emphasis added)).

As reflected above, the Specification provides various embodiments in which the second index alone may provide the location information necessary to enable trick play functionality or the second index in combination with further refinement by the first index may provide the location information to enable trick play functionality. In contrast to Patent Owner’s position, we find that one of ordinary skill in the art would have understood from these disclosures that trick play functionality is enabled by the second index alone as well as the second index in combination with the first index. In other words, contrary to Patent Owner’s position, the Specification does not require the *use* of both indexes *together* to enable trick play functionality.

The irony of Patent Owner’s position on claim construction is that this point is undisputed and effectively mandates our rejection of Patent Owner’s proposed construction. *See* PO Sur-reply 15 (“As explained, the ’792 [patent] teaches two aspects of its embodiments: *one aspect* wherein the second index *alone* enables trick play functionality, *another* where the two indexes *together* enable trick play functionality.” (emphases added)). As reflected in the parenthetical quote, Patent Owner acknowledges the breadth of the Specification. Yet, Patent Owner contends that its proposed

construction “does not ‘exclude’ the second index also enabling certain trick play functionality” allegedly because “[t]he claims are open-ended.” *Id.* at 16. We disagree. If the claim limitation at issue is construed as Patent Owner proposes—to require that the first and second index be used *together* to enable trick play functionality—an embodiment that *only uses* the second index to enable trick play functionality would not be within the scope of the claim regardless of whether it is open-ended because the embodiment would not satisfy the alleged requirement of using the first index together with the second. Thus, we reject Patent Owner’s attempt to read the claim narrowly to require that both indexes be used *together* to enable trick play on the one hand while acknowledging that the Specification discloses embodiments directed to the same trick play functionality that are not as limited and which clearly show that the second index *alone* can enable trick play functionality on the other hand. *See, e.g., Vehicle IP, LLC v. AT&T Mobility, LLC*, 594 Fed. Appx. 636, 643 (Fed. Cir. 2014) (where the specification provided that “way points may be used as intermediate points,” it was error to limit the claim term “way points” to intermediate points to the exclusion of final destinations).

Along the same lines, Patent Owner fails to acknowledge that its proposed narrower construction would impede a purported benefit of the claimed invention. *See* Ex. 1001, 16:26–30 (“Including a chunk containing index information before the ‘movi’ list chunk can enable a device to start playing and performing other functions, such as fast forward, rewind and scene skipping, *prior to the downloading* of the ‘idx1’ chunk.” (emphasis added)); *see also id.* at claim 22 (“the processor is configured to locate and

playback the sequence of encoded video frame without receiving the complete index”).

Turning our consideration to the Specification’s disclosure regarding the first index, we disagree with Patent Owner that the Specification does not provide any teaching that the first index *alone* enables trick play functionality. PO Resp. 47–49 (citing Ex. 2005 ¶¶ 99–101). We find that the use of idx1 in the AVI file format to enable trick play was well known in the art at the time of the invention. *See, e.g.*, Ex. 1008 ¶ 4 (“The index chunk is used for random access into the file.”); Ex. 1009, 763 (“This list indexes the location of each frame of video stored inside the file, which is necessary for nonlinear applications to randomly reference any point inside the video segment.”), Fig. 4; Ex. 1007, Fig. 10; Ex. 1003 ¶¶ 43–49; Pet. Reply 24. The ’792 patent Specification acknowledges as much. *See* Ex. 1001, 22:19–22 (explaining that the idx1 chunk “can be used to index the ‘data’ chunks in the ‘movi’ list chunk”), 48:33–37. We therefore do not agree with Dr. Bajaj and Patent Owner that an ordinarily skilled artisan would have understood the claim language as referring “to the first and second indexes working together, not independently,” (PO Resp. 48) or that “the *only* role the first index has with respect to trick play functionality in the [’792 patent] is when working together with the second index” (PO Sur-reply 15).

Turning to the prosecution history, we do not agree with Patent Owner that it “confirm[s] that both indexes together should enable trick play functionality.” PO Resp. 49. First, Patent Owner makes this allegation without pointing to anything specific from the file history in Patent Owner’s discussion of claim construction. *See id.* at 40–49. Second, our review of

the file history did not evidence any specific definition, disclaimer, discussion or other correspondence that sheds light on the specific meaning of the disputed limitation. Thus, we do not find the prosecution history informative on this specific issue of claim construction.

Turning to extrinsic evidence, although we have considered Dr. Bajaj's testimony, we find it "less significant than the intrinsic record in determining the legally operative meaning of" the claim limitation at issue. *Phillips*, 415 F.3d at 1317 (internal quotations and citations omitted). In particular, we are cognizant of the Federal Circuit's guidance that we "should discount any expert testimony that is clearly at odds with the claim construction mandated by . . . the written description." *Id.* at 1318 (internal quotation and citation omitted). In this instance, we find that Dr. Bajaj's testimony is at odds with the description of two indexes provided in the '792 patent because, for example, the Specification provides examples that rely on using both indexes to perform trick play functionality as well as examples that rely on the second index (without the first) to perform trick play functionality. And, as discussed above, we recognize that using the first index to perform trick play functionality was well-known in the art at the time of the invention. *See* Pet. Reply 24 (citing Ex. 1022, 50:7–22, 154:14–25, 155:13–156:17, 157:10–22, 158:7–21). Even if we accept Dr. Bajaj's testimony that "the first index enabling trick play functionality was not a focus of the inventive system," that is not the standard by which we construe claim limitations. There is nothing uncommon about an applicant drafting a claim that covers her invention as well as subject matter already known in the art. Not being a focus of the inventive system does not mean that one of ordinary skill in the art would not have recognized that

using the first index alone to enable trick play functionality was known nor does it mean that the Specification's description of using the second index alone to enable trick play functionality should be ignored. For these reasons, we give Dr. Bajaj's testimony less weight than the Specification's explicit teachings about the second index and what was well-known in the art as to the first index.

For the reasons explained above, the breadth of the Specification and the embodiments disclosed therein confirm our understanding of plain and ordinary meaning of the claim language that both indexes enable trick play functionality, but that they are not required to be *used together* to do so.

2. *Remaining Claim Terms*

We determine that it is not necessary to explicitly construe any other term or phrase, and we give all remaining claim terms their ordinary and customary meaning. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

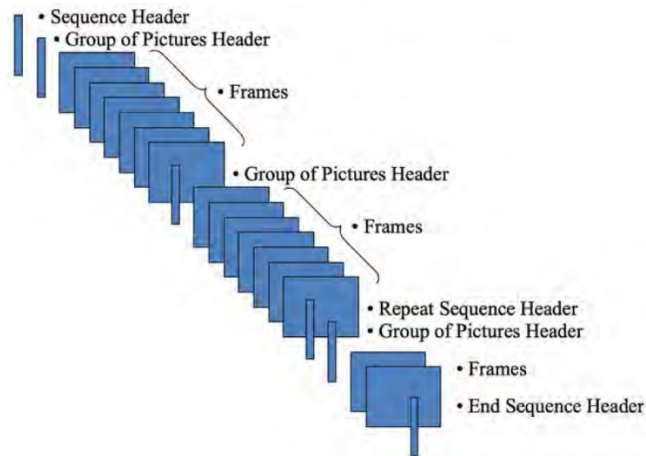
D. *Overview of the Asserted Prior Art*

1. *Zetts (Ex. 1004)*

Zetts discloses a method for automatic insertion of an “offset table” within a previously encoded MPEG¹⁰ video file allowing for random access of each individual video frame using a “play-from-offset” mode. Ex. 1004,

¹⁰ “MPEG” refers to the Motion Picture Experts Group audiovisual coding standards. *See* Ex. 1003 ¶ 5.

code (57), 3:29–33. Zetts explains that an end-user using an MPEG player streaming a video file digitized and compressed using the MPEG standard may be provided with “thumbnails” corresponding to major scene transition and may choose to play the video by selecting any thumbnail. *Id.* at 2:3–16. The MPEG player then “begins to play the video from the timecode associated with the thumbnail” by “sending to the streaming video server a play-from-offset request.” *Id.* at 2:16–20. Zetts further teaches that the MPEG standard “permits a video to be randomly accessed only at the Group of Pictures (GOP) header level.” *Id.* at 2:20–22. Dr. Reader explains the MPEG video standard with the illustration reproduced below.



The above illustration shows the hierarchical structure of MPEG, comprising a “Sequence Layer with a header that provides application-specific information,” a “Group of Pictures Layer [that] provides an access point for random access and trick play,” as well as a “Picture Layer [that] comprises the coded video frames.” Ex. 1003 ¶ 35. GOP is a sequence of frames comprising I-frames (intracoded), P-frames (forward-predicted) and B-frames (bi-directional predicted), with the first picture in a GOP being an I-frame. *Id.* ¶ 28.

Zetts explains that “in order to start playing randomly, within an MPEG file, the player must decode . . . a GOP header to begin decoding on an ‘I’ frame.” Ex. 1004, 2:22–28. Zetts’s method “creates a compressed GOP offset table having an entry for each GOP header of every video packet of the MPEG video file, and modifies the MPEG video file by inserting the compressed GOP offset table before the MPEG video file.” *Id.* at 3:28–37; *see also id.* at 4:64–5:10 (explaining, in further detail, how the GOP offset table allows for “precise play-from-offset capability”). Zetts teaches that the embedded GOP offset table becomes a permanent part of the video file, and “[w]hen the file is decoded by the associated MPEG player, the GOP offset table is extracted and stored in memory for the duration of time the file remains the active video.” *Id.* at 6:4–6, 6:19–21. “When random jumps in video location are commanded by the user, the player locates the nearest preceding GOP header employing an efficient binary search that references the timecode stored in the GOP offset table,” and the video is played from that point. *Id.* at 6:6–16.

2. *Kaku (Ex. 1005)*

Kaku relates to a “motion image reproducing apparatus” that discloses “compressed image data accommodated in a desired AVI file,” and also

discloses the details of the AVI file format. *See* Ex. 1005, code (57), Fig. 2. Figure 2 of Kaku is reproduced below.

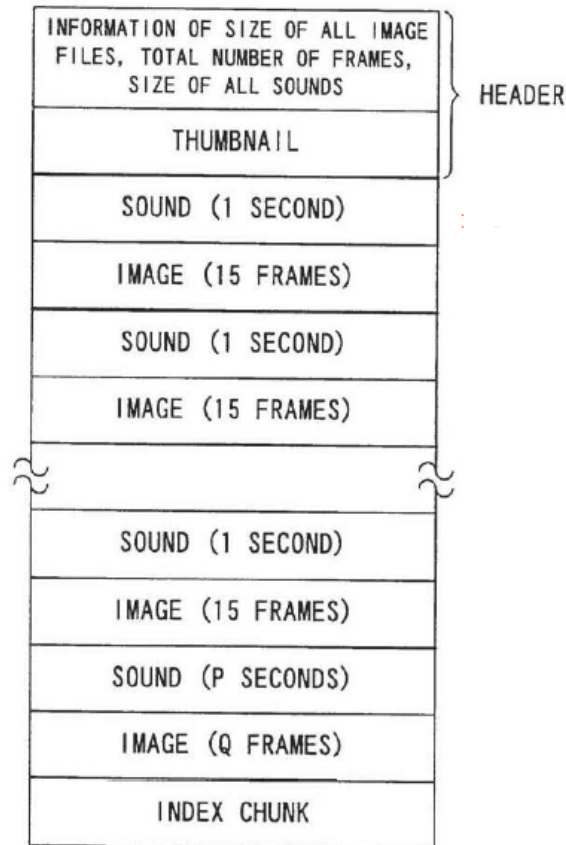


Figure 2, above, shows the structure of an AVI file. *Id.* at 3:41. Kaku discloses that “[t]he AVI file header is written with header information, such as a total file size, total number of frames and total sound sizes,” and “an index chunk provided at . . . last is written with beginning addresses of sound chunks and compressed image data beginning addresses of frames, i.e. index information.” *Id.* at 5:23–31.

3. *Seo (Ex. 1006)*

Seo discloses a video streaming method, where streaming “from a random point required by a user can be provided when the streaming has begun, and the random access function can be supported . . . even if the part

required by the user has not yet been transmitted to [a] receiving party.”

Ex. 1006, code (57). Figure 6 of Seo is reproduced below.

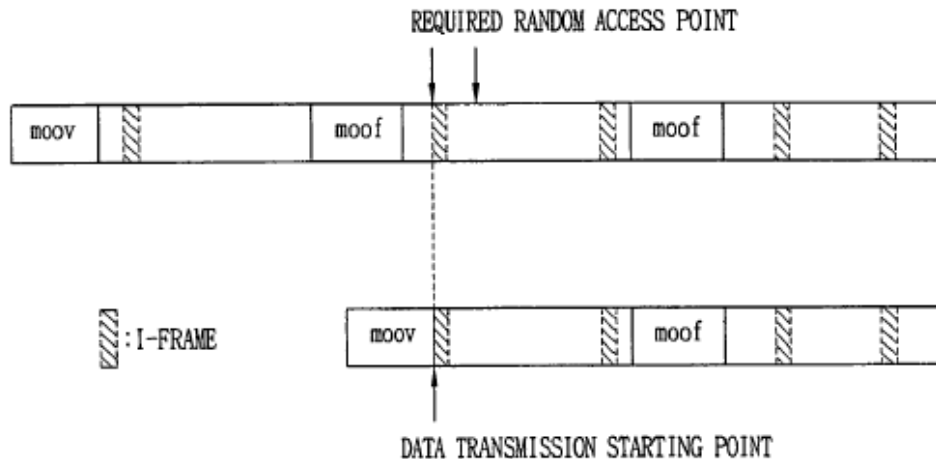


Figure 6 is a diagram showing Seo’s video streaming method (*id.* at 4:4–6), where “[w]hen the type of the random access point is *not* the I-frame, the transmitting server 20 determines whether or not the user wants to receive the data from an *exact* random access point,” and if not, “the transmitting server 20 detects an I-frame *closest* to the requested random access point . . . and then designates [for transmission] the media data sample including the I-frame” (*id.* at 6:36–48 (emphases added) (referring to Figs. 5–7)).

E. Obviousness over Zetts and Kaku

Petitioner contends that claims 1, 5, 8, 9, 13–15, 18, and 21–23 are unpatentable under 35 U.S.C. § 103 as obvious over Zetts and Kaku.

Pet. 24–76. For the reasons that follow, we are persuaded that Petitioner has established by a preponderance of the evidence, including Dr. Reader’s testimony, that claims 1, 5, 8, 9, 13–15, 18, and 21–23 are unpatentable under § 103(a) as obvious over Zetts and Kaku.

1. Analogous Art – Field of Endeavor

Before turning to Petitioner’s analysis of the claims, we address Patent Owner’s argument that Petitioner’s combination of Zetts and Kaku fails because Petitioner has not shown that Kaku is analogous art to the ’792 patent. PO Resp. 1–18; PO Sur-reply 1–6. In our Final Written Decision, we agreed with Patent Owner that Petitioner had not demonstrated by a preponderance of evidence that the ’792 patent and Kaku are in the same field of endeavor. Final Dec. 26. As discussed above, the Federal Circuit’s decision remands this factual question for our consideration.

a) Patent Owner’s Response

Patent Owner argues that “[n]either Petitioner nor Dr. Reader makes any attempt to demonstrate that Kaku is analogous to the ’792 patent,” and thus, “Petitioner has failed to satisfy its burden of demonstrating that Kaku is analogous.” PO Resp. 5 (noting that “the phrases ‘analogous art,’ ‘field of endeavor,’ and ‘problem’ are not even used in the Petition”). Applying the Federal Circuit’s two-part test, Patent Owner contends, “there is no reason to believe that Kaku is in the same field of endeavor as the ’792 patent or reasonably pertinent to the problem with which the [’792 patent’s] inventors were involved.” *Id.* at 5; *see id.* at 3–5 (citing *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004); *In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992); *Wang Labs., Inc. v. Toshiba Corp.*, 993 F.2d 858, 864–65 (Fed. Cir. 1993); *In re Klein*, 647 F.3d 1343, 1351–52 (Fed. Cir. 2011); *In re Oetiker*, 977 F.2d 1443, 1446 (Fed. Cir. 1992)).

Patent Owner contends that Kaku is not in the same field of endeavor as the ’792 patent because Kaku “is directed towards digital cameras that can also reproduce motion image data.” *Id.* at 5–7 (citing Ex. 1005, 1:6–11,

3:66–67, 8:51–52, Figs. 1, 7; Ex. 2005 ¶ 39). Patent Owner further contends that Kaku is specifically “concerned with digital cameras with a limited internal memory capacity.” *Id.* at 7 (citing Ex. 1005, 1:14–27, 1:30–34, 1:65–2:4; Ex. 2005 ¶ 40). Noting that Kaku is assigned to Sanyo Electric Company Limited, Patent Owner argues that Sanyo’s cameras of the time often had a small monitor typically used to view images recorded on the camera. *Id.* at 7–8 (citing Ex. 1005, 1:39; Ex. 2012, 1; Ex. 2013; Ex. 2014). Patent Owner further contends that “Kaku is primarily focused on Motion JPEG files, which were commonly used in cameras with a very limited memory and processing power.” *Id.* at 8 (quoting Ex. 2005 ¶ 42).

Patent Owner argues that the ’792 patent is not directed towards digital cameras or other motion image recording/reproducing apparatuses. *Id.* at 9. “Rather, the field of endeavor of the ’792 patent is facilitating trick play functionality in multimedia content that is streamed or downloaded over the internet.” *Id.* at 9–10 (quoting Ex. 2005 ¶ 43; citing Ex. 1001, 1:20–34, 4:61–5:27, 16:26–36; 48:28–49:29, Fig. 1; Ex. 1002, 726–27). Relying on Dr. Bajaj’s testimony, Patent Owner contends that a person of ordinary skill in the art would understand Kaku and the ’792 patent as having distinct fields of endeavor because “[t]here is . . . no indication that Kaku has anything to do with enabling trick play functionality, streamed content, or dual indexes.” *Id.* at 11 (citing Ex. 2005 ¶ 45).

b) Petitioner’s Reply

Petitioner responds that “[i]t is undisputed that Kaku teaches the AVI file format.” Pet. Reply 2 (citing PO Resp. 17, 24, 31). Petitioner contends:

Under Federal Circuit precedent, Kaku must be considered for its AVI teachings, which cannot be ignored even if Kaku were primarily directed to camera embodiments. Moreover, Kaku is

not so limited. Kaku teaches that, “although the embodiments were explained using a digital camera, it is needless to say that the invention is applicable to every electronic appliance to reproduce motion images.” Kaku includes embodiments directed to particular implementations of the AVI file format, e.g., the “data file.”

Id. at 3 (citing Ex. 1005, 2:28–39, 3:24–32, 11:57–61; Ex. 2006, 131:3–12).

Petitioner further contends that “[t]he Federal Circuit has rejected attempts to exclude art when it is referenced in the background of a patent.” *Id.*

(citing *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1238 (Fed. Cir. 2010)).

Petitioner argues that “the ’792 patent refers to AVI as prior art,” and

“[t]herefore, Kaku is in the same field of endeavor.” *Id.* at 3–4 (citing PO Resp. 10; Ex. 1001, 5:33–38, 5:51–6:17, 22:20–22; Ex. 2005 ¶ 26).

Petitioner further argues that “the ’792 patent broadly defines its scope as including ‘encoding . . . and decoding of multimedia files,’” and Kaku

teaches “encoding (e.g., ‘compressed’ image data) and decoding (e.g., ‘decompression’) of image data in AVI files.” *Id.* at 4 (citing Ex. 1005,

2:19–24; *Wyers*, 616 F.3d at 1238). Petitioner asserts that Dr. Bajaj

“disowned the opinions in his declaration regarding analogous art,” but

“acknowledged that ‘everything in the ’792 [patent] is encoded using AVI.’”

Id. (citing Ex. 1022, 145:18–146:18, 51:7–52:10).

c) Patent Owner’s Sur-Reply

Patent Owner responds that Petitioner’s burden of demonstrating that Kaku is analogous art is not met because, in spite of submitting two expert declarations, Petitioner offers no expert testimony in support of its position. PO Sur-reply 1. Patent Owner asserts that “neither Petitioner nor its expert state what they believe the field of endeavor is for either the ’792 [patent] or Kaku, nor does Petitioner dispute Patent Owner’s identification of the

respective fields of endeavor.” *Id.* at 2 (citing PO Resp. 6–11; Ex. 2005 ¶¶ 39–45). Patent Owner contends that Petitioner’s argument—that the ’792 patent’s reference to AVI makes Kaku in the same field of endeavor—misapprehends the operable legal test. *Id.* at 2–3 (citing *In re Clay*, 966 F.2d at 659).

d) The Federal Circuit’s Remand

As discussed briefly above, our determination as to the field of endeavor was the focus of the appeal to the Federal Circuit. *Netflix*, 80 F.4th at 1362. The Federal Circuit found that Petitioner identified *two* alternative theories for what it viewed as Kaku’s and the ’792 patent’s overlapping fields of endeavor—(1) AVI files; or (2) encoding and decoding multimedia files. *Id.* at 1360. The court reasoned that although Petitioner’s Reply brief did not formulaically articulate a field of endeavor using those exact words, it provides enough for us to understand Petitioner’s position as to the field. *Id.* The court explained that “even where a petitioner does not explicitly define a field of endeavor, its briefing may nonetheless present an argument on that issue when taken as a whole.” *Id.* The court further found fault with our analysis of the field of endeavor of the ’792 patent and of Kaku, and provided guidance on the determination of the field of endeavor for a given reference. *Id.* at 1359–61. The Federal Circuit remanded to allow us “to decide this factual question of whether Kaku is directed to the same field of endeavor as the patent-in-suit based on the arguments fairly presented by the parties, including [Petitioner’s] arguments that Kaku and the ’792 patent are both directed to AVI files and/or that they are both directed to the encoding and decoding of multimedia files.” *Id.* at 1361.

e) Our Analysis

Although we initially did not read the Petition and Petitioner’s Reply as articulating a field of endeavor, in light of the Federal Circuit’s determination that Petitioner has presented “arguments that Kaku and the ’792 patent are both directed to AVI files and/or that they are both directed to the encoding and decoding of multimedia files,” (*Netflix*, 80 F.4th at 1361), we now determine if Kaku is analogous art at least under one of those field of endeavors.

Petitioner argues that “the ’792 patent broadly defines its scope as including ‘encoding . . . and decoding of multimedia files.’” Pet. Reply 4. Petitioner also argues that Kaku teaches “encoding (e.g., ‘compressed’ image data) and decoding (e.g., ‘decompression’) of image data in AVI files.” *Id.* (citing Ex. 1005, 2:19–24). In light of the Federal Circuit’s determination, we are persuaded that both the ’792 patent and Kaku are directed to the encoding and decoding of multimedia files.¹¹

The ’792 patent Abstract states that “[a] multimedia file and methods of generating, distributing and using the multimedia file are described.” Ex. 1001, code (57). The Specification discloses that “[t]he present invention relates generally to encoding, transmission and decoding of multimedia files.” *Id.* at 1:20–21. It further discloses that “[e]mbodiments

¹¹ The court found that we erred by “requir[ing] the use of magic words” and imposing a “strict requirement” on Petitioner as to its arguments for a field of endeavor. *Netflix*, 80 F.4th at 1361–62. Instead, the court’s guidance requires that we look to Petitioner’s briefing as a whole to see if Petitioner has presented any argument that *generally* relates to that issue. *Id.* at 1360. Reviewing Petitioner’s briefing per the court’s guidance, we determine that Petitioner has done enough to link the field of endeavor of the ’792 patent to that of Kaku.

of the present invention include multimedia files and systems for generating, distributing and decoding multimedia files.” *Id.* at 1:38–40. The ’792 patent is therefore directed to the encoding and decoding of multimedia files.

Kaku “relates to motion image recording apparatuses and, more particularly, to a motion image reproducing apparatus which is applicable to a digital camera for reproducing motion image data recorded on a recording medium.” Ex. 1005, 1:7–12. Kaku discloses that “the image data is compressed data having been compressed according to a predetermined scheme,” and that “the predetermined scheme is preferably JPEG.” *Id.* at 2:19–26. Specifically, Kaku teaches the workings of the JPEG codec and in one mode, teaches reading an AVI file and storing image data in JPEG format. *Id.* at code (57), 5:23–52, Figs. 1–4; Pet. 18. Further, as Petitioner points out, Kaku states that “although the embodiments were explained using a digital camera, it is needless to say that the invention is applicable to every electronic appliance to reproduce motion images.” Ex. 1005, 11:57–61; Pet. Reply 3. We thus agree with Petitioner that Kaku is also directed to the encoding and decoding of multimedia files.

Patent Owner argues that “Kaku does not, in fact, ‘teach’ encoding and decoding” and “[n]o aspect of Kaku depends on or requires encoding and decoding.” PO Sur-reply 5. According to Patent Owner, “Kaku may simply *use* a compressed video in a system that otherwise has nothing to do with compression or decompression and has no bearing upon the problem Kaku is trying to solve.” *Id.* at 6. But the Federal Circuit stated that “the field-of-endeavor test does not look to the problem that the patent purports to address,” and is also “not limited to the specific point of novelty, the narrowest possible conception of the field, or the particular focus within a

given field.” *Netflix*, 80 F.4th at 1359. Instead, the “analogous art test merely gauges whether prior art is ‘too remote’ to be treated as analogous art.” *Id.* (citations omitted). In light of the Federal Circuit’s guidance, we find that Petitioner has demonstrated by a preponderance of evidence that the ’792 patent and Kaku are in the same field of endeavor.¹²

2. Independent Claim 1

- a) “A decoder for decoding a multimedia file comprising at least one video track and at least one audio track, the decoder comprising:”

Petitioner contends that the combination of Zetts and Kaku teaches or suggests a decoder for decoding a multimedia file. Pet. 33. Petitioner argues that Zetts teaches an MPEG decoder for decoding a multimedia file. *Id.* at 33–34 (citing Ex. 1004, 3:13–21, 5:6–10, 5:48–59, Figs. 1, 2). Petitioner further contends that Zetts teaches a multimedia file containing audio and video streams or tracks. *Id.* at 37–38 (citing Ex. 1004, 2:13–28, 7:16–31; Ex. 1003 ¶¶ 163–165).

Petitioner asserts that Kaku also teaches video can be encoded and decoded according to coding standards such as MPEG, and therefore, teaches a decoder for decoding a multimedia video file. Pet. 35 (citing Ex. 1005, 9:7–25, 11:38–57, 1:14–18, 5:53–64, 6:43–54, 7:59–8:5, Fig. 1; Ex. 1003 ¶¶ 158, 159). Petitioner further asserts Kaku stores multimedia audio and video data in a multimedia AVI file commonly used to store

¹² Because we determine that both the ’792 patent and Kaku are directed to the encoding and decoding of multimedia files, we need not also determine whether the ’792 patent and Kaku are both directed to AVI, the second theory that the Federal Circuit found Petitioner to have presented as to the field of endeavor. *Netflix*, 80 F.4th at 1361.

multimedia in the form of audio and video. *Id.* at 35–36 (citing Ex. 1005, 5:31–40, 6:18–30, 6:58–7:5, Fig. 2; Ex. 1003 ¶ 160). Petitioner argues Kaku also teaches arranging the audio and video as a video track and a corresponding audio track, and therefore teaches playing back those tracks. *Id.* at 36–37 (citing Ex. 1005, 6:18–30, 8:58–9:48, Fig. 1; Ex. 1003 ¶¶ 161–162).

Patent Owner does not specifically respond to these arguments. *See generally* PO Resp. We find Petitioner’s arguments persuasive as to the preamble of claim 1 and supported on the complete record before us, and, therefore, we adopt them as our own findings. Accordingly, for the reasons explained by Petitioner, we find that the combination of Zetts and Kaku teaches the preamble of claim 1.

b) *“a processor; and memory having a multimedia file including:”*

Petitioner contends that the combination of Zetts and Kaku “teaches or suggests a decoder comprising a processor (e.g., CPU) and memory (e.g., storage, memory card) having a multimedia file.” Pet. 38 (citing Ex. 1004, 3:65–4:2; Ex. 1005, 4:61–5:8, 8:58–9:48; Ex. 1003 ¶¶ 166–167). Petitioner contends that Zetts discloses storing a multimedia file in memory on a streaming video server, Kaku teaches memory cards storing AVI files, and a person of ordinary skill in the art would have been motivated to implement the combined teachings using a computer with a processor and memory, where a multimedia file is stored in that memory. *Id.* at 38–39 (citing Ex. 1004, 4:64–5:10; 5:35–45; Ex. 1005, 4:61–5:8, 5:31–40, 6:58–7:4, 8:58–62; Ex. 1003 ¶¶ 168–170).

Patent Owner does not specifically respond to these arguments. *See generally* PO Resp. We find Petitioner’s arguments persuasive as to this limitation and supported on the complete record before us, and, therefore, we adopt them as our own findings. Accordingly, for the reasons explained by Petitioner, we find that the combination of Zetts and Kaku teaches this limitation.

c) “a series of encoded video frames;”

Petitioner contends the combination of Zetts and Kaku “teaches or suggests a multimedia file including a series of encoded video frames (e.g., MPEG-encoded video frames).” Pet. 39 (citing Ex. 1003 ¶¶ 171–173) (referring to Petitioner’s discussion in Pet. § VI.A.1). Petitioner argues that both Zetts and Kaku teach MPEG encoding and representing video as a series of frames organized into GOPs. *Id.* at 39–40 (citing 1004, 3:29–33, 3:48–59, 1:31–41, 2:12–57; Ex. 1005, code (57), 2:28–39, 3:24–32, 8:52–9:7, 9:25–35, 11:37–43; Ex. 1003 ¶¶ 171–173). According to Petitioner, it was well known in the art that MPEG standards encoded video as a series of encoded video frames, which would be included in a multimedia file. *Id.* at 40 (citing Ex. 1003 ¶ 173).

Patent Owner does not specifically respond to these arguments. *See generally* PO Resp. We find Petitioner’s arguments persuasive as to this limitation and supported on the complete record before us, and, therefore, we adopt them as our own findings. Accordingly, for the reasons explained by Petitioner, we find that the combination of Zetts and Kaku teaches this limitation.

d) “a first index that includes information indicative of the location within the file and characteristics of each encoded video frame;”

Petitioner contends that the combination of Zetts and Kaku “teaches or suggests a first index (e.g., index chunk) that includes information indicative of the location (e.g., address) within the file and characteristics of each encoded video frame.” Pet. 40 (citing Ex. 1003 ¶¶ 174–177).

Petitioner specifically contends that Kaku teaches an index chunk at the end of the file that provides the beginning addresses of frames, i.e., index information used to read and access desired frames from the multimedia file. *Id.* at 40–41 (citing Ex. 1005, 5:22–30, 5:31–40, 7:5–24, 8:62–9:7; Ex. 1003 ¶ 175). Petitioner argues that a person of ordinary skill in the art would have understood that Kaku teaches the index “idx1” chunk from the AVI file format, which was widely known to be located at the end of AVI files and to contain the location within the AVI file of each encoded video frame. *Id.* at 41 (citing Ex. 1003 ¶ 175; Pet. § I.C). Petitioner further argues that “because Kaku teaches that the [idx1] index references both video frames and sound chunks, it would have been obvious for the index to include information indicative of characteristics of each encoded video frame, including its type of data—whether the chunk contains audio or video.” *Id.* (citing Ex. 1005, 5:22–30; Ex. 1003 ¶ 176).

Petitioner asserts that the ’792 patent also relies on the idx1 chunk from the AVI file format as the recited first index and that the idx1 chunk identifies characteristics including the type of data, confirming that Kaku teaches the claimed limitation. *Id.* at 42 (Ex. 1001, 22:18–28; Ex. 1003 ¶ 177).

Patent Owner responds the claim language expressly recites the plural form of the word “characteristic,” and the ’792 patent Specification discloses that the first index includes multiple characteristics. PO Resp. 50–53 (citing Ex. 1001, 20:11–14, 22:25–27, claims 1, 9; Ex. 2005 ¶¶ 104–107). Patent Owner further contends that both experts agree that the ’792 patent distinguishes between the plural and singular forms of the word “characteristics.” *Id.* at 53–55 (citing Ex. 1003 ¶¶ 135–143; Ex. 2006, 69:22–70:6, 1:21–72:2, 3:20–24, 75:21–76:6, 74:2–75:1; Ex. 2005).

Patent Owner contends that Petitioner identifies only a single characteristic, namely the type of data (i.e., audio or video) that would have been obvious to include in Kaku’s index. *Id.* at 55–56 (citing Ex. 1005, 5:22–30; Ex. 1003 ¶ 176; Ex. 2005 ¶¶ 108–110). Patent Owner also contends that Petitioner fails to present any colorable reason why a person of ordinary skill in the art would have been motivated to include “type of data” for each frame in Kaku’s index. *Id.* at 56–57 (citing Pet. 42; Ex. 1001, 22:25–28). Patent Owner argues that Petitioner’s use of the ’792 patent’s “own disclosed index against the invention is impermissible,” and Petitioner has not explained why it would have been obvious for a person of ordinary skill in the art to include this information in Kaku’s index. *Id.* at 57–58 (citing Ex. 2005 ¶¶ 111–112).

Petitioner responds that Kaku teaches AVI idx1, which includes information indicative of characteristics of each encoded frame, and the field for type of data is information that indicates multiple characteristics. Pet. Reply 14–15 (citing Pet. 41; Ex. 1003 ¶ 175; Ex. 1021; Ex. 1023 ¶ 5; Exs. 2015–2017). Petitioner asserts that Kaku teaches “the traditional index chunk in the AVI file format,” and in the standard idx1, “the type of data is

stored in an ID field using a 4-byte code in the form ‘xxyy,’ where ‘xx’ is the stream number and ‘yy’ is a two-character code.” *Id.* at 15 (citing PO Resp. 24; Ex. 2005 ¶ 66; Ex. 2015, 4; Ex. 2016, 5; Ex. 1021, 2; Ex. 1023 ¶¶ 2–3).

Petitioner contends that Dr. Reader cited an example of idx1 “indicating audio data with ‘01wb’ and image data with ‘00dc.’” *Id.* at 16 (citing Ex. 1003 ¶¶ 48–49; Ex. 1007, 6:29–56, Figs. 9, 10). Petitioner therefore contends that “for AVI idx1, the field for the type of data is a 4-byte code that is information indicative of multiple characteristics of each frame, including (a) the stream number, (b) whether it is audio or video, and (c) whether the frame is compressed.” *Id.* at 16–17 (citing Ex. 1023 ¶ 4; Ex. 1007, 6:29–56; Ex. 2017, 3–4; Ex. 1021, 2; Ex. 2015, 4; Ex. 2016, 5). Petitioner contends that Patent Owner’s exhibits confirm that each idx1 entry also includes flags that indicate additional characteristics. *Id.* at 17–18 (citing Ex. 2016, 8; Ex. 1021, 2–3; Ex. 1023 ¶ 6).

In its Sur-reply, Patent Owner first argues that Petitioner’s Reply arguments are untimely. According to Patent Owner, the Petition relied solely upon the “type of data,” which identified a single characteristic: “whether the chunk is audio or visual,” and further argued that it would be obvious to *add* the “type of data” to Kaku’s index. PO Sur-reply 6–7 (citing Pet. 41). Patent Owner argues that Petitioner’s arguments changed from arguing it was obvious to include “type of data” to arguing “type of data” was inherently present. *Id.* at 7–8 (citing Pet. 41, Reply 14–15; Ex. 1003 ¶ 176; Ex. 1023 ¶ 2). Patent Owner further contends that Petitioner’s reliance on additional characteristics such as stream number and whether a frame is compressed is untimely. *Id.* at 8–10 (citing Ex. 1003 ¶¶ 46–49,

175; Ex. 1023 ¶¶ 2, 4, 6; Ex. 2006, 73:20–24). Patent Owner also faults Petitioner for relying on new evidence to support its contentions related to this limitation. *Id.* at 10–11 (Exs. 1021, 2015–2017; Ex. 1023 ¶¶ 2, 4, 6).

We are persuaded that Petitioner has sufficiently shown that Kaku teaches a first index that includes “characteristics” of each encoded video frame. Petitioner relies on Kaku’s teachings of the AVI file format and the AVI “idx1” chunk as teaching this limitation. Pet. 40–41 (citing Ex. 1005, 5:22–30, 5:31–40, 7:5–24, 8:62–9:7; Ex. 1003 ¶ 175). Kaku discloses that the AVI file format includes “an index chunk provided at a last [sic] is written with beginning addresses of sound chunks and compressed image data beginning addresses of frames, i.e., index information.” Ex. 1005, 5:26–28. Dr. Reader testifies that the index “idx1” chunk from the AVI file format “was widely known to be located at the end of the file and to contain the location within the AVI file of each encoded video frame.” Ex. 1003 ¶ 175 (citing *id.* § II.D.¹³).

We agree with Petitioner that the idx1 chunk taught by Kaku uses four-byte codes for the field for “the type of data.” Pet. 42 (citing Ex. 1003 ¶ 177). Dr. Reader cites examples of such four-byte codes from various references indicating, for example, audio data with “01wb” and image data with “00dc” codes. Ex. 1003 ¶¶ 48–49 (citing Ex. 1007, 2:40–43, 6:29–56, Figs. 9, 10; Ex. 1008 ¶ 4, Fig. 1, Ex. 1009, 763, Fig. 4). In his supplemental declaration, Dr. Reader further explains, based on the above-cited evidence

¹³ In his supplemental declaration, Dr. Reader states that the reference to § II.C in ¶ 175 of his original declaration was a typographical error where he intended to refer to § II.D, which describes the AVI file format. Ex. 1023 ¶ 2 n.1. We agree and consider Dr. Reader’s testimony from § II.D of his declaration in evaluating Petitioner’s contentions as to this limitation.

as well as Patent Owner’s own exhibits, that “for AVI idx1, the field for the type of data is a 4-byte code that is information indicative of multiple characteristics of each frame, including (a) the stream number, (b) whether it is audio or video, and (c) whether the frame is compressed.” Ex. 1023 ¶¶ 3–4 (citing also Ex. 2015, 4; Ex. 2016, 5); Pet. Reply 15–17 (citing Ex. 1021, 2; Ex. 2017, 3–4). We credit this testimony since it is consistent with the various cited references and discusses the well-known AVI file format.

Patent Owner contends that Petitioner’s argument detailing the four-byte code for the type of data found in the idx1 index of the AVI file format is an “improper[] new theory of unpatentability rooted in new evidence that should not be considered.” PO Sur-reply 6–10. According to Patent Owner, the Petition relied solely upon the “type of data,” which identified a single characteristic—“whether the chunk is audio or visual”—and further argued that it would be obvious to *add* the “type of data” to Kaku’s index. *Id.* at 6–7 (citing Pet. 41).

We disagree because we find Petitioner’s arguments and reliance on Dr. Reader’s testimony to be squarely in response to arguments raised in the Patent Owner Response, and not in support of contentions different from those in the Petition. *See Apple Inc. v. Andrea Elecs. Corp.*, 949 F.3d 697, 707 (Fed. Cir. 2020) (finding that the Board abused its discretion in ignoring petitioner’s responsive arguments to issues raised by patent owner during trial).

As discussed above, the Petition contended that “[t]he idx1 chunk identifies characteristics *including* ‘the type of data,’” and pointed to the ’792 patent’s own disclosure of the well-known AVI format as confirming

Kaku's teaching.¹⁴ Pet. 42 (emphasis added) (citing Ex. 1001, 22:18–28); *see also* Ex. 1001, 22:25–28 (“In several embodiments, the idx1 chunk identifies each data chunk by the track number of the data and *the type of the data*. The FOURCC codes referred to above can be used for this purpose.” (emphasis from the Petition)). The Petition also cited to Dr. Reader's testimony, which detailed the fields of the idx1 index and the AVI file format. Pet. 41–42 (citing Ex. 1003 ¶¶ 175–177). In response, Patent Owner argued that the Petition “fails to identify multiple characteristics that would have even allegedly been obvious to include in Kaku's index.” PO Resp. 55–58. Petitioner's argument and Dr. Reader's testimony that the field for the type of data is a four-byte code that is information indicative of multiple characteristics of each frame, are indeed responsive to Patent Owner's arguments, especially given that this information appears to have been well-known in the art, including as demonstrated by many of Patent Owner's own exhibits.¹⁵

We likewise reject Patent Owner's argument that Petitioner's arguments changed from arguing it was obvious to include “type of data” to arguing “type of data” was inherently present. PO Sur-reply 7–8 (citing

¹⁴ Patent Owner also argues that “the Petition's attempt to use the [’792 patent's] own disclosed index against the invention is impermissible.” PO Resp. 57–58. We disagree. Petitioner, instead, relies on the ’792 patent's disclosure as merely confirming the teachings of Kaku and other references relating to a well-defined and well-known file format.

¹⁵ Nor are we persuaded that the exhibits filed with Petitioner's Reply are necessary for Petitioner to make a *prima facie* case as to this limitation. PO Sur-reply 10–11 (citing Exs. 1021, 2015–2017). Although these exhibits confirm Petitioner's contentions, the exhibits filed with the Petition and Dr. Reader's original testimony sufficiently establish that Kaku and the AVI file format teach the use of multiple characteristics, as discussed above.

Pet. 41; Ex. 1003 ¶ 176). We agree with Patent Owner that the Petition contended that “it would have been obvious for the index to include information indicative of characteristics of each encoded video frame, including its type of data.” Pet. 41 (citing Ex. 1005, 5:22–30; Ex. 1003 ¶ 176). But the Petition *also* contended that “the ’792 patent confirms that Kaku’s teachings—which also *include* the location within the file and characteristics, such as the type of data, of each encoded video frame—satisfy limitation [1d].” *Id.* at 42 (emphasis added) (citing Ex. 1003 ¶ 177). We are therefore not persuaded that Petitioner relied solely on an obviousness argument in the Petition and changed its argument in its Reply, as suggested by Patent Owner.

Lastly, we reject Patent Owner’s stretched argument that “not all AVI versions included the FOURCC code in the index,” and that

[n]o evidence of record suggests that the AVI 2.0 index (or other versions) includes the FOURCC code, that Kaku uses (or would use) the AVI 1.0 index, or whatever version of the AVI file used by Kaku or in Petitioner’s combination would include the FOURCC code in the index, as opposed to the ‘movi’ list.

PO Sur-reply 12–13 (citing Ex. 2017, 3; Ex. 1021, 1). There is no evidence in the record that multiple AVI versions existed at the time of the invention; each of the relevant references in the record refers simply to AVI and AVI index, suggesting that the only version available at the time of the invention was the first one. *See, e.g.*, Ex. 1005, 3:41, Fig. 2; Ex. 1007, 3:10–14; Ex. 1008 ¶ 2. Exhibits 2017 and 1021 that Patent Owner relies upon as mentioning AVI 2.0 index are much more recent, dated 2018.¹⁶ Moreover,

¹⁶ Exhibit 1021 was created by Dr. Reader using a link from Exhibit 2017. *See* Ex. 1023 ¶ 5.

we are not persuaded on this record that features such as the idx1 index defined in the earlier AVI format would become unsupported in a later AVI format rendering that version incompatible for existing devices.

Based on the entirety of the record, we determine that Petitioner has proved by a preponderance of the evidence that the combination of Zetts and Kaku teaches this claim limitation.

- e) *“a separate second index that includes information indicative of the location within the file of a subset of the encoded video frames,”*

Petitioner contends that “[t]he combination of Zetts and Kaku teaches or suggests a separate second index (e.g., GOP offset table) that includes information indicative of the location within the file of a subset of the encoded frames (e.g., the first frame of each GOP in the file).” Pet. 42 (citing Ex. 1003 ¶¶ 178–185). Petitioner specifically argues that Zetts’s GOP offset table includes an entry for each GOP that includes an offset address indicating where the GOP begins. *Id.* at 42–44 (citing Ex. 1004, 3:29–61, 4:64–5:11, 8:15–31, Fig. 4; Ex. 1003 ¶ 179).

Figure 8 of Zetts is reproduced below.

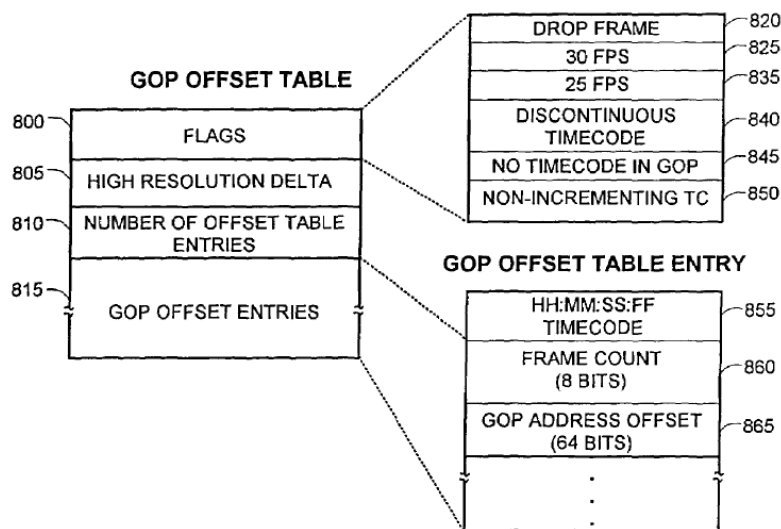


FIG. 8

Figure 8 shows the structure of Zetts's GOP offset table data. Ex. 1004, 4:33–34. Petitioner argues that “[o]n playback, the decoder extracts the GOP offset table, recreating the offset table of Figure 8 [of Zetts], with a GOP offset entry for each GOP where the ‘GOP address offset’ provides the location within the file where the GOP begins.” Pet. 44–45 (citing Ex. 1004, 9:8–20, 11:59–12:37, Fig. 8; Ex. 1003 ¶ 180). Petitioner therefore argues that “Zetts teaches a GOP offset table that includes offset information indicative of the location within the file of the first frame (an I-frame) of each GOP.” *Id.* at 46 (citing Ex. 1004, 2:22–28; Ex. 1003 ¶ 181).

Petitioner asserts that, because a video file typically includes several GOPs, Zetts teaches that the GOP offset table includes entries for each GOP, and therefore teaches “a GOP offset table that is a second index that includes information indicative of the location within the file of a subset of the encoded video frames, with the subset comprising the first frame of each GOP.” *Id.* (citing Ex. 1003 ¶ 182). Petitioner further asserts that Zetts also

teaches storing the GOP offset table in compressed form in the beginning portion of the file. *Id.* (citing Ex. 1004, 3:29–61). According to Petitioner, an ordinarily skilled artisan would have understood Zetts’s teaching regarding a GOP offset table to be an index because Zetts characterizes it as an index, and therefore, Zetts teaches this limitation. *Id.* at 47 (citing Ex. 1004, 2:59–61, 3:13–21; Ex. 1003 ¶¶ 184–185).

Patent Owner cites to this limitation and argues that “the Petition does not identify any reference that includes two indexes, much less two in the same multimedia file.” PO Resp. 19. Patent Owner contends that Zetts and Kaku “each disclose only a single index, but Petitioner contends that a [person of ordinary skill in the art] would be motivated to include Zetts’ index within Kaku’s AVI file.” *Id.* Patent Owner’s arguments are directed to Petitioner’s proposed motivation to combine the two references, teaching the two separate indexes, and are addressed below. *See infra* § III.E.2.h. Patent Owner does not otherwise respond to Petitioner’s arguments as to this limitation. *See generally* PO Resp. We find Petitioner’s arguments persuasive as to this limitation and supported on the complete record before us, and, therefore, we adopt them as our own findings. Accordingly, for the reasons explained by Petitioner, we find that the combination of Zetts and Kaku teaches this limitation.

f) “the separate second index located prior to the series of encoded video frames and the first index,”

Petitioner contends that “[t]he combination of Zetts and Kaku teaches or suggests that the separate second index (e.g., GOP offset table) is located prior to the series of encoded video frames and the first index (e.g., index chunk).” Pet. 47 (citing Ex. 1003 ¶¶ 186–188). Petitioner specifically

contends that Zetts teaches adding the GOP offset table to the beginning portion of the file, prior to the MPEG-encoded video frames. *Id.* at 47–48 (citing Ex. 1004, 3:14–21, 3:29–47, 4:64–5:10, 5:46–59, 6:58–7:12, Fig. 3; Ex. 1003 ¶ 186). Petitioner further contends that a person of ordinary skill in the art “would have found it obvious and been motivated to insert the GOP offset table towards the beginning of the AVI file, after AVI header information (to maintain compatibility), but before the ‘movi’ chunk with audio/video data (to enable trick precise play-from-offset as taught by Zetts).” *Id.* at 48 (citing Ex. 1004, 13:26–35, Fig. 3; Pet. §§ VI.A1, I.C).

Petitioner argues that a person of ordinary skill in the art would have found it obvious that Kaku’s teachings refer to the AVI idx1 index chunk, widely known to be located at the end of an AVI file. Pet. 48–49 (citing Ex. 1005, 5:22–30, Fig. 2; Ex. 1003 ¶ 187). Petitioner further argues that a person of ordinary skill in the art would have found it obvious to add Zetts’s GOP offset table to the *beginning* portion of an AVI file while keeping the AVI index to all frames located at the end of the AVI file. *Id.* at 50 (citing Ex. 1004, 2:3–16, 3:14–21, 3:29–47, 6:58–7:12, 12:61–13:35, Fig. 3; Ex. 1003 ¶ 188).

Patent Owner does not specifically respond to these arguments. *See generally* PO Resp. We find Petitioner’s arguments persuasive as to this limitation and supported on the complete record before us, and, therefore, we adopt them as our own findings. Accordingly, for the reasons explained by Petitioner, we find that the combination of Zetts and Kaku teaches this limitation.

g) “*the first and second indexes enabling trick play functionality.*”

Petitioner contends that “[t]he combination of Zetts and Kaku teaches or suggests that the first and second indexes (e.g., AVI index chunk, GOP offset table, respectively) enable trick play functionality (e.g., scene skipping, fast forward, and rewind).” Pet. 50 (citing Ex. 1003 ¶¶ 189–193). Petitioner asserts that “[b]oth indices [sic] enable trick play functionality, though this limitation is also satisfied when the second index enables trick play *by itself*.” *Id.* (emphasis added) (citing Ex. 1001, claim 22; Ex. 1003 ¶ 189).

Petitioner argues Zetts discloses that play-from-offset requests allow the user to skip to a desired scene without having to stream or fast forward through the entire video file. Pet. 51 (citing Ex. 1004, 2:3–28, 3:29–47, 3:48–61, 6:4–17, 4:64–5:11, 13:4–35; Ex. 1003 ¶¶ 189–190). Petitioner argues that “[t]he MPEG GOP data structure was designed in part to support trick play.” *Id.* (citing Ex. 1004, 2:12–28; Ex. 1003 ¶ 189). Petitioner argues that Zetts’s “GOP offset table enables random access of any frame, and thus scene skipping.” *Id.* at 51–52 (citing Ex. 1004, 12:61–13:35; Ex. 1003 ¶¶ 191–192).

Petitioner also argues that Kaku “teaches fast forward and rewind functionality is performed by ‘high speed reproduction’ in the forward or reverse directions, e.g., by only playing back one out of every X frames, depending on the desired playback speed.” *Id.* at 52 (citing Ex. 1005, 8:35–46). Petitioner further argues that “[s]ince the index chunk provides the beginning address of each frame, . . . it would have been obvious to use the index chunk to locate and skip to the desired frames for fast forward and

rewind functionality.” *Id.* (citing (Ex. 1005, 5:22–31, 5:31–40, 7:5–24, 8:62–9:7; Ex. 1003 ¶ 192). Petitioner argues that “because the index chunk includes the location of all frames in the multimedia video file, it would have been obvious to use the index to access the particular frames needed for fast-forward or rewind, which varies depending on the desired reproduction speed.” *Id.* at 53 (citing Ex. 1005, 5:22–31, 8:35–46; Ex. 1003 ¶ 193). According to Petitioner, a person of ordinary skill in the art “would have been motivated to do so, for example when decoding a locally-stored multimedia file, where the entire media file is available from the outset.” *Id.* (citing Ex. 1004, 6:13–16, 13:22–25; Ex. 1003 ¶ 193).

Patent Owner responds that the combination of Zetts and Kaku fails to teach this limitation because “[p]roperly construed, this limitation requires trick play functionality that *utilizes both* the first and the second indexes.” PO Resp. 40 (emphasis added). Patent Owner contends that “the claims require that the two indexes together enable trick play functionality,” and the “Petition does not argue, let alone prove, that the combination of Zetts and Kaku renders obvious utilizing both indexes to enable trick play functionality.” *Id.* at 41–50 (citing Ex. 1001, claims 1, 9, 15).

As discussed above, we do not agree with Patent Owner that the claim limitation requires that the indexes *actually be used together* to enable trick-play functionality. *See supra* § III.C.1.

Patent Owner does not dispute that Zetts and Kaku each disclose enabling trick-play functionality (*see* PO Resp. 40–50), and we are persuaded that under the proper claim construction, the combination of Zetts and Kaku teaches this limitation.

Even if we were to agree with Patent Owner that the claim limitation requires that the indexes be used *together* to enable trick-play functionality, we are persuaded that the combination of Zetts and Kaku teaches this limitation. Petitioner contends that “the AVI idx1 index satisfies the role of the claimed ‘first’ index for this limitation [1g],” and “Kaku teaches the AVI idx1 index chunk and renders this limitation obvious.” Pet. 53. Petitioner contends that a person of ordinary skill in the art would have been motivated to use the AVI idx1 index, “for example when decoding a locally-stored multimedia file, where the entire media file is available from the outset,” and that such a “usage model [was] known for video streaming services where a multimedia file is cached on a user’s machine so that it can be played back offline, and also taught by Zetts.” *Id.* (citing Ex. 1004, 6:13–16, 13:22–25). Zetts teaches using the GOP offset table in decoding a locally stored MPEG file, so that “the player makes the corresponding file read pointer update itself.” Ex. 1004, 6:13–16. Petitioner contends that, in its proposed combination, a person of ordinary skill in the art also would have been motivated to use the AVI idx1 index in the usage model taught by Zetts, i.e., “where the entire media file is available from the outset.” Pet. 53 (citing Ex. 1005, 5:22–31, 8:35–46; Ex. 1003 ¶ 193); *see also* Pet. Reply 13 (citing Pet. 16–17, 24–25; Ex. 1004, 4:55–5:1; Ex. 2006, 125:19–126:4; Ex. 1022, 176:4–11) (contending that “the *combination* includes two indexes”). Petitioner argues that “it would have been obvious to use the [idx1] index to access the particular frames needed for fast-forward or rewind, which varies depending on the desired reproduction speed.” *Id.* We are thus persuaded that, in such usage, both the AVI idx1 index and Zetts GOP offset table

would be used *together* to enable trick play functionality, in the manner required under Patent Owner’s construction.¹⁷

*h) Motivation to Combine Zetts and Kaku, and
Reasonable Expectation of Success*

(1) Petitioner’s Contentions

Petitioner argues that a person of ordinary skill in the art “would have been motivated to combine (a) Zetts’s teachings of inserting a GOP offset table to the beginning portion of a multimedia file, with (b) the AVI file format, as taught by Kaku.” Pet. 24 (citing Ex. 1003 ¶ 145). Petitioner argues that Zetts teaches adding a GOP offset table to the beginning portion of a media file to enable playback starting from any GOP in the file, and an ordinarily skilled artisan would have been motivated to apply Zetts’s teachings to the AVI file format taught by Kaku. *Id.* (citing Ex. 1004, 3:29–39).

Petitioner argues that “Zetts describes play-from-offset as ‘common’ and ‘essential’ functionality,” and a person of ordinary skill in the art “would have been motivated to apply Zetts’s teachings regarding a GOP offset table because it enabled precise play-from-offset capabilities.” *Id.* at 24–25 (citing Ex. 1004, 3:29–39, 4:64–5:11; Ex. 1003 ¶ 146). Petitioner contends that another advantage of Zetts’s teachings is that the “GOP offset table is compact, with just 3 bytes per entry.” *Id.* at 24 (citing Ex. 1004, 8:15–17).

¹⁷ We reiterate that the claim merely requires the indexes to “enable” trick play functionality. Thus, even we if mandate a “together” requirement, all that is needed is that both indexes together *enable* trick play functionality. In Petitioner’s proposed scenario, where an entire multimedia file is available from the outset, with both indexes accessible, both indexes would together enable trick play functionality. *See* Pet. 53; Ex. 1003 ¶ 193.

Petitioner argues that adding the GOP offset table “to the beginning portion of multimedia files simplified file management in video libraries by reducing the need to keep a ‘separate index file.’” *Id.* at 25 (citing Ex. 1004, 2:59–61, 3:13–21, 6:17–19).

Petitioner further argues that the “ability to quickly skip to desired scenes was beneficial for both video streaming applications and playback of local files, both of which are taught by Zetts.” *Id.* at 25 (citing Ex. 1004, 6:4–16, 13:4–25). Petitioner contends that Zetts’s offset table “provides an efficient mechanism for enabling play-from-offset requests because the table can be quickly extracted, when the file is first read, without having to [read] another part of the file.” *Id.* Further, Petitioner contends, “the GOP offset table includes timecodes for the starting point of each GOP, which enables precise searching and playback based on timecodes.” *Id.* (citing Ex. 1004, Fig. 8; Ex. 1003 ¶ 147).

Petitioner argues that, although Zetts’s embodiments are based on an MPEG file, an ordinarily skilled artisan would have been motivated to apply Zetts’s teachings to other known video file formats, such as the widely-used AVI file format. Pet. 26 (citing Ex. 1003 ¶ 148). Petitioner contends Kaku teaches using the AVI file format with MPEG-compressed video. *Id.* (citing Ex. 1005, 11:37–43; Ex. 1003 ¶ 149). Petitioner further contends that “AVI was a popular file format developed by Microsoft and supported by default on Windows, including by Windows Media Player,” and a person of ordinary skill in the art “would have been motivated to apply Zetts’s teachings to . . . AVI given its Windows support.” *Id.* at 27 (citing Ex. 1003 ¶ 150).

As for the indexes, Petitioner argues, a person of ordinary skill in the art “would have been motivated to include the AVI idx1 index at the end of the file because Kaku teaches it, and because it was included in AVI files.” Pet. 27 (citing Ex. 1008 ¶ 4, Fig. 1; Ex. 1009, 763, Fig. 4; Ex. 1007, 6:29–39, Figs. 9, 10). That index, Petitioner contends, “would have been advantageous for downloads and playback of locally-cached multimedia files because an index to all frames allows granular access to any frame in the file, including for scene-skipping.” *Id.* at 27–28.

Petitioner further argues that, in combining the two teachings, a person of ordinary skill in the art would have implemented Zetts’s teaching by “either embedding a GOP offset table within the MPEG video stream or inserting a new AVI chunk for the GOP offset table,” at the beginning portion of Kaku’s AVI file, i.e., before the encoded audio/video data. *Id.* at 28 (citing Ex. 1004, 13:26–35, Fig. 3; Ex. 1003 ¶ 152). Because the AVI/RIFF file format was extensible by design, Petitioner contends, an ordinarily skilled artisan would have been motivated to insert the GOP offset table as a new chunk towards the beginning of the file, e.g., after the header information or in a junk chunk towards the beginning of the file, and before the movi chunk with audio/video data. *Id.* at 28–30 (citing Ex. 1004, 13:26–35, Fig. 3; Ex. 1003 ¶¶ 153, 154; Ex. 1007, 4:58–63, 5:38–43, 5:53–55, Fig. 9; Ex. 1008 ¶¶ 16, 30, Fig. 9; Ex. 1009, 761).

Petitioner asserts that, alternatively, inserting the GOP offset table into a junk chunk would also have been obvious “because Zetts teaches inserting the GOP offset table into ‘padding packets’ that serve a similar function of adjusting the file spacing with ‘dummy’ or ‘null data’ while

being ignored by conventional decoders.” *Id.* at 31 (citing Ex. 1004, 5:46–59).

Petitioner argues that an ordinarily skilled artisan would have had a reasonable expectation of success when combining Zetts and Kaku because MPEG-compressed video was commonly stored in AVI files and because AVI was a flexible file format and extending that format would have been well within the level of ordinary skill in the art. *Id.* at 32 (citing Ex. 1004, 3:33–39; Ex. 1005, 11:37–43; Ex. 1008 ¶ 2; Ex. 1003 ¶ 155).

(2) Patent Owner’s Response

Patent Owner responds with four arguments: (1) the concept of including two indexes in the same file is entirely absent from both Zetts and Kaku; (2) Petitioner’s purported motivations to combine are conclusory; (3) a person of ordinary skill in the art would not have been motivated to also include the optional AVI index as part of the proposed combination; and (4) Petitioner’s combination is rooted in hindsight. PO Resp. 19–20 (citing Ex. 1001, claims 1, 9, 15; Pet. 19, 24, 40–42; Ex. 2005 ¶¶ 55–56).

On the first argument, Patent Owner points to the prosecution history of the ’792 patent as demonstrating that “including two separate indexes is significant technologically as it may substantially increase the speed with which devices can commence playback with trick play functionality.” *Id.* at 20–21 (citing Ex. 1002, 726–27; Ex. 1001; 15:37–40, 24:28–31, 16:26–29; Ex. 2005 ¶¶ 58–59). Patent Owner contends that the inclusion of the second index was not only technologically significant, but it was also counterintuitive. *Id.* at 21–23 (citing Ex. 1002, 727; Ex. 2005 ¶¶ 60–61). Patent Owner argues that Zetts addresses an absence of any index in MPEG files, and where there was an index for an MPEG file, it was made as a

separate file. *Id.* at 23–24 (citing Ex. 1004, 2:31–58, 2:61–3:3, 3:13–15; Ex. 2005 ¶¶ 62–63). According to Patent Owner, Zetts highlights that its GOP offset table would obviate the need for any separate (i.e., second) index. *Id.* at 24 (citing Ex. 1004, 3:17–21; Ex. 2005 ¶¶ 64–65). Patent Owner contends that Kaku also discloses just one optional index because the traditional index chunk in the AVI file format only includes a single index. *Id.* (citing Ex. 1001, 22:19–28; 1005, 5:26–28, Fig. 2; Ex. 2005 ¶ 66; Ex. 2006, 107:20–25, 135:14–15).

Patent Owner contends that Petitioner fails to articulate any colorable reason why a person of ordinary skill in the art would have added Zetts’s index to Kaku’s file. *Id.* at 26. According to Patent Owner, Kaku’s AVI file has an index that includes all frames and allows for “precise play-from offset capability,” and thus, a person of ordinary skill in the art would have had no motivation to add Zetts’s GOP offset table to the AVI file for that reason. *Id.* (citing Ex. 1003 ¶ 151; Ex. 2005 ¶ 6). Patent Owner contends that Petitioner also has not shown that Kaku’s AVI file has a separate index file to be avoided, or that Zetts suggests otherwise. *Id.* at 26–27 (citing Ex. 2005 ¶¶ 70–71; Ex. 1003 ¶ 125).

As to Petitioner’s reason that the combination would provide the ability to quickly skip to desired scenes, Patent Owner contends that Petitioner has not shown that adding Zetts’s GOP offset table to Kaku’s AVI file would be beneficial either for streaming applications or playback of local files. *Id.* at 27–29 (citing Ex. 2005 ¶¶ 72–74). Dr. Bajaj testifies that it was well-known at the time of invention that the AVI file format was not designed for streaming and was suboptimal for streaming as it used “less compression than other video formats such as MPEG or MOV.” Ex. 2005

¶¶ 73–74 (citing Ex. 2006, 146:17–18; Ex. 2007, 4; Ex. 2008). Dr. Bajaj also testifies that for a locally stored file, the decoder can access any portion of the file as necessary, and there is no reason that a person of skill in the art would have found it beneficial and obvious to modify the AVI file format of locally stored videos to include the index at the beginning of the file. *Id.* ¶ 75; PO Resp. 29–31.

Patent Owner also argues that Petitioner fails to address how a person of ordinary skill would have either been motivated or had a reasonable expectation of success in “adding” an MPEG index to an AVI file to “enable trick play functionality.” PO Resp. 31. Patent Owner contends that an AVI decoder will disregard the GOP offset table that Petitioner proposes to add from Zetts. *Id.* at 31–33 (citing Ex. 1001, 5:59–6:3, 46:42–45; Ex. 2015, 2, 5; Ex. 2017, 4; Ex. 2005 ¶¶ 77–80; Ex. 2006, 107:20–25). Dr. Bajaj testifies that “while an AVI file can *store* additional files, that does not mean its decoder will read them, let alone use such files to ‘enabl[e] trick play functionality,’ as the claims require.” Ex. 2005 ¶ 81 (citing Ex. 1001, 5:59–6:3; Ex. 1007, 4:58–63); PO Resp. 33–34.

As to its third argument, Patent Owner contends that, assuming, *arguendo*, a person of ordinary skill in the art would have been motivated to add Zetts’s GOP offset table to Kaku’s AVI file and that Zetts’s table could be recognized and processed, Petitioner fails to establish motivation to include AVI’s own index in the same file, given that the native index of the AVI file format is optional. PO Resp. 35–36 (citing Ex. 2006, 138:19–21; Ex. 2005 ¶ 85). Patent Owner argues that both experts agree that Zetts’s GOP offset table by itself, at least in the context of Zetts, already provides a user with the ability to access any individual frame, and not just the frames

identified in the GOP offset table. *Id.* at 37–38 (citing Ex. 1004, 3:17, 3:29–33, 4:64–5:2, 12:66–13:3; Ex. 1003 ¶ 19; Ex. 2006, 122:3–14; Ex. 2005 ¶ 87). According to Patent Owner, Petitioner’s argument that a person of ordinary skill in the art would have been motivated to also include Kaku’s more granular index fails to provide any rationale to include both indexes. *Id.* at 38 (citing Ex. 1004, 6:6–16, 13:9–25).

Lastly, Patent Owner argues that Petitioner’s combination should further be rejected as it is rooted in impermissible hindsight because the second index as technologically significant, counterintuitive, and a key basis for issuance. PO Resp. 39–40.

(3) Petitioner’s Reply

Petitioner responds that Zetts teaches using MPEG-compressed video for streaming, and Kaku teaches storing MPEG-compressed video in AVI files. Pet. Reply 5 (citing Ex. 1003 ¶ 149; Ex. 1005, 11:37–43). Petitioner further responds that AVI is a generic file format that could be used for internet streaming applications, even in the 1990s. *Id.* (citing Ex. 2006, 145:2–4). Petitioner points out that “prior art, including from Microsoft and Intel, expressly teaches AVI for streaming.” *Id.* (citing Ex. 1018, 3:35–48; Ex. 1019 ¶ 5; Ex. 1020 ¶ 57).

According to Petitioner, it is nonsensical to contrast MPEG compression with AVI because there is no dispute that the MPEG compression standard can be used to compress data stored in an AVI file. *Id.* at 6 (citing Ex. 1003 ¶¶ 28, 46; Ex. 2005 ¶¶ 82–83; Ex. 2006, 144:16–18). Petitioner argues that even if a newer format, such as ASF (Advanced Streaming Format), offered alleged improvements over AVI, that

would not have made AVI patentable or made AVI inapt for Petitioner's obviousness argument. *Id.* at 7.

Petitioner responds that a person of ordinary skill in the art would have had a reasonable expectation of success in achieving the proposed combination. *Id.* at 8. According to Petitioner, Zetts modifies the decode process to use its GOP offset table, while preserving compatibility for conventional decoders. *Id.* (citing Ex. 1004, 5:46–59; Ex. 2006, 120:20–24). Petitioner explains that the decoders use the GOP offset table in the manner taught by Zetts (e.g., for trick play), but in combination with the AVI format, using for example the AVI junk chunk or a new chunk. *Id.* at 8–9 (citing Ex. 1003 ¶¶ 152–154).

Petitioner further contends that a legacy decoder would simply ignore the chunks that it does not know how to interpret, but “a proprietary AVI device that is designed to use the GOP offset table” would “interpret that data, that AVI data, according to what it knows about the proprietary format.” *Id.* at 9 (quoting Ex. 2006, 152:13–153:1). Petitioner points out that “non-standard chunks are only skipped *if the decoder does not recognize them.*” *Id.* (citing Ex. 2015, 2; Ex. 2016; PO Resp. 32). According to Petitioner, this allows the AVI format to be extended without rendering the files unreadable to pre-existing “vanilla” decoders. *Id.* at 9–10 (citing Ex. 1004, 5:46–6:3; Ex. 1022, 176:22–177:3, 177:19–178:19). Petitioner further contends that the '792 patent similarly adds chunks that “are not contained in the AVI file format,” and under Patent Owner's position, these chunks would also be ignored, including its claimed second index. *Id.* at 10–11 (citing Ex. 1001, 6:12–14; Ex. 2005 ¶ 51).

Petitioner also argues that Zetts does not discourage multiple indexes but instead “teaches adding an index to existing video files, precluding the need to maintain a separate *file*.” *Id.* at 11 (citing Inst. Dec. 32–33). Petitioner contends that while Zetts’s GOP offset table provides the starting point of each GOP, idx1 allows granular access to any frame—including I-frames inside a GOP. *Id.* at 12 (citing Ex. 2006, 112:17–113:5, 115:1–116:2). Petitioner argues that there are “numerous advantages to having idx1 for playback of locally-cached files, which would not have been detrimental for streaming because idx1 is located at the end of the file.” *Id.* (citing Pet. 26–28, 51–53; Ex. 1003 ¶¶ 191–193). Petitioner further argues that Kaku’s idx1 and Zetts’s table are not duplicative and keeping idx1 in the combined file would have maintained existing trick play functionality for legacy AVI decoders that use idx1. *Id.* at 12–13 (citing Ex. 1022, 177:24–178:11; Ex. 2006, 120:20–24).

(4) *Patent Owner’s Sur-reply*

Patent Owner responds that even if AVI could be used for streaming under certain circumstances, that does not explain why a person of ordinary skill in the art would do such a thing. PO Sur-reply 18–19. Patent Owner argues that Dr. Reader merely opines that AVI “*could* be used for internet streaming applications,” and admits that “Microsoft itself had moved away from AVI by the time of the invention.” *Id.* (citing Ex. 2006, 145:2–4, 146:17–18). According to Patent Owner, Microsoft’s abandonment of AVI for streaming is especially significant here as Dr. Reader relied on Microsoft’s support for AVI “in the computer market of 2003” as a significant reason why a person of ordinary skill in the art would have combined Zetts and Kaku. *Id.* at 20 (citing Ex. 1003 ¶ 150).

Patent Owner reiterates that AVI was not considered suitable for streaming services in 2003, and that fact directly negates Petitioner’s purported motivation. *Id.* As to including two indexes in the same file, Patent Owner argues that Zetts’s GOP offset table already provides frame-by-frame access and a person of ordinary skill in the art would not have been motivated to include AVI’s optional index for the sake of having an index with no benefit. *Id.* at 21–22 (citing Ex. 2006, 122:3–14; Ex. 1003 ¶ 191; Ex. 1004, 12:66–13:3, 3:29–33). As to Petitioner’s argument that including the AVI index helps maintain existing trick play functionality for legacy AVI decoders, Patent Owner asserts that the argument is untimely and, on the merits, there would be no device/decoder/file that would use the first *and* second indexes (separately or together) to enable trick play functionality. *Id.* at 22–23.

Lastly, Patent Owner contends that there is no evidence in the record to show that a person of ordinary skill in the art would have had a reasonable expectation of success in devising a “proprietary AVI device.” *Id.* at 24–25.

(5) *Our Analysis*

“Whether an ordinarily skilled artisan would have been motivated to modify the teachings of a reference is a question of fact.” *WBIP 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 v. Bombardier Recreational Prod. 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)).

Based on our review of the current record, we determine that Petitioner provides adequate reasons why one of ordinary skill in the art would have been motivated to combine Zetts's GOP offset index with Kaku's teaching of AVI files in the manner asserted by Petitioner, with a reasonable expectation of success. Pet. 24–33; *see KSR*, 550 U.S. at 420 (“any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed”). We address each of Patent Owner's arguments below.

Patent Owner's first argument—that the concept of including two indexes in the same file is entirely absent from both Zetts and Kaku—does not detract from Petitioner's challenge. PO Resp. 20–25. Petitioner's challenge is based on obviousness, not anticipation, and relies on teachings from each reference, *in combination*, as satisfying the claimed subject matter. Patent Owner's argument in effect appears to be that invalidity of claims involving two elements, such as here, cannot be proven using a combination of two references unless either of those references individually teaches the two elements. That is not the law of obviousness; instead, “the test for obviousness is what the combined teachings of the references would have suggested to those having ordinary skill in the art.” *In re Mouttet*, 686 F.3d 1322, 1333 (Fed. Cir. 2012); *see also Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008) (explaining that although two prior art references cannot be combined to find anticipation, that is not the case with obviousness).

Patent Owner relies on the patent applicants' statements during prosecution of the '792 patent that including a second index was

counterintuitive to compression designs common in applicants' technology space. PO Resp. 21–22 (citing Ex. 1002, 726–27). But as the applicants explained, the need for reduced size is balanced against the purported benefit that the claimed invention provided – “increas[ing] the speed with which unsophisticated playback devices, such as many consumer electronics devices, can commence playback with trickplay functionality.” Ex. 1002, 726. Zetts, and thus Petitioner's proposed combination, similarly balances addition of the GOP offset table with added functionality proposed by Petitioner—the ability to quickly and precisely skip to desired scenes, after downloading an initial portion of the file, would be beneficial for both video streaming applications and playback of local files. Pet. 24–25 (citing Ex. 1004, 2:3–19, 3:29–39, 4:64–5:11, Fig. 12). “A given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine.” *See Gen. Electric Co. v. Raytheon Techs. Corp.*, 983 F.3d 1334, 1351 (Fed. Cir. 2020) (quotations omitted). Here, we are persuaded that a person of ordinary skill in the art “would have recognized several advantages to applying Zetts's teachings” at the cost of adding Zetts's GOP offset table which took “just 3 bytes per entry.” Pet. 24–25.

Next, we address Patent Owner's second argument that Petitioner's contentions in support of its combination are conclusory and meritless. PO Resp. 25–35. Patent Owner argues that Petitioner's proposed benefit from the combination—enabling precise play-from-offset capabilities—is already present in Kaku and an ordinarily skilled artisan would have no motivation to add Zetts's GOP offset table. *Id.* at 26. Petitioner, however, explains, and we agree, that Kaku's index is different from Zetts's GOP offset table. Pet.

Reply 12. Zetts’s GOP offset table is simply a “table having an entry *for each GOP header* of every video packet of the MPEG video file.” Ex. 1004, 3:33–35 (emphasis added); *see also id.* at 3:13–21, 4:64–5:10; Pet. 25. The offset table provides a compact, efficient way of enabling play-from-offset requests. *See* Ex. 1003 ¶ 147. Although Zetts’s GOP offset table may *enable* random access of any frame, we do not agree that it is in fact an index to all frames. The AVI idx1 index, on the other hand, is such an index. *See* Ex. 1005, 5:25–31; Ex. 1003 ¶ 125; *see also* Ex. 1008 ¶ 4 (“The index portion lists the location of each audio and video frame in the multiplex.”), Fig. 1; Ex. 1009, 763 (“This list indexes the location of each frame of video stored inside the file.”), Fig. 4; Ex. 1007, 6:29–56, Fig. 9; Pet. 27; Ex. 1003 ¶ 151. We are therefore persuaded by Petitioner’s argument that Kaku’s index is an *index to all frames* allowing for more granular access to any frame in the file, and disagree with Patent Owner that the proposed combination would add no benefit that is not already present in Zetts.

We also do not find that Patent Owner’s argument and Dr. Bajaj’s testimony—that the AVI file format was suboptimal for streaming and that Microsoft had moved from AVI to a file format known as ASF—detract from Petitioner’s reasons as to why one of ordinary skill in the art would have been prompted to combine the teachings of Zetts and Kaku as proposed by Petitioner. PO Resp. 27–29. Petitioner offers ample evidence that AVI is a generic file format and was being used for internet streaming applications at the time of the invention. Pet. Reply 5 (citing Ex. 2006, 145:2–4; Ex. 1018, 3:35–48; Ex. 1019 ¶ 5; Ex. 1020 ¶ 57). For example, U.S. Patent

Publication 2004/0028042, from 2002 titled, “Sharing Live Advanced Streaming Format Indexed Files,” discloses:

Recently, however, certain standards have been developed which enable file-based data to be encoded in a streaming format, so that the data can be accessed and read at the same time it is being received, and without first requiring the entire contents of the streamed data file to be received. Examples of the various *standards and formats for streaming data* include MPEG (Moving Picture Experts Group), ASF (Advanced Streaming Format), *AVI (Audio Video Interleave)*, Active Movie and QuickTime.

Ex. 1019 ¶ 5 (emphases added). Dr. Reader testifies that “AVI could be used for internet streaming applications, even in the 1990s,” and we find that testimony supported by Petitioner’s evidence. Ex. 2006, 145:2–4.

Nor do we agree with Patent Owner that Microsoft’s announcement of a new file format undermines Petitioner’s argument that one of ordinary skill in the art would have been motivated to add Zetts’s GOP offset table to Kaku’s AVI file to facilitate streaming. PO Resp. 29. First, we do not agree that the AVI file format was no longer being used at the time of the claimed invention; references that Petitioner relies on to argue that AVI was being used for streaming at the time of the invention in fact belong to Microsoft. *See, e.g.*, Exs. 1019, 1020. Moreover, Patent Owner’s own references speak to wide use of the AVI file format. *See* Exs. 2007, 2009.

Second, there is no requirement that the file format should have been in use *extensively* in order to support motivation to combine. Petitioner provides evidence that those of ordinary skill in the art in fact used the AVI file format for streaming thereby supporting Petitioner’s contention that they would have been motivated to combine the teachings of Zetts and Kaku for the reasons provided by Petitioner.

Patent Owner’s criticism of the use of the AVI format for streaming as suboptimal as compared to some other file formats also does not undermine Petitioner’s reason to combine teachings of Zetts with Kaku’s AVI format for enabling trick play in streaming applications. *See PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197–98 (Fed. Cir. 2014) (“Our precedent, however, does not require that the motivation be the *best* option, only that it be a *suitable* option from which the prior art did not teach away.”); *see also Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380 (Fed. Cir. 2023) (“Intel never had to show that replacing Kabemoto’s secondary cache with Bauman’s secondary cache was an ‘improvement’ in a categorical sense.”).

Next, Patent Owner argues that even if a second index were added to Kaku’s AVI file, the AVI decoder would simply disregard that second index and would not utilize it to enable trick play functionality. PO Resp. 30–35. However, as Petitioner points out, Zetts modifies the decode process to use its GOP offset table, explaining how any decoder enabled to extract the GOP offset table recognizes and utilizes the table. *See* Ex. 1004, 5:46–59. In Petitioner’s proposed combination, inserting the offset table in, for example, the junk chunk, allows a decoder that is capable of recognizing the offset table to use it to enable trick play functionality. *See* Ex. 2006, 125:10–17, 152:13–153:1; Pet. Reply 8–10.

Patent Owner’s argument that an AVI decoder is not capable of accessing information in chunks that are not defined in the standard AVI file format ignores the basic premise that Zetts, and thus, Petitioner’s proposed combination modifies the encoding process and would therefore require a modified decoder. *See, e.g.,* Ex. 1003 ¶ 159 (stating that “a principal

purpose of having a multimedia video file is to decode it, so that it can be viewed by users”).

For the same reason, Patent Owner’s argument that Petitioner’s reference to a proprietary AVI device is untimely (PO Sur-reply 24) seems misplaced. The Petition includes an argument that “[a]s with the padding packets in Zetts, inserting the GOP offset table into the dummy data of a ‘junk’ chunk would have preserved compatibility for conventional decoders—which ignore junk chunks—while enabling precise play-from-offset capabilities for decoders that are capable of recognizing and utilizing the ‘uniquely mark[ed]’ GOP offset table taught by Zetts.” Pet. 29–31 (citing Ex. 1004, 5:46–59). We thus find no basis to conclude that Petitioner’s argument distinguishing legacy AVI decoders from ones that would utilize the second index in the proposed combination is untimely or improper.

Patent Owner also argues that there is no evidence in the record that a person of ordinary skill in the art would have had a reasonable expectation of success in devising a “proprietary AVI device.” PO Sur-reply 24. But Zetts itself provides that evidence. Zetts’s GOP offset table would have been of no use if a person of ordinary skill could not have been expected to devise a decoder to use it. Moreover, Dr. Reader explains that Kaku teaches a decoder for decoding a multimedia video file and that video decoders were well-known in the art by the 1990s. Ex. 1003 ¶¶ 158–159. According to Dr. Reader, “by teaching a video codec, Kaku teaches a decoder for decoding a multimedia video file.” *Id.* ¶ 158 (citing Ex. 1005, Fig. 1). We find this testimony credible because it is consistent with the prior art’s teachings. We are therefore persuaded by Petitioner’s argument that a

person of ordinary skill in the art “would have been more than capable of applying Zetts’s teachings, including to known file formats such as AVI.” Pet. 32 (citing Ex. 1003 ¶ 155). And we are persuaded by Petitioner’s argument that a person of ordinary skill in the art would have had a reasonable expectation of success when combining Zetts and Kaku. *Id.* at 32–22.

Patent Owner also argues that a person of ordinary skill in the art would not have been motivated to include the optional AVI index as part of the proposed combination. PO Resp. 35–36. As discussed above, Petitioner provides a good rationale to include both indexes—because an index to *all* frames allows granular access to any frame in the file, including for scene-skipping. And we are persuaded by Petitioner’s argument that a person of ordinary skill in the art “would have been motivated to include the AVI idx1 index at the end of the file because . . . it was [already] included in AVI files.” Pet. 27 (citing Ex. 1008 ¶ 4, Fig. 1; Ex. 1009, 763, Fig. 4; Ex. 1007, 6:29–39, Figs. 9, 10; Pet. § I.C).

As Petitioner points out, and we agree, the idx1 index is defined by the AVI file format and it would have made no sense for an ordinarily skilled artisan to change a well-known defined file format by removing that index and thus breaking compatibility with existing AVI decoders. Pet. Reply 12–13 (citing Ex. 1022, 177:24–178:11; Ex. 2006, 120:20–24). Patent Owner offers no reason why a person of ordinary skill in the art would go through the trouble of removing an existing index—neither Zetts nor Kaku discourage multiple indexes—and we find no basis to require Petitioner to show more. *See Gen. Electric*, 983 F.3d at 1351–52 (finding that Board improperly faulted petitioner for not providing a persuasive

motivation for why a person of ordinary skill in the art, when modifying the first reference to include elements of a second reference, would still maintain the other parameters of the first reference).

Lastly, we address Patent Owner's argument that Petitioner's combination is built upon hindsight. PO Resp. 39–40. Patent Owner argues that the second index was technologically significant, counterintuitive, and a key basis for issuance of the '792 patent, whereas Zetts and Kaku disclose only a single index. Okay. We accept Patent Owner's position that each of Zetts and Kaku discloses only a single index. Nonetheless, we are persuaded that Petitioner articulates a reason with rational underpinning as to why one of ordinary skill in the art would have made the proposed combination, highlighting the complementary teachings of Zetts and Kaku, and identifying a valid need known in the relevant field of art. It is enough for Petitioner to show that there was a known need in the art to allow a user to precisely jump to a desired scene after downloading just an initial portion of a multimedia file, such as the popular AVI file taught by Kaku, that Zetts's index helped address that issue, and that combining the teachings of Kaku and Zetts was not beyond the skill of an ordinary artisan. "Nothing more is required to show a motivation to combine under *KSR*." *Intel*, 61 F.4th at 1381.

On the complete record, we determine Petitioner provides an adequate reason why one of ordinary skill in the art would have combined the teachings of Zetts and Kaku in the manner, with a reasonable expectation of success, as asserted by Petitioner.

i) Objective Considerations of Nonobviousness

Neither party presents evidence of objective considerations of nonobviousness.

j) Conclusion as to Obviousness of Claim 1

“Once all relevant facts are found, the ultimate legal determination [of obviousness] involves the weighing of the fact findings to conclude whether the claimed combination would have been obvious to an ordinary artisan.” *Arctic Cat*, 876 F.3d at 1361. On balance, considering the complete record before us, Petitioner has established, by a preponderance of the evidence, that the combination of Zetts and Kaku would have rendered the subject matter of claim 1 obvious to one of ordinary skill in the art at the time of the invention.

3. Independent Claims 9 and 15

Independent claims 9 and 15 recite subject matter similar to claim 1, but recite slightly different limitations. *See* Ex. 1001, 52:16–33, 52:54–53:3. Petitioner relies on an analysis similar to that of claim 1 for showing how the combination of Zetts and Kaku teaches each limitation of claims 9 and 15. *See* Pet. 57–62 (citing Ex. 1003 ¶¶ 202–213), 65–70 (citing Ex. 1003 ¶¶ 221–229).

Claim 9 is directed to “[a]n encoder for encoding a multimedia file comprising at least one video track and at least one audio track.” Ex. 1001, 52:15–18. Petitioner argues Zetts teaches an MPEG encoder, and that it would have been obvious to use the encoder to create a multimedia file because the file includes compressed audio/video data, such as MPEG-2. Pet. 57 (citing Ex. 1004, 5:23–45, 6:24–57, Figs. 1, 2; Ex. 1003 ¶¶ 203–204; Pet. § VI.A.2[1a]).

Claim 15 further recites “the processor is configured to locate a particular encoded video frames within the multimedia using the abridged index and to playback the sequence of encoded video frame starting from the located encoded video frame.” Ex. 1001, 52:65–53:2. Petitioner argues that Zetts teaches this limitation because the GOP offset table indicates the location of the first frame of each GOP and enables play-from-offset functionality. Pet. 68–69 (citing 1004, 12:61–13:3; Ex. 1003 ¶¶ 229–234). Petitioner contends, for example, Zetts teaches locating and displaying video starting from a timecode requested by the user. *Id.* at 69 (citing Ex. 1004, 13:4–25, 6:4–16; Ex. 1003 ¶ 231). Additionally, Petitioner contends, a person of ordinary skill would have found it obvious to use starting I-frames of GOPs as thumbnails for the user to select for playback, such that when the user selects that starting I-frame for playback, the user’s video player would issue a play-from-offset request by locating the corresponding entry in the GOP offset table and then using the address offset to locate the requested I-frame within the multimedia file. *Id.* at 69–70 (citing Ex. 1004, 2:3–28, 6:4–16, 12:61–13:35; Ex. 1003 ¶¶ 233–234).

And although claims 9 and 15 recite a “full/complete index” and an “abridged index” instead of a “first index” and “second index” as recited by claim 1, Petitioner contends that these claim terms do not materially affect the analysis and therefore Petitioner relies extensively on its discussion of claim 1.¹⁸ *Id.* at 59–60, 67.

¹⁸ Petitioner points out that claim 15 “recites ‘the first’ index without an antecedent basis,” and “to the extent this claim is not indefinite, the ‘first’ index must be the ‘complete’ index.” Pet. 67. Patent Owner does not address this issue. We evaluate Petitioner’s contentions based on Petitioner’s understanding of the claim that the “first” index refers to the

Patent Owner presents the same arguments for each of the independent claims.¹⁹ *See, e.g.*, PO Resp. 19, 40, 50.

Aside from the differences in claim limitations discussed above, we agree with Petitioner that claims 1, 9, and 15 recite analogous limitations. We have reviewed Petitioner’s arguments and evidence directed to claims 9 and 15, and we find that, on the complete 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. On balance, considering the complete record before us, Petitioner has established, by a preponderance of the evidence, that the combination of Zetts and Kaku would have rendered the subject matter of claims 9 and 15 obvious to one of ordinary skill in the art at the time of the invention.

4. Dependent Claims 5, 8, 13, 14, 18, and 21–23

Claim 5 recites “[t]he decoder of claim 1 wherein the second index includes a plurality of tags, each tag references encoded video frames that are evenly spaced throughout the encoded video frames.” Petitioner alleges that claim 5 also would have been obvious in view of Zetts and Kaku. *See* Pet. 54–57. In part, Petitioner contends that Zetts teaches that “the GOP

“complete” index, and similarly, the “second” index refers to the “abridged” index. *See* Ex. 1001, 52:54–53:3.

¹⁹ In comparison to claim 1’s “first index” limitation, claim 15 recites “a complete index referencing each encoded video frame in the sequence of encoded video frames.” Ex. 1001, 52:60–61. Patent Owner’s arguments related to other aspects of the “first index” limitation (e.g., whether more than one “characteristic” is required) therefore do not apply to claim 15 and its dependent claims. *See* PO Resp. 50–58 (not including claim 15 in the heading or discussion that follows).

offset table includes a plurality of entries, one for each GOP,” and “[e]ach entry includes a tag (e.g., an address offset field) that indicates the location of the starting I-frame for that GOP.” *Id.* at 54 (citing Ex. 1004, 3:48–61; 8:15–31, 10:35–67; Ex. 1003 ¶ 196). Petitioner further contends that “Kaku teaches evenly-spaced groups of pictures and associated audio in an AVI file, including groups of 15 video (image) frames with 1 second of associated audio.” *Id.* at 54–55 (citing Ex. 1005, 5:9–21, 8:62–9:8, Fig. 2; Ex. 1003 ¶ 197). Petitioner argues that a person of ordinary skill in the art would have been motivated to combine Zetts’s and Kaku’s teachings to use evenly spaced GOPs with the same number of frames in each GOP. *Id.* at 55–56 (citing Ex. 1005, 5:9–21, 8:62–9:8, Fig. 2; Ex. 1003 ¶ 198).

Petitioner argues that, at the time of the invention, a common way to organize GOPs in MPEG media files was to evenly space the GOPs, with the same number of frames in each GOP, and that many encoders had I-frame spacing settings for that purpose. *Id.* at 56 (citing Ex. 1003 ¶ 198). Petitioner further argues that a person of ordinary skill in the art “would have been motivated to use evenly-spaced GOPs because it improved fast-forward and rewind features,” a well-known benefit of evenly spaced I-frames. *Id.* (citing Ex. 1003 ¶ 198). Additionally, when the GOPs are evenly spaced, Petitioner argues, “it would have been obvious for the second index to include a plurality of tags, where each tag references encoded video frames (e.g., the first frames at the start of each GOP) that are evenly spaced throughout the encoded video frames.” *Id.*

Claims 8, 14, and 23 depend from independent claims 1, 9, and 15, respectively, and recite that “trick play functionality comprises at least one of fast forward, rewind and scene skipping.” Petitioner alleges that claims 8,

14, and 23 also would have been obvious in view of Zetts and Kaku. *See* Pet. 57, 65, 76 (citing Ex. 1003 ¶¶ 201, 220, 251). Petitioner relies on its analysis of the trick play limitation of claims 1, 9, and 15 for showing how the combination of Zetts and Kaku teaches the express language recited by claims 5, 18, and 23. *See id.* at 57, 65, 76 (citing Pet. §§ VI.A.2[1g], VI.A.5[9g], VI.A.8[15g]).

Next, Petitioner alleges that claim 13 also would have been obvious in view of Zetts and Kaku.²⁰ *See* Pet. 54–57. In part, Petitioner argues that Zetts teaches the express language recited by claim 13 because it teaches a processor detecting scene changes, a common feature for video libraries, where commercially available cataloger software was used to automatically perform scene change analysis and create a bitmap (thumbnail) of the first frame after each cut or major scene transition. *Id.* at 62 (citing Ex. 1004, 1:59–2:11, 2:12–18; Ex. 1003 ¶ 215). Petitioner contends an ordinarily skilled artisan would have found it obvious for a processor, e.g., running cataloger software, to insert a key frame (e.g., I-frame) when the processor

²⁰ Claim 13 recites “[t]he encoder of claim 9 wherein the processor is configured to insert key frames when *one of the processor* detects a scene change and a threshold interval of video frames is exceeded without the processor detecting a scene change.” Ex. 1001, 52:47–50 (emphasis added). Petitioner contends that the phrase “one of the processor” is grammatically incorrect, and both claims 9 and 13 only recite a singular processor. Pet. 23. Petitioner further contends that an ordinarily skilled artisan would have understood claim 13 to mean “the processor is configured to insert key frames when one of (a) the processor detects a scene change, *or* (b) a threshold interval of video frames is exceeded without the processor detecting a scene change.” *Id.* at 22–23. Patent Owner does not respond to Petitioner’s argument (*see generally* PO Resp.), and we are persuaded by Petitioner’s interpretation of the claim for the reasons provided by Petitioner (Pet. 22–23).

detects a scene change because doing so would have allowed the user to begin decoding and playback at the detected scene change, as Zetts teaches. *Id.* at 63 (citing Ex. 1003 ¶ 216). Petitioner also argues that it would have been obvious, in view of Kaku’s teaching of grouping 15 video (image) frames with 1 second of associated audio, to insert key frames when a threshold interval of video frames is exceeded without detecting a scene change. *Id.* at 63–65 (citing Ex. 1005, 5:9–21, 8:62–9:8, Fig. 2; Ex. 1003 ¶¶ 218–219).

Claim 18 recites “[t]he decoder of claim 15 wherein the processor is configured to identify a desired encoded video frame; determine the encoded video frame that is closest to the desired video frame in the abridged index; and display an encoded video frame.” Petitioner alleges that claim 18 also would have been obvious in view of Zetts and Kaku. *See* Pet. 71–72. In part, Petitioner argues that Zetts teaches the express language recited by claim 18 because Zetts describes scene-skipping (play-from-offset) where the player locates the nearest preceding GOP header using the timecode stored in the GOP offset table. *Id.* at 71 (citing Ex. 1004, 3:29–61, 13:4–35, 6:4–16; Ex. 1003 ¶ 237). According to Petitioner, “Zetts teaches identifying a desired encoded video frame (the ‘requested frame’ at the ‘requested timecode’), determining the nearest preceding I-frame (at the start of a GOP) to the requested frame in the GOP offset table by ‘comparing the requested timecode with each GOP timecode 855 from the table,’ streaming from the first frame of the GOP, and then displaying the requested frame when it is reached.”²¹ *Id.* at 72 (citing Ex. 1004, 12:4–9, 13:4–35; Ex. 1003 ¶ 238).

²¹ Petitioner argues that in view of claim 20, which indirectly depends on claim 18, the “closest frame” of claim 18 may be satisfied by “the closest

Claim 21 recites “[t]he device of claim 18, wherein the processor configured to [display]²² an encoded video frame further comprises the processor displaying the encoded video frame that is determined to be closest to the desired video frame.” Petitioner alleges that claim 21 also would have been obvious in view of Zetts and Kaku. *See* Pet. 72–74. In part, Petitioner argues that “Zetts teaches using the GOP offset table to determine the first frame (an I-frame) in the nearest preceding GOP for the desired (e.g., requested) video frame,” and a person of ordinary skill in the art would have found it obvious to display the identified I-frame. *Id.* at 72–73 (citing Ex. 1004, 6:4–16, 13:4–35; Ex. 1003 ¶ 242). Although Zetts teaches a feature where the player suppresses video display while skipping frames until reaching the requested frame, Petitioner argues that “the omission of this feature would have been obvious for several reasons, including because some users do not desire it” and “prefer to have video playback begin as soon as possible, even if playback does not begin at the exact requested frame,” because that approach “makes the playback feel more responsive to the user input (e.g., clicking a thumbnail).” *Id.* at 73 (citing Ex. 1004, 13:21–23, 6:4–16, 13:4–35; Ex. 1003 ¶ 243).

Alternatively, Petitioner argues, a person of ordinary skill in the art “would have found it obvious to use the starting I-frames of GOPs, or a

preceding frame in the abridged index to the desired frame.” Pet. 23–24 (citing Ex. 1003 ¶¶ 141–142). Patent Owner does not respond to Petitioner’s argument (*see generally* PO Resp.), and we are persuaded by Petitioner’s interpretation of the claim for the reasons provided by Petitioner.

²² Although claim 21 includes a typographical error, Petitioner offers evidence related to “displaying” an encoded video frame. *See* Pet. 72; Ex. 1001, 54:12–13. We are persuaded to accept Petitioner’s reading of the claim.

subset, as thumbnails the user can select,” in which case, when the user requests playback starting from the first frame of a GOP, the closest frame in the abridged index would have been that same frame. *Id.* at 74 (citing Ex. 1003 ¶ 245).

Petitioner alleges that claim 22 also would have been obvious in view of Zetts and Kaku. *See* Pet. 75. Petitioner relies on its analysis of the trick play limitation of claim 15 for showing how the combination of Zetts and Kaku teaches that “[t]he process of locating and playing back the sequence of encoded video frames . . . utilizes the abridged index (e.g., Zetts’s GOP offset table) *without using or receiving the complete index* (e.g., Kaku’s index chunk at the end of the file).” *Id.* at 75 (emphasis added) (citing Ex. 1003 ¶ 247; Pet. § VI.A.8[15f]). Petitioner argues that Zetts teaches that video playback begins by extracting the GOP offset table from the beginning of the file, which is used to locate and access requested frames. *Id.* (citing Ex. 1004, 3:29–47, 3:48–61, 6:4–16, 13:36–43, 12:61–13:3; Ex. 1003 ¶¶ 248–250).

Patent Owner does not raise any additional argument directed specifically to claims 5, 8, 13, 14, 18, and 21–23. *See generally* PO Resp. On balance, considering the complete record before us, we determine that Petitioner has established, by a preponderance of the evidence, the combination of Zetts and Kaku would have rendered the subject matter of claims 5, 8, 13, 14, 18, and 21–23 obvious to one of ordinary skill in the art at the time of the invention for the reasons provided by Petitioner.

F. Obviousness over Zetts, Kaku, and Seo

Petitioner contends that claims 5, 18, and 21 are unpatentable under 35 U.S.C. § 103 as obvious over Zetts, Kaku, and Seo. Pet. 76–82. For the

reasons that follow, we are persuaded that Petitioner has established by a preponderance of the evidence, including Dr. Reader's testimony, that claims 5, 18, and 21 are unpatentable under § 103(a) as obvious over Zetts, Kaku, and Seo.²³

1. Dependent Claims 5, 18, and 21

Petitioner contends that claim 5 would have been obvious in view of Zetts, Kaku, and Seo. Pet. 78–79. Petitioner relies in part on its challenge to claim 5 based on Zetts and Kaku as teaching evenly spaced I-frames at the start of each GOP. *Id.* at 78 (citing Pet. § VI.A.2–3). Petitioner contends that Seo teaches that “the I-frame is located with a predetermined interval in order to prevent a defect from being generated on the video screen due to accumulating errors.” *Id.* (quoting Ex. 1006, 5:39–46). Petitioner argues that in view of the combined teaching of Seo and Zetts, “it would have been obvious that the second index (e.g., GOP offset table) includes a plurality of tags, where each tag references encoded video frames (e.g., I-frames) that are evenly spaced throughout the encoded video frames in the multimedia file.” *Id.* at 78–79 (citing Ex. 1003 ¶ 260; Pet. §§ VI.A.2[1e], VI.A.5[9e]).

Petitioner contends that claim 18 also would have been obvious in view of Zetts, Kaku, and Seo. Pet. 79–80. Petitioner argues that Seo teaches a user requesting playback from a desired frame (random access point) in the video, and identifying whether the desired random access point is an I-frame and, if not, determining the closest I-frame and streaming starting from that

²³ Even though we addressed claims 5, 18, and 21 above (*see supra* § III.E.4), we address Petitioner's challenge under this ground for completeness.

I-frame. *Id.* at 79 (citing Ex. 1006, 4:26–46, 2:48–60, 1:40–52, 6:17–23, 6:52–57, Fig. 1; Ex. 1003 ¶ 262). In view of Seo’s teachings, Petitioner contends that it would have been obvious to a person of ordinary skill in the art “to use the GOP offset table to determine the I-frame that is closest to the desired video frame in the abridged index,” and display that I-frame. *Id.* at 80 (citing Ex. 1006, 6:1–3, 6:36–51; Ex. 1003 ¶¶ 264–266; Pet. §§ VI.B.1, VI.A.2[1g], VI.A.8[15f]).

Petitioner contends that claim 21 also would have been obvious in view of Zetts, Kaku, and Seo. Pet. 81–82. Petitioner argues that Seo teaches determining whether the user wants to receive data from an exact random access point and, if not, detecting an I-frame closest to the requested random access point to begin streaming and playback. *Id.* (citing Ex. 1006, 6:36–51). Petitioner further contends that Seo teaches that the I-frame is transmitted to the user’s device, stored in memory, and displayed. *Id.* (citing Ex. 1006, code (57), 2:65–3:3, 4:37–40, 6:1–3, 6:39–51; Ex. 1003 ¶¶ 272–273). Petitioner argues that an ordinarily skilled artisan “would have found it obvious to decode video starting from the closest I-frame because MPEG decoding is required to begin with an I-frame.” *Id.* at 81–82 (citing Ex. 1004, 2:20–28; Ex. 1006, 5:39–46; Pet. § VI.A.10[21]). According to Petitioner, whether to display or suppress frames leading up to the requested frame is an obvious matter of user preference, and Seo teaches that some users prefer displaying the frames. *Id.* at 82 (citing Ex. 1003 ¶ 274). Further, Petitioner argues, “it would have been obvious from Seo’s teachings that the transmitted frames are meant to be displayed.” *Id.* (citing Ex. 1006, 6:52–7:4; Ex. 1003 ¶¶ 275–276).

Patent Owner does not specifically respond to these arguments. *See generally* PO Resp. We adopt Petitioner’s arguments for the reasons provided by Petitioner to find that the combination teaches the subject matter of claims 5, 18, and 21.

*2. Motivation to Combine Zetts, Kaku, and Seo;
Reasonable Expectation of Success*

Petitioner argues that a person of ordinary skill in the art would have been motivated to combine the teachings of Seo with those of Zetts and Kaku. Pet. 76 (citing Ex. 1003 ¶ 253). Petitioner argues Zetts and Seo provide complementary teachings for scene-skipping because Zetts teaches scene skipping by indicating the location of I-frames at the start of each GOP whereas Seo teaches displaying video starting from the I-frame closest to the frame requested by the user. *Id.* at 76–77 (citing Ex. 1006, 6:36–51; Ex. 1003 ¶ 254). Petitioner argues that Seo teaches that at least some users do not want play-from-offset requests to begin exactly at the requested location, preferring quicker playback from the closest I-frame because it feels more responsive. *Id.* (citing Ex. 1003 ¶ 255). Relying on Dr. Reader’s testimony, Petitioner argues that a person of ordinary skill in the art would have been motivated to apply Seo’s teaching to Zetts for users that do not desire exact-frame playback. *Id.* (citing Ex. 1003 ¶¶ 255–256).

Petitioner further argues that an ordinarily skilled artisan would have had a reasonable expectation of success in achieving this combination because the application of Seo’s teachings would have been a simple matter of implementing user preferences using conventional programming. *Id.* at 78 (citing Ex. 1003 ¶ 257). Likewise, Petitioner contends accessing and displaying frames for MPEG standards and managing the spacing of

I-frames was well within the level of ordinary skill. *Id.* (citing Ex. 1003 ¶ 257).

Patent Owner does not specifically respond to these arguments. *See generally* PO Resp. We determine that Petitioner provides a reason with rational underpinning why one of ordinary skill in the art would have been motivated to combine Seo’s teachings with those of Zetts and Kaku—providing the user with more responsive playback where the user does not desire exact-frame playback—and that one of ordinary skill in the art would have had a reasonable expectation of success in achieving the combination.

3. Determination as to Claims 5, 18, and 21 Under Petitioner’s Ground based on Zetts, Kaku, and Seo

Patent Owner does not raise any argument directed specifically to Petitioner’s obviousness challenge of claims 5, 18, and 21 based on Zetts, Kaku and Seo. *See generally* PO Resp. We determine that the information presented supports Petitioner’s assertions as to these dependent claims.

On balance, considering the complete record before us, Petitioner has established by preponderance of the evidence that the combination of Zetts, Kaku, and Seo would have rendered the subject matter of claims 5, 18, and 21 obvious to one of ordinary skill in the art at the time of the invention.

IV. PATENT OWNER’S MOTION TO EXCLUDE

Patent Owner filed a Motion to Exclude seeking to exclude Exhibits 1018–1020 as hearsay under Federal Rules of Evidence 801 and 802. Paper 39, 1. Patent Owner contends that Petitioner relies on these exhibits “for the truth of the statements within them to support its factual assertion that the AVI file format was ‘designed for streaming.’” *Id.* at 1–2 (citing Pet. Reply). Patent Owner contends:

For example, Petitioner relies on Exhibit 1018's statement that "media distribution system 18 may encode the media data streams and/or media data files into . . . AVI (i.e., Audio Video Interleave) format" for the truth of the (incorrect) factual assertion that AVI was suitable for streaming media. Petitioner also relies on Exhibit 1019 for the truth of its statement that "[e]xamples of . . . formats for streaming data include . . . AVI." Lastly, Petitioner relies on Exhibit 1020 for the truth of the statement that "[e]xamples of media types include . . . streaming formats (e.g., . . . AVI . . .)."

Id. (internal citations omitted) (citing Pet. Reply 5; Exs. 1018–1020). Patent Owner further contends that hearsay is not admissible unless an exception applies and that no such exception applies for these exhibits. *Id.* at 2–3.

Petitioner responds that Exhibits 1018–1020 are prior art U.S. patents and U.S. patent publications, and are admissible. Paper 40, 3–4. Petitioner points out that Patent Owner has itself argued in a related proceeding that "[t]he substance of a printed publication generally is not hearsay," and that printed publications "legitimately serve to document the knowledge that skilled artisans would bring to bear in reading the prior art identified as producing obviousness." *Id.* at 4 (citing *Netflix, Inc. v. DivX, LLC*, IPR2020-00558, Paper 44 at 10 (PTAB Apr. 30, 2021)). Petitioner argues the Board has consistently held that prior art is not hearsay. *Id.* at 4–6 (citing *Juniper Networks, Inc. v. Chrimar Sys., Inc.*, IPR2016-01389, Paper 69 at 102 (PTAB Jan 23, 2018); *33Across, Inc. v. LeftsnRights, Inc.*, IPR2018-01480, Paper 54 at 90 (PTAB Feb. 7, 2020)). According to Petitioner, Exhibits 1018–1020 provide express teachings, suggestions, and motivations in the prior art for using AVI for video streaming, and "[r]egardless of the truth of the matters asserted, these teachings exist in the prior art, and a [person of ordinary skill in the art] is presumed to have

knowledge of all the pertinent prior art.” *Id.* at 6. Petitioner further contends that, as U.S. patents and U.S. patent publications, Exhibits 1018–1020 are admissible under F.R.E. 803(8) because they “constitute records of the activities of the U.S. Patent and Trademark Office.” *Id.* at 7.

Patent Owner responds that prior art is hearsay if proffered for the truth of what it describes, and that Petitioner here relies on Exhibits 1018–1020 precisely for the truth of its attorney argument, unsupported by expert testimony, that AVI was “designed for streaming.” Paper 44 at 1–2. Patent Owner argues that the Board has previously admitted Patent Owner’s evidence on the basis that they were relied upon by Patent Owner’s expert, but here, Petitioners chose to not have Dr. Reader opine on any of these exhibits. *Id.* at 2–5 (citing *Netflix*, IPR2020-000558, Paper 44 at 4). Patent Owner further argues that the public record hearsay exception does not apply because the statements in a patent’s specification are not made by any government agency in the course of performing their duties; rather, the statements in a patent’s specification are made by third party applicants, and have become public records only by virtue of having been filed with the Patent Office. *Id.* at 3–4. Patent Owner also argues that it has been deprived of any opportunity to respond to these exhibits with any evidence or to cross-examine Dr. Reader about them. *Id.* at 5.

Patent Owner, as the “moving party,” “has the burden of proof to establish that it is entitled to the requested relief.” 37 C.F.R. § 42.20.

We are not persuaded that Exhibits 1018–1020 constitute inadmissible hearsay under Federal Rules of Evidence 801 and 802. Mot. 1. Hearsay refers to a statement that “a party offers in evidence to prove the truth of the

matter asserted in the statement.” Fed. R. Evid. 801. Here, Petitioner does not offer these exhibits for the truth of the matter asserted in them.

Petitioner relies on these exhibits to show that “prior art, including from Microsoft and Intel, expressly teaches AVI for streaming.” Pet. Reply 5. For example, Petitioner quotes the following from Exhibit 1018: “media distribution system 18 may encode the media data streams and/or media data files into . . . AVI (i.e., Audio Video Interleave) format, for example.” *Id.* (quoting Ex. 1018, 3:35–48). Clearly, Petitioner does not offer this exhibit to show that the media distribution system of U.S. Patent 8,996,420 could *in fact* encode media data streams into various formats or even that those media streams were encoded in the AVI format. Instead, Petitioner offers it as evidence of what it describes, whether it is in fact true or not, and to show that skilled artisans would have understood the AVI format to be one such format from the teachings of U.S. Patent 8,996,420, again whether it is in fact true or not. Similarly, Petitioner quotes Exhibit 1019:

[C]ertain standards have been developed which enable file-based data to be *encoded in a streaming format*, so that the data can be accessed and read at the same time it is being received, and without first requiring the entire contents of the streamed data file to be received. *Examples of . . . formats for streaming data include . . . AVI (Audio Video Interleave) . . .*

Id. (quoting Ex. 1019 ¶ 5). Again, Petitioner offers this evidence to show that a person of ordinary skill in the art would have understood the AVI format to be one of the formats for streaming data, whether or not it was actually true that formats for streaming data included AVI, for example. *See id.* (quoting Ex. 1020 ¶ 57). In short, these exhibits do not constitute hearsay because they are offered as evidence of what they describe, not for proving the truth of the matters addressed in the references. *See 33Across*, IPR2018-

01480, Paper 54 at 90 (citing *Joy Tech., Inc. v. Manbeck*, 751 F. Supp. 225, 233 n.2 (D.D.C. 1990)); *Juniper*, IPR2016-01389, Paper 69 at 102).

Patent Owner argues that it would be prejudiced by the admission of these exhibits because

Petitioners have by design deprived Patent Owner of *any* opportunity to respond to these exhibits with any evidence, where Petitioners *chose* to not include them with the Petition, even though they relied on AVI for streaming as their motivation to combine their references, and where Petitioners *chose* to not have Dr. Reader opine on any of these exhibits, even in his 2nd declaration, thus depriving Patent Owner even of the opportunity to cross-examine Dr. Reader about them.

Paper 44, 5 (citing Pet. 25). We find little prejudice to Patent Owner given that the evidence relates to an issue raised in the Patent Owner Response, where Patent Owner had ample opportunity to submit evidence in support of its argument. *See* PO Resp. 28–29 (arguing that “it was well-known at the time of invention that the AVI file format was not designed for streaming,” and citing to various printed publications). In fact, Petitioner’s Reply arguments are squarely in response to arguments raised in the Patent Owner Response. For us to analyze patentability based on Patent Owner’s printed publications offered as evidence of knowledge of a person of ordinary skill in the art to *argue* patentability, while excluding Petitioner’s printed publications offered to *refute* that same knowledge, would be unfair and

improper.²⁴ *See* Fed. R. Evid. 102. Accordingly, Patent Owner’s Motion to Exclude is *denied*.²⁵

V. PETITIONER’S OBJECTION TO PATENT OWNER’S ORAL HEARING ARGUMENTS

During the oral hearing, Petitioner objected to Patent Owner’s claim construction argument as presenting a different position at the oral hearing than the one Patent Owner made in its briefing. *See* Tr. 86:10–87:3. Specifically, Petitioner objected to Patent Owner’s argument that “the second index can enable trick play separately from the first,” as a new argument that had not previously been presented in Patent Owner’s papers. *Id.* at 86:20–23.

Patent Owner responded that the argument, made in conjunction with demonstrative slide 45, specifically referred to our preliminary findings and was presented in Patent Owner’s Sur-reply. *Id.* at 104:1–23 (citing

²⁴ Patent Owner did not seek authorization to file additional exhibits with its Sur-reply and, thus, protestations regarding its inability to respond to these exhibits with further evidence are not persuasive.

²⁵ Although Patent Owner does not seek to exclude Dr. Reader’s testimony, Patent Owner argues that his declaration should be given little weight. *See* PO Resp. 58–60. According to Patent Owner, “Dr. Reader’s opinions of obviousness in his declaration are generally based on conclusory and unsupported allegations, as explained throughout [the Patent Owner Response].” *Id.* at 58. Patent Owner also asserts that “Dr. Reader was evasive, and unwilling or unable to answer many basic questions about the ’792 patent and the Petition’s references.” *Id.* at 59. We have considered Dr. Reader’s testimony as well as Patent Owner’s arguments as to each of the issues to be resolved and accorded appropriate weight to his testimony. *See Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 5 (PTAB Aug. 24, 2022) (precedential) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”).

PO Sur-reply 15). We have reviewed Patent Owner’s cited papers and agree with Patent Owner that it did not present an improper new argument that had not been previously made. *See, e.g.*, PO Sur-reply 15 (“As explained, the ’792 [patent] teaches two aspects of its embodiments: one aspect wherein the second index alone enables trick play functionality, another where the two indexes together enable trick play functionality.” (citing PO Resp. 47–48)). We therefore overrule Petitioner’s objection.

We note, however, that demonstratives are not evidence. *See* Paper 38 at 5 (“Demonstrative exhibits used at the hearing are not evidence, nor will they be relied upon as evidence. Rather, demonstratives are visual aids to a party’s oral presentation regarding arguments and evidence previously presented and discussed in the papers”); CTPG 84 (“Demonstrative exhibits used at the final hearing are aids to oral argument and not evidence.”). In this Final Written Decision, we rely solely on the arguments properly presented in the parties’ briefs and the evidence of record, not on the demonstratives.

VI. CONCLUSION

For the foregoing reasons, we conclude that Petitioner has established by a preponderance of the evidence that claims 1, 5, 8, 9, 13–15, 18, and 21–23 of the ’792 patent are unpatentable.²⁶ Additionally, we deny Patent

²⁶ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent

Owner's Motion to Exclude, overrule Petitioner's objection to Patent Owner's oral hearing testimony based on demonstrative slide 45, and maintain our prior ruling sustaining Patent Owner's objection to Petitioner's demonstrative slide 53.

Our conclusions regarding the Challenged Claims are summarized below:

Claim(s)	35 U.S.C. §	References/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 5, 8, 9, 13–15, 18, 21–23	103(a)	Zetts, Kaku	1, 5, 8, 9, 13–15, 18, 21–23	
5, 18, 21	103(a)	Zetts, Kaku, Seo	5, 18, 21	
Overall Outcome			1, 5, 8, 9, 13–15, 18, 21–23	

Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

VII. ORDER

It is, therefore,

ORDERED that claims 1, 5, 8, 9, 13–15, 18, and 21–23 of the '792 patent have been shown to be unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude is *denied*;

FURTHER ORDERED that Petitioner's objection to Patent Owner's oral hearing argument is *overruled*; and

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

IPR2020-00646
Patent 8,472,792 B2

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