

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMAZON.COM, INC.,
Petitioner,

v.

CUSTOMPLAY, LLC,
Patent Owner.

IPR2018-01498
Patent 9,380,282 B2

Before J. JOHN LEE, JESSICA C. KAISER, and JOHN R. KENNY,
Administrative Patent Judges.

LEE, *Administrative Patent Judge.*

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

INTRODUCTION

Amazon.com, Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 4, 7–9, 12, 14, 16, 18, and 19 (“the challenged claims”) of U.S. Patent No. 9,380,282 B2 (Ex. 1001, “the ’282 Patent”). An *inter partes* review of all challenged claims was instituted on March 14, 2019. Paper 13 (“Inst. Dec.”). After institution, CustomPlay, LLC (“Patent Owner”) filed a Patent Owner Response (Paper 18, “PO Resp.”), Petitioner filed a Reply (Paper 22, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 25, “PO Sur-reply”). Patent Owner also filed a Motion to Exclude (Paper 28), which is addressed below. An oral hearing was held on December 18, 2019. Paper 36 (“Tr.”).

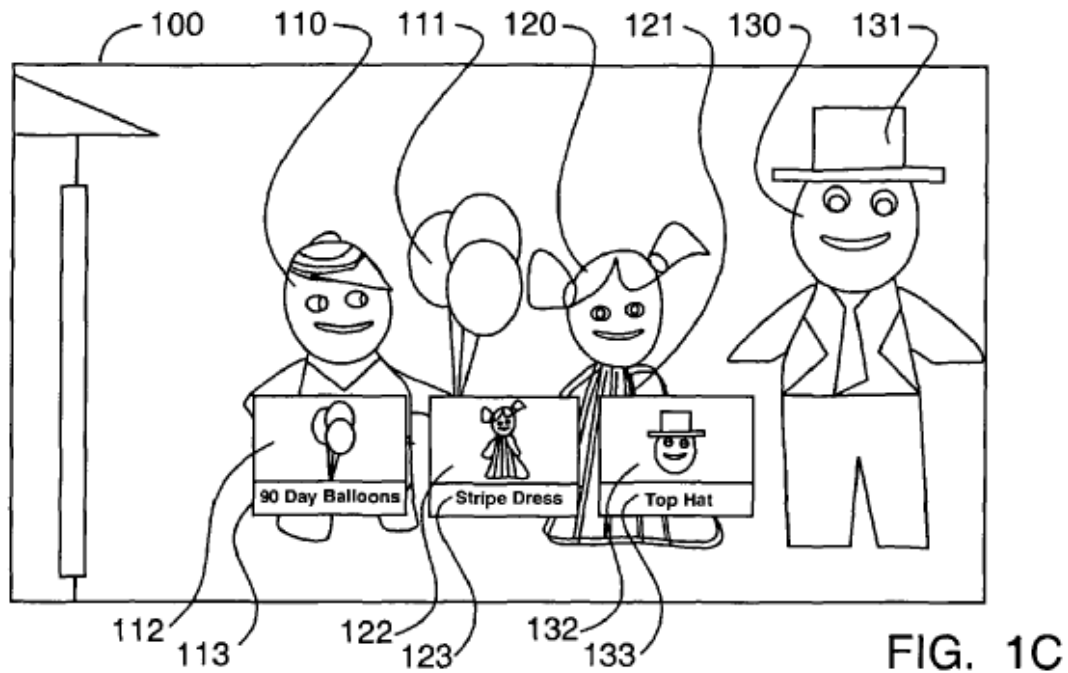
We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). As explained below, Petitioner has shown by a preponderance of the evidence that all challenged claims of the ’346 Patent are unpatentable.

A. *Related Case*

The parties identify as related to the present case *CustomPlay, LLC v. Amazon.com, Inc.*, Case No. 9:17-cv-80884 (S.D. Fla.). Pet. 1; Paper 4, 1.

B. *The ’282 Patent*

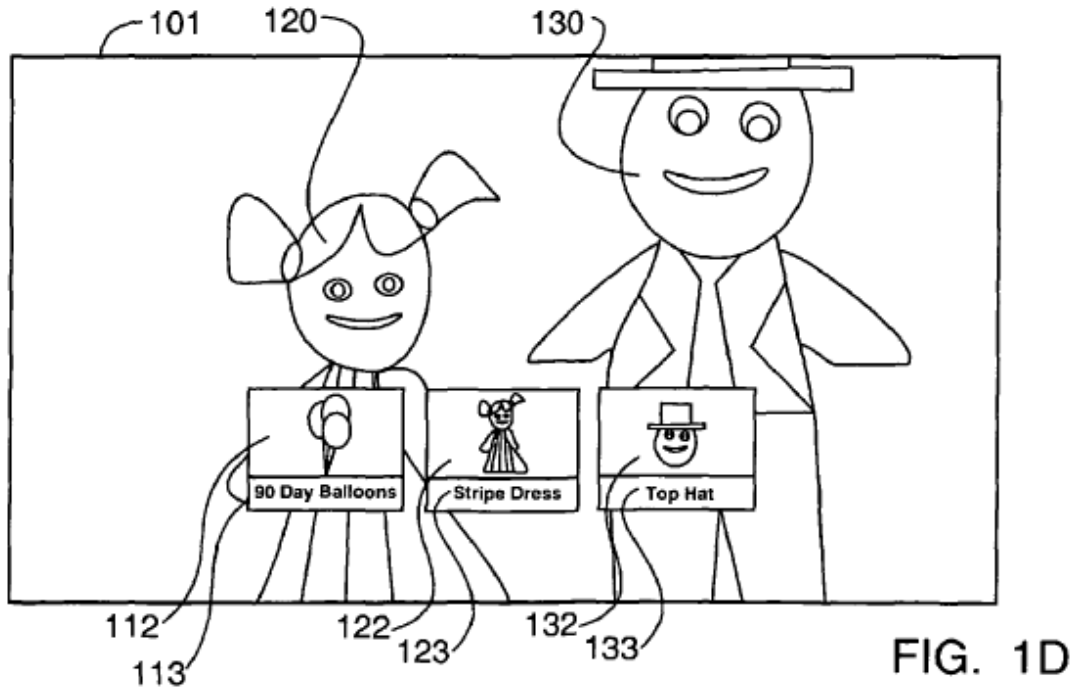
The ’282 Patent relates to providing information to a user during a video regarding a purchasable item in that video. Ex. 1001, 1:64–67. In accordance with the claimed invention, as shown in Figure 1C (reproduced below), item information is presented during video playback.



Ex. 1001, Fig. 1C. Figure 1C depicts an embodiment of the claimed invention where, in response to a user request, item information for items depicted in the video is superimposed onto the video. *Id.* at 8:33–54. For example, information about balloons 111 held by a boy in the video is displayed in the form of image 112 and textual identification 113, which identifies the item as “90 Day Balloons.” *Id.* at Fig. 1C, 8:39–43. Similarly, information about dress 121 worn by a girl in the video is displayed in the form of image 122 and textual identification 123, which identifies the item as “Stripe Dress.” *Id.* at Fig. 1C, 8:43–46.

The '282 Patent notes that the example shown in Figure 1C “presumes that the user has activated the item identification routines at that instance that the target item is on the screen,” but that such is often not the case. *Id.* at 9:35–41. “A user may request item information for an item that was just depicted but is no longer currently depicted” *Id.* at 9:41–43. To address such a scenario, “the request location . . . may be adjusted to include

the request location and a predetermined play period prior to the request location, for example, 10 seconds.” *Id.* at 9:48–51. This is shown in Figure 1D, which is reproduced below.



Ex. 1001, Fig. 1D. Figure 1D depicts a video frame “at a subsequent instance within the same clip that includes the video frame 100 shown in FIG. 1C.” *Id.* at 9:61–63. Although the boy and balloons are no longer depicted, image 112 and textual identification 113 of the balloons are still provided. *Id.* at Fig. 1D. In this instance, “the item identification routines are configured to search a plurality of segment definitions to identify segment definitions that are responsive to the request location and a predetermined play period prior to the request location.” *Id.* at 10:1–4. Thus, information about the girl’s dress (122, 123) depicted at the request location as well as information about the balloons (112, 113) depicted at a play period prior to the request location are both displayed. *Id.* at Fig. 1D.

C. Challenged Claims

Petitioner challenges claims 4, 7–9, 12, 14, 16, 18, and 19 of the '282 Patent. Claim 4 is illustrative and is reproduced below:

4. An apparatus capable of processing data and instructions executable by a processor; the apparatus, when executing the instructions, performs the steps of:

receiving, from a user during a playing of a video, a request for information relating to a depiction within the video;

identifying a request location that is responsive to the request for information;

retrieving, from a plurality of video frame identifiers, a first video frame identifier that is responsive to the request location, and contemporaneously retrieving a second video frame identifier that is different from the first video frame identifier and that is responsive to a location that is prior to the request location; and

displaying information associated with the first video frame identifier, and contemporaneously displaying information associated with the second video frame identifier that is different from the information associated with the first video frame identifier.

D. Instituted Grounds of Unpatentability and Asserted Prior Art

Trial was instituted on the following grounds of unpatentability¹ asserted in the Petition:

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), amended 35 U.S.C. §§ 102 and 103. Because the application from which the '346 Patent issued was filed before March 16, 2013, the effective date of the relevant amendments, the pre-AIA versions of §§ 102 and 103 apply.

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
4, 9, 12, 14, 16, 19	103(a)	McIntire, ² Dey ³
7, 8, 18	103(a)	McIntire, Dey, Abecassis ⁴
4, 9, 12, 14, 16, 19	103(a)	Bergen, ⁵ Reimer ⁶
7, 8, 18	103(a)	Bergen, Reimer, Abecassis
4, 9, 12, 14, 16, 19	103(a)	Armstrong ⁷
7	103(a)	Armstrong, Abecassis

Inst. Dec. 37. Petitioner also relies on two declarations by its proffered expert witness, Dr. Alan C. Bovik (Ex. 1002; Ex. 1102). Likewise, Patent Owner relies on a declaration by its proffered expert witness, Dr. Clifford Reader (Ex. 2021).

ANALYSIS

A. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art would have had a bachelor's degree in electrical engineering, computer engineering, or computer science, as well as three years of experience in the design of digital video systems. Pet. 9 (citing Ex. 1002 ¶¶ 24–26). Patent Owner does

² U.S. Patent Application Publication No. 2007/0250901 A1, published Oct. 25, 2007 (Ex. 1004, “McIntire”).

³ U.S. Patent No. 6,965,890 B1, issued Nov. 15, 2005 (Ex. 1023, “Dey”).

⁴ U.S. Patent No. 6,038,367, issued Mar. 14, 2000 (Ex. 1024, “Abecassis”).

⁵ U.S. Patent No. 6,956,573 B1, issued Oct. 18, 2005 (Ex. 1028, “Bergen”).

⁶ U.S. Patent No. 5,696,905, issued Dec. 9, 1997 (Ex. 1005, “Reimer”).

⁷ U.S. Patent Application Publication No. 2007/0003223 A1, published Jan. 4, 2007 (Ex. 1021, “Armstrong”).

not dispute Petitioner's formulation of the level of skill in the art. Based on the information and testimony presented with the Petition, we adopt Petitioner's formulation.

B. Claim Construction

For petitions filed before November 13, 2018, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b) (2018); *see Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016). Petitioner contends no express claim constructions are necessary to resolve the issues presented in the Petition. Pet. 10. Patent Owner contends the inventor acted as his own lexicographer in presenting a number of definitions in the Specification of the '282 Patent, and asserts that these definitions should be used in this proceeding. PO Resp. 7–8. We determine that no claim terms of the challenged claims in the '282 Patent require express construction. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (holding that only claim terms in controversy require express construction, and only to the extent necessary to resolve the controversy). To the extent any interpretation of claim language is necessary, we address those issues in the context of our unpatentability analysis below.

C. Alleged Unpatentability Under § 103(a)

A claim is unpatentable under § 103 if the differences between the claimed subject matter and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.”

KSR Int’l Co. v. Teleflex Inc., 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of non-obviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)); see *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006)).

1. *Secondary Considerations of Non-Obviousness*

Neither party presents any evidence or argument regarding secondary considerations of non-obviousness relating to any challenged claim. Thus, we do not address any such considerations in this Decision.

2. *Obviousness Based on Bergen and Reimer*

Petitioner asserts that claims 4, 9, 12, 14, 16, and 19 would have been obvious over Bergen in view of Reimer. Pet. 38–53. Bergen is directed to “an information database suitable for providing a scene-based video information to a user.” Ex. 1028, 2:29–31. When a user submits a query to the system, the database may be used to retrieve, for example, all the scenes showing a particular actor. *Id.* at 14:10–15, 14:31–36. The database may be

indexed and accessed “according to temporal attributes,” such as “[f]rame viewing time, e.g., the time from the beginning of the video, which is equivalent to a frame number,” or “[s]cene viewing time, which is equivalent to a scene number.” *Id.* at 15:37–43. This indexing may be used to respond to user queries by providing several frames or scenes. *Id.* at 15:50–52. In one embodiment (a “Video-Book”), a temporal index can be used to display scenes of a video program in a “storyboard.” *Id.* at 20:23–33. The user can request further information about a particular scene in the storyboard, and view that and other scenes. *Id.* at 20:34–42.

Reimer relates to a system for “providing on demand access to information related to a movie while the movie is being presented to a user.” Ex. 1005, 3:27–29. Reimer explains:

The invention operates by presenting the movie to the user, and then receiving from the user a query pertaining to the movie. The invention determines a frame of the movie that was being presented to the user when the user issued the query (the invention may extract this information from the query, or may extract this information from the movie itself). The invention identifies, as specified by the query, portions of the movie related information relating to the frame, and retrieves those portions of the movie related information. These retrieved portions of the movie related information are presented to the user.

Id. at 3:31–41.

a. Claim 4

According to Petitioner (Pet. 39–42), Bergen teaches the “receiving . . . a request for information” limitation of claim 4 in its disclosure of “query requests” submitted by a user via a “client” to an “access engine.” Ex. 1028, 4:37–47. Bergen describes various types of queries that can be used to access the video information database via the access sub-system. *Id.*

at 14:13–30. “A textual query may comprise, e.g., a command to ‘find all video frames . . . showing a specific actor’” *Id.* at 14:13–17. “A linear video browsing technique may comprise, e.g., pointing to a specific displayed object, such as a baseball player, . . . and retrieving other scenes including the identified object (player)” *Id.* at 14:21–26. Thus, Petitioner contends, Bergen teaches “receiving, from a user . . . a request for information relating to a depiction within the video.” Pet. 40.

Claim 4 further requires that the request for information from the user be received “during a playing of a video.” Petitioner first relies on Bergen’s description of a “linear video browsing technique” for submitting a query, which may comprise “pointing to a specific displayed object, such as a baseball player, using a pointing device.” Ex. 1028, 14:21–24; *see also id.* at 15:4–6 (“The query specification may be selected using, e.g., a pointing device to select a particular portion of a displayed image.”). According to Petitioner, these disclosures would have suggested to an ordinary artisan that the query may be submitted as the video is played, i.e., when the object is displayed. Pet. 41.

In addition, Petitioner cites Reimer’s disclosure of “presenting the movie to the user, and then receiving from the user a query pertaining to the movie,” as part of its system “for providing on demand access to information related to a movie while the movie is being presented to a user.” Ex. 1005, 3:28–34; *see also id.* at 16:5–7 (“The user can send a query . . . at any time while viewing and/or interacting with a movie”); Pet. 41–42. The Petition (Pet. 42) cites Dr. Bovik’s testimony that a person of ordinary skill would have been motivated to combine this aspect of Reimer with the teachings of Bergen because doing so would have advantageously

“provide[d] the viewer with supplemental information for video that they are watching,” and further because Bergen and Reimer are “directed to similar systems” such that an ordinary artisan “would have had a reasonable expectation of success in combining them.” Ex. 1002 ¶ 115.

Patent Owner does not dispute these contentions. Based on the arguments and evidence discussed above, we find that the combination of Bergen and Reimer teaches the “receiving” limitation.

Next, the Petition relies on Bergen and Reimer as teaching the “identifying a request location” limitation of claim 4. Pet. 42–44.

Specifically, the Petition argues the following with respect to Bergen:

Bergen discloses various types of “attributes” that may be used to index and access video information, including “temporal attributes” and “content-based attributes.” Ex. 1028, 15:37–38, 15:57–58. Such attributes may be used for “querying the video information database” to “retrieve several frames or scenes.” *Id.*, 15:50–52; *see also id.*, 20:40–44 (a user may request “similar scenes” from a movie or sporting event “using the above-described attribute information”); 20:54–21:3.

Id. at 42. Petitioner proceeds to argue the following:

Moreover, Bergen discloses that the “content-based attributes” may be used to identify “all scenes including a particular object” in response to a user’s selection of “an attribute-related portion of a displayed image.” Ex. 1028, 15:57–62, 16:7–10. Again, a [person of ordinary skill] would have understood that a frame or time stamp corresponding to the request would need to be retrieved to identify the search results. Ex. 1002 ¶¶ 117–20. For example, to identify objects corresponding to the user’s selection, the system would need to determine what objects were in the selected location in the current frame. *Id.* Bergen discusses “location coordinates of objects” within a frame, and refers to such coordinates as “frame-specific attributes.” Ex. 1028, 10:13–16. Thus, when a user’s query relates to an object, a [person of ordinary skill] would have understood that

the system identifies the time or frame (request location) associated with such “location coordinates.” Ex. 1002 ¶¶117–20.

Id. at 43. We are persuaded by these arguments in the Petition and find that Bergen teaches the “identifying” limitation.

In its Response, Patent Owner characterizes Petitioner’s arguments regarding Bergen as “anticipation theory arguments” and an “inherency theory.” PO Resp. 34–35; *see* PO Sur-reply 18–20. That characterization, however, is inaccurate. As an initial matter, the Petition is clear that this ground of unpatentability as a whole is based on obviousness in view of two references, not anticipation. *See, e.g.*, Pet. 11. Although “inherency may supply a missing claim limitation in an obviousness analysis,” inherency in an obviousness context is not the same as inherency in an anticipation context, and its applicability generally is more limited. *See Par Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1194–95 (Fed. Cir. 2014). Patent Owner conflates the two. *See* PO Resp. 34 (citing, *e.g.*, *Synopsys, Inc. v. ATopTech, Inc.*, 685 F. App’x 951, 956 (Fed. Cir. 2017) (inherency in anticipation); *Endo Pharms. Sols., Inc. v. Custopharm Inc.*, 894 F.3d 1374, 1381 (Fed. Cir. 2018) (inherency in obviousness)).

Moreover, the Petition signals its reliance on the *explicit teachings* of Bergen, not undisclosed but inherent properties. For example, as noted above, the Petition identifies explicit disclosures in Bergen describing the identification of specific frames or scenes using “attributes” such as “content-based attributes” based on the objects present in each frame or scene, and “frame-specific attributes” comprising “location coordinates of objects” appearing in each frame. Pet. 42–43. Petitioner contends persuasively that a skilled artisan “would have understood” these disclosures of Bergen as *explicitly* describing a system in which (1) a user requests

information about a particular object (e.g., a person) in a frame or scene by selecting a particular “attribute-related portion” of the frame, and (2) the system identifies that frame or scene based on, for example, the content-based and frame-specific attributes to determine which objects were in that frame or scene, and which of those objects were selected by the user. *Id.* As set forth in the Petition, these aspects of the system are explicitly described in Bergen. *Id.* (citing, e.g., Ex. 1028, 15:57–62, 16:7–10, 20:40–44); *see* Ex. 1002 ¶¶ 117–120.

Thus, Patent Owner is incorrect that the Petition relies on *inherent* features of Bergen’s system that are *not* explicitly disclosed. Indeed, the Petition makes no mention of “inherency” or “inherent” features with respect to the “identifying” limitation. *See* Pet. 42–43. Petitioner’s assertions that a skilled artisan “would have understood” Bergen to explicitly describe a system in which certain steps “must” or “need to” occur, or would be “require[d],” does not transform its arguments into inherency arguments, or this ground into an anticipation ground. *See id.* In fact, in introducing an alternative argument based on Reimer, the Petition states, “[e]ven if Bergen did not *teach or suggest* this limitation,” indicating that its arguments are based on conventional obviousness concepts. *Id.* at 43 (emphases added).

Conversely, with regard to that alternative argument based on Reimer, Patent Owner is correct that the Petition failed to set forth a rationale explaining why a person of ordinary skill would have been motivated to combine Reimer with Bergen. PO Resp. 35–36. Petitioner asserts that “[e]ven if Bergen did not teach or suggest this limitation, it would have been obvious in view of Reimer.” Pet. 43–44. In particular, Petitioner cites (*id.* at

43–44) Reimer’s disclosure of determining “the time code corresponding to the current frame,” i.e., “the frame that was being presented on the user device when the user issued the query.” Ex. 1005, 16:61–63, 17:3–5, Fig. 9B; *see also id.* at 3:34–37 (“The invention determines a frame of the movie that was being presented to the user when the user issued the query . . .”). But Petitioner does not explain why an ordinary artisan would have combined these teachings with those of Bergen. Although Petitioner, in its Reply, belatedly attempts to identify such a motivation—based principally on a portion of the Petition relating to a *different* limitation (Pet. Reply 17 (citing Pet. 41–42))—we agree with Patent Owner that this effort is untimely and should be disregarded. *See* PO Sur-Reply 20–22.⁸ Based on our finding explained above that *Bergen* teaches this limitation, however, the deficiencies in this alternative argument are not fatal to Petitioner’s obviousness ground.

With respect to the final limitations of claim 4 that recite retrieving first and second “video frame identifiers” and displaying information associated with those identifiers, Petitioner relies on Bergen. Pet. 44–47. As Petitioner notes, Bergen discloses an “access engine” that, in response to a user request, “accesses the video information database and identifies video

⁸ Patent Owner also argues that an ordinary artisan would not have been motivated to combine Reimer with Bergen with respect to the “identifying” limitation because doing so would “require a change in the principle of operation of Bergen.” PO Resp. 36–38; *see* PO Sur-Reply 22–23 (reiterating the same argument but erroneously citing features of *different* references, i.e., McIntire and Dey). Although we disagree for the reasons explained in Petitioner’s Reply (Pet. Reply 17), this does not address the lack of a timely-raised motivation to combine the references for the “identifying” step.

frames and/or scenes . . . that satisfy the user request.” Ex. 1028, 14:31–37. This information, as discussed above, may be indexed by “temporal attributes,” such as “frame number,” which Petitioner reads on the recited “video frame identifier.” *Id.* at 15:37–41; Pet. 45 (citing Ex. 1002 ¶ 124). Once identified, the requested video frames/scenes are formatted for the user, for example, in “storyboard form.” Ex. 1028, 15:28–36.

As discussed above, Bergen describes a user submitting a query by requesting all video frames depicting a particular actor, or by “pointing to a specific displayed object, such as a baseball player,” to retrieve other scenes that include the object (player). *Id.* at 14:13–15, 14:21–25. Petitioner argues that Bergen consequently teaches that the system could retrieve the current frame (e.g., the current frame depicting the player that the user pointed to) together with all earlier frames featuring the same player, for example, including the frame numbers. Pet. 45–46. Thus, Petitioner contends Bergen teaches retrieving a first video frame identifier (e.g., frame number), from a plurality of such identifiers (e.g., all frame numbers), responsive to the request location (e.g., current frame with the selected baseball player). *See id.* In addition, Petitioner contends Bergen teaches contemporaneously retrieving (i.e., in the same search) a second video frame identifier (frame number) that is different from the first identifier and is responsive to a location prior to the request location (e.g., for an earlier frame with the same player). *See id.* at 47.

Petitioner further asserts that Bergen teaches displaying information associated with these different video frame identifiers, as recited in claim 4. *Id.* at 48–49. Specifically, Petitioner relies on Bergen’s disclosures relating to the “storyboard” that displays all of the frames retrieved for a user query.

See Ex. 1028, 15:28–36; *see also id.* at 20:28–39 (describing a “Video-Book” embodiment in which a temporal index is used to present key frames of scenes to a user “in a storyboard (i.e., linear) fashion” upon request). Relying also on Dr. Bovik’s testimony, Petitioner argues that an ordinary artisan would have understood these disclosures to teach displaying information (e.g., key frames) associated with different video frame identifiers (e.g., frame numbers for different frames with the same baseball player) contemporaneously (e.g., as part of the same storyboard). Pet. 48–49 (citing Ex. 1002 ¶¶ 135, 138).

Based on the arguments and evidence discussed above, we find that Petitioner has shown that Bergen teaches the “retrieving” and “displaying” limitations of claim 4. Although Patent Owner disputes that Bergen teaches these limitations (PO Resp. 38–40), its arguments are unpersuasive for the below reasons.

First, Patent Owner contends that Bergen’s teachings can be distinguished from claim 4 because Bergen teaches retrieving information associated with locations *after* the request location. *See id.* at 38–39. This position, however, is not commensurate with the scope of claim 4. The claim does not include any language *precluding* the retrieval of information associated with other, unclaimed video frame identifiers for locations after the request location. Patent Owner does not identify any such preclusive language, instead referring to conclusory assertions about alleged “conceptual distinctions” between the “indiscriminate” and “comprehensive” approach of Bergen, and the approach of the ’282 Patent. *See id.* These conclusory assertions are unpersuasive because they are not tied to any claim language or intrinsic evidence of the ’282 Patent. Further,

the testimony of Dr. Reader that is cited in support also is conclusory and fails to explain why the claim should be interpreted to preclude retrieving information associated with locations after the request location. *See* Ex. 2021 ¶ 140.

Second, Patent Owner asserts that Bergen fails to teach “information associated with the [first/second] video frame identifier” because the video frame associated with each identifier cannot be the recited “information.” PO Resp. 39–40. According to Patent Owner, the claimed “information” must be information about the video frame, not the frame itself. *See id.* Dr. Reader testified that, in his opinion, the recited information associated with a video frame identifier is the same as the “information relating to a depiction within the video” recited in an earlier limitation, and that images of video frames cannot be the recited information. Ex. 2021 ¶¶ 141–145. The claim language and the weight of the evidence of record, however, does not support Patent Owner’s position or Dr. Reader’s opinion.⁹

As an initial matter, we note that claim 4 recites “information associated with the [first/second] video frame identifier.” The claim does not recite that the information is associated with the video frame; thus, we are not persuaded that the information must be “about” the video *frame*

⁹ Patent Owner cites examples of displayed information in the Specification of the ’282 Patent as supporting its arguments. PO Resp. 40 (citing Ex. 1001, 9:8–12). We decline to import these examples as limitations of the claim. *See SuperGuide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004). In particular, we note that the cited examples relate to a specific embodiment where the information is “item information” relating to a depicted product. *See* Ex. 1001, 8:66–9:15. Patent Owner does not contend claim 4 is limited to such an embodiment, nor would we be persuaded by such a contention.

(PO Resp. 39)—rather, it must be associated with the *identifier*. We find credible and convincing Dr. Bovik’s testimony that an image of a video frame, formatted as part of a storyboard as described in Bergen, teaches the recited information associated with a video frame identifier. Ex. 1002 ¶¶ 134–135; Ex. 1102 ¶¶ 67–72.

Dr. Reader’s deposition testimony also corroborates Dr. Bovik’s opinion and undermines his own. He testified at his deposition that “any” information related to a frame number would constitute information associated with a video frame identifier within the meaning of the ’282 Patent, regardless of the type, format, or content of that information. Ex. 1101, 117:15–118:17. He also testified that images alone may be information associated with a video frame identifier (e.g., a frame number), including “images representing other scenes in the video.” *Id.* at 119:20–121:21, 126:15–127:11, 128:19–129:1.

We also note that claim 4 does not recite that the information associated with the first and second video frame identifiers is “the” information or “said” information, or otherwise reference the “information relating to a depiction within the video” recited earlier in the claim. Thus, we do not agree with Dr. Reader’s view that they must be the same information. Ex. 2021 ¶ 141. But even were we to interpret the claim in that manner, we credit Dr. Bovik’s testimony that the video frame images in the storyboard of Bergen would have taught such information because Bergen describes that the storyboard images are responsive to the user’s request for information relating to, for example, an object or person depicted in a scene. *See* Ex. 1002 ¶¶ 134–135; Ex. 1102 ¶ 67.

For the reasons set forth above, we find that the combination of Bergen and Reimer teaches each limitation of claim 4, and that Petitioner has provided sufficient reasoning for combining those teachings. Thus, Petitioner has demonstrated by a preponderance of the evidence that claim 4 is unpatentable as obvious over Bergen and Reimer.

b. Claims 14 and 19

Claim 14 is identical to claim 4, and claim 19 also is identical except that it does not recite that the first video frame identifier is retrieved “from a plurality of video frame identifiers.”¹⁰ Petitioner relies on the same arguments and evidence as advanced for claim 4 (Pet. 50), and Patent Owner does not present any additional arguments specific to these claims (PO Resp. 40). For the same reasons discussed above for claim 4, we conclude Petitioner has demonstrated by a preponderance of the evidence that claims 14 and 19 are unpatentable as obvious over Bergen and Reimer.

c. Claims 9, 12, and 16

Claim 9 is substantially the same as claim 4, except that it recites two additional limitations. First, claim 9 recites, “receiving from the user a request for additional information relating to the information associated with the first video frame identifier.” Second, claim 9 recites, “enabling a displaying of additional information in response to the request for additional information.” The Petition cites Bergen as teaching both of these limitations. Pet. 50–51.

¹⁰ We note that claim 19, like claim 4, nonetheless recites retrieving both a first and a second video frame identifier, which constitutes a plurality of video frame identifiers.

As discussed above, Bergen discloses presenting video frames to a user in the form of a storyboard. Ex. 1028, 15:28–36, 20:23–31. Bergen further discloses that “[a]fter browsing the storyboard of the video series, the user may interactively request a more detailed description of the scene(s).” *Id.* at 20:34–38. The user can also “request similar scenes,” and “request to see the actual video of the entire scene, or a sequence of scenes.” *Id.* at 20:38–42. As such, Petitioner contends Bergen teaches the “request for additional information” and enabling the display of that information, as recited in claim 9. Patent Owner does not present any additional arguments specific to these claims. PO Resp. 40.

Based on the full record after trial, we find that the combination of Bergen and Reimer teaches each limitation of claim 9, and conclude that Petitioner has demonstrated by a preponderance of the evidence that claim 9 is unpatentable as obvious over Bergen and Reimer.

Claim 12 depends from claim 9 and additionally recites, “pausing the playing in response to the request for information.” Petitioner argues that a person of ordinary skill would have recognized that presenting results of a request/query could interfere with viewing the video, and, thus, pausing the video would have been obvious given that it would have been “trivial” for the artisan to implement such a “ubiquitous” feature. Pet. 51–52 (citing Ex. 1002 ¶ 148). Additionally, the Petition cites Reimer as teaching this limitation. *Id.* at 52. Specifically, Petitioner notes that Reimer teaches using the “Pause” button of a remote control to initiate a query. *Id.* (citing Ex. 1005, 16:7–14). According to Petitioner, a skilled artisan would have been motivated to combine this feature of Reimer with Bergen because the two references are directed to similar systems, and doing so would constitute

the use of a known technique (pausing) to improve Bergen’s system in the same way it improves Reimer’s system. *Id.* (citing Ex. 1002 ¶¶ 151–152; *KSR*, 550 U.S. at 417).

We agree with Petitioner’s analysis and find that the combination of Bergen and Reimer teaches each limitation of claim 12. Also, we find that Petitioner has articulated a sufficient rationale that would have motivated a person of ordinary skill to combine those teachings. Thus, Petitioner has established by a preponderance of the evidence that claim 12 is unpatentable as obvious over Bergen and Reimer.

Lastly, claim 16 is substantially the same as claim 9 except that (1) it does not recite that the first video frame identifier is retrieved “from a plurality of video frame identifiers,” and (2) the request for additional information relates to the *second* video frame identifier, rather than the first. The Petition relies on substantially the same arguments and evidence as for claim 9, which are persuasive for the same reasons discussed above for that claim. Patent Owner does not present any arguments specific to this claim. We find that the combination of Bergen and Reimer teaches each limitation of claim 16, and that a person of ordinary skill would have been motivated to combine them in the manner claimed. Consequently, we conclude that Petitioner has demonstrated by a preponderance of the evidence that claim 16 also is unpatentable as obvious over Bergen and Reimer.

3. *Obviousness Based on Bergen, Reimer, and Abecassis*

Petitioner asserts that claims 7, 8, and 18 would have been obvious over Bergen in view of Reimer and Abecassis. Pet. 54–58. Abecassis is directed to providing a “customized” version of a video to a viewer based on the viewer’s content preferences. Ex. 1024, 2:30–35. The customized video

is constructed based on assigning “content descriptors” to each segment of the video, and organizing the segments into a “video map.” *Id.* at 40–49.

a. Claim 7

Claim 7 is substantially the same as claim 12 except that it also recites, “resuming the playing at a beginning of a video clip that is responsive to the request location.” Petitioner adds Abecassis to the combination of Bergen and Reimer, discussed above, to address this additional limitation. Pet. 54–56. Specifically, Abecassis discloses that the video map “identifies the beginning point of the segment in which the pause occurred, thus automatically identifying a suitable prior point in the video to restart the delivery of the video.” Ex. 1024, 5:6–10. Thus, in combination with the teachings discussed above with respect to the pausing limitation of similar claim 12, Petitioner argues Abecassis teaches resuming playing the video at the beginning of a video clip (i.e., a segment in Abecassis) that is responsive to the request location (i.e., where the user pressed pause to initiate a query, e.g., as in Reimer). *See* Pet. 54–55. Based on Petitioner’s arguments and evidence, we agree and find that Abecassis teaches “resuming the playing at a beginning of a video clip that is responsive to the request location,” as recited in claim 7.

Petitioner advances several reasons why a person of ordinary skill would have been motivated to combine these teachings of Abecassis with those of Bergen and Reimer. *Id.* at 55–56. For example, Petitioner argues all three references disclose similar systems, and applying the resume feature of Abecassis would have been a simple substitution of a known technique for a similar technique in Bergen and Reimer (resuming from the pause location) to obtain predictable results with a reasonable expectation of

success. *Id.* at 55 (citing Ex. 1002 ¶¶ 160–161). Additionally, Petitioner notes that Abecassis expressly discusses the advantages of its method, arguing that an ordinary artisan would have been motivated to capture that benefit. *Id.* (citing Ex. 1024, 5:6–12 (“By automatically replaying the segment in which the pause occurred, the viewer may re-engage the video without the loss of continuity.”)). We are persuaded by this evidence and find that a person of ordinary skill would have been motivated to combine the teachings of Abecassis with Bergen and Reimer.

Patent Owner argues that Bergen does not teach the additional limitation of claim 7, addressing the Petition’s assertion that Bergen itself discloses the limitation. PO Resp. 41; *see* Pet. 54. Patent Owner does not address Abecassis, however. Due to our findings above that Abecassis teaches the limitation and that an ordinary artisan would have combined the references, Patent Owner’s arguments concerning Bergen individually are unpersuasive. *See In re Keller*, 642 F.2d 413, 426 (CCPA 1981) (“[O]ne cannot show non-obviousness by attacking references individually where, as here, the rejections are based on combinations of references.”). Further, Patent Owner also relies on its arguments against the ground based only on Bergen and Reimer, but they also are unpersuasive for the same reasons discussed above. *See* PO Resp. 40–41.

Based on the complete trial record, we find that the combination of Bergen, Reimer, and Abecassis teaches each limitation of claim 7, and that Petitioner has provided sufficient reasoning for combining those teachings. Thus, Petitioner has established by a preponderance of the evidence that claim 7 is unpatentable as obvious over Bergen, Reimer, and Abecassis.

b. Claim 8

Claim 8 is substantially the same as claim 7 except that the recited pausing is “in response to the request for additional information” (i.e., the second request) instead of the “request for information” (i.e., the first request). Petitioner identifies disclosures in Bergen that it contends teach this aspect of claim 8, and relies on the testimony of Dr. Bovik as to why a skilled artisan would have found it obvious in view of the asserted art. Pet. 56–57 (citing Ex. 1002 ¶¶ 166–167). Additionally, Petitioner asserts that “[i]t would have been obvious to pause the playing at the time of the second query for the same reasons that it would have been obvious to pause at the time of the first playing,” relying on the arguments and evidence it presented for claim 7. *Id.* at 57.

In response, Patent Owner asserts that “Petitioner fails to demonstrate how the applied references would enable a user to request additional information relating to the information associated with the first video frame identifier (initial information), if the playing was resumed after the initial display of information and prior to the request for additional information.” PO Resp. 42. But Petitioner does not assert that “the playing was resumed after the initial display of information and prior to the request for additional information.” To the contrary, Petitioner argues that a person of ordinary skill in the art would have known that the video need not be paused to display Bergen’s storyboard, but would need to be paused where the “additional information” is a video that would distract the viewer. *See* Pet. 56. Patent Owner’s argument is unpersuasive because it does not address the arguments in the Petition.

We find Petitioner’s arguments and evidence for claim 8 to be persuasive, and find that the combination of Bergen, Reimer, and Abecassis teaches each limitation of claim 8 on that basis. In addition, we find that Petitioner has articulated a sufficient rationale that would have motivated an ordinary artisan to combine and modify those teachings in the manner claimed. Consequently, Petitioner has demonstrated by a preponderance of the evidence that claim 8 is unpatentable as obvious over Bergen, Reimer, and Abecassis.

c. Claim 18

Claim 18 depends from claim 16 and recites two additional limitations. First, similar to claims 7 and 8, claim 18 recites, “pausing the playing in response to the request for information.” Second, also similar to claims 7 and 8, claim 18 recites, “resuming . . . the playing at a beginning of a video clip that is responsive to the request location,” and specifies that the “resuming” occurs “following a termination of the displaying of additional information.” The Petition relies on essentially the same arguments and evidence as presented for claims 7 and 8, which we find persuasive for the same reasons discussed above for those claims. *See* Pet. 57–58.

Patent Owner does not provide any arguments specific to claim 18. PO Resp. 42. On the full trial record and for the reasons explained above, we find that the combination of Bergen, Reimer, and Abecassis teaches each limitation of claim 18, and that Petitioner has provided sufficient reasoning for combining those teachings. Thus, Petitioner has shown by a preponderance of the evidence that claim 18 is unpatentable as obvious over Bergen, Reimer, and Abecassis.

4. *Obviousness Based on Armstrong*

Petitioner asserts that claims 4, 9, 12, 14, 16, and 19 would have been obvious over Armstrong. Pet. 58–68. Armstrong relates to “allowing viewers of video content to access more information about specific items in a video segment.” Ex. 1021 ¶ 15. For example, a user may press the “pause” or “menu” button during a movie, which causes the last viewed frame to be displayed along with a “menu overlay” that provides options for obtaining further information. *Id.* ¶ 19.

a. *Claim 4*

As to the “receiving . . . a request for information” limitation of claim 4, Petitioner cites Armstrong’s disclosure of a user pressing a “pause” or “menu” button during a video to access information about items in a video segment. Pet. 58 (citing Ex. 1021 ¶¶ 18–19, 23–24, 45–46, 56). Further, Petitioner cites Armstrong’s discussion of a “point of suspension” as teaching the “identifying a request location” limitation of claim 4. *Id.* at 59. Specifically, Armstrong describes “menus that allow suspension of the primary video at points of suspension within scenes to display secondary content for that scene.” Ex. 1021 ¶ 31. Armstrong further discloses that the “primary video content of a video source (e.g., a DVD) may be suspended at a point of suspension in time (or according to frame indexing, time frame indexing or GOP time code).” *Id.* ¶ 42. According to Petitioner, the point of suspension is the request location because that is the point in time at which the user requested the menu to access information about the video. *See* Pet. 58–59; Ex. 1002 ¶ 176. At his deposition, Dr. Reader agreed that determining the point in time at which a user request is received would constitute identifying a request location, which supports Petitioner’s

position. *See* Ex. 1101, 93:22–94:6. We agree with Petitioner and find that Armstrong teaches the “receiving” and “identifying” limitations. Patent Owner’s arguments regarding these limitations are unpersuasive, as explained below.

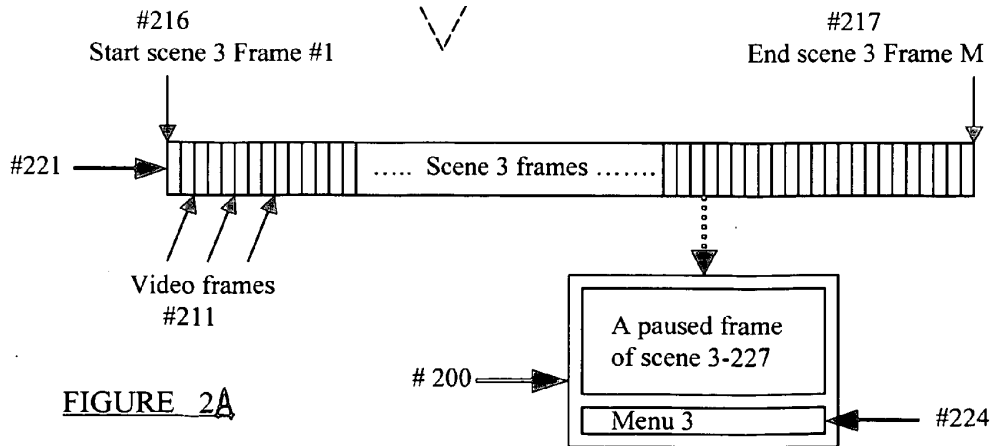
Patent Owner argues that Petitioner improperly conflates the request location with the video frame identifiers separately recited in the claim, and that the claim requires the request location to be identified before the first video frame identifier is retrieved. *See* PO Resp. 45–46. These arguments, however, mischaracterize the positions advanced in the Petition.

First, Petitioner relies on *different* aspects of Armstrong as teaching the recited request location and video frame identifiers. As discussed above, Petitioner relies on Armstrong’s “point of suspension,” i.e., the point in time during the video at which the user paused the video (by requesting information about the video). Pet. 59 (citing Ex. 1021 ¶¶ 31, 42). In contrast, Petitioner relies on Armstrong’s *frame numbers* as teaching the recited video frame identifiers. *See id.* at 59–60.

Second, as discussed in more detail below, Petitioner contends that the frame number responsive to the point of suspension (i.e., the first video frame identifier) is retrieved *after* the point of suspension is identified. *See* Pet. Reply 21; *see* Pet. 59–60; Ex. 1002 ¶¶ 176–179; Ex. 1102 ¶¶ 82–84. This is actually consistent with Patent Owner’s view of the required order¹¹ of the steps recited in claim 4. *See* PO Resp. 45–46.

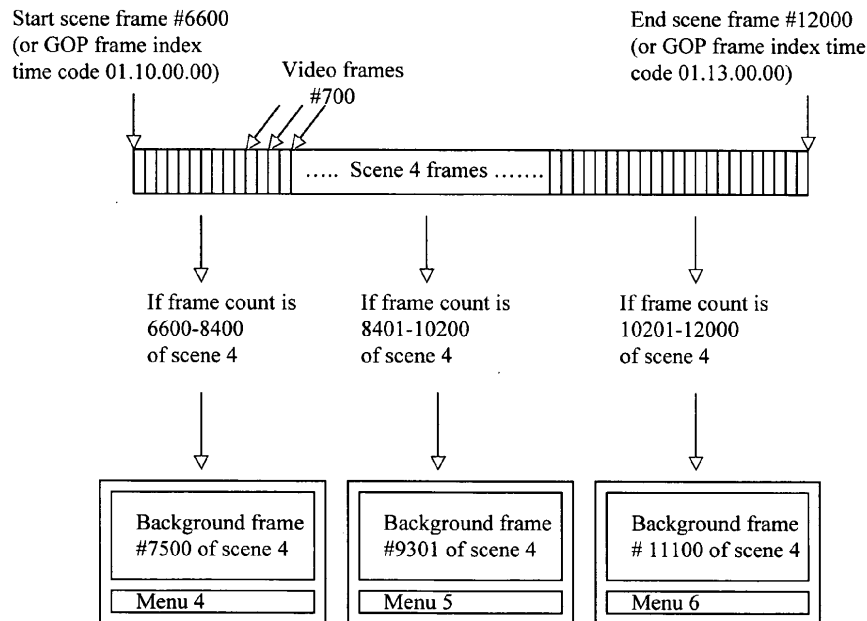
¹¹ Petitioner disagrees that claim 4 requires identifying a request location before retrieving the recited video frame identifiers. Pet. Reply 21. We need not decide whether the claim so requires because Petitioner contends (and we agree) that Armstrong teaches that order of steps. *See id.*

With respect to retrieving first and second video frame identifiers, as recited in claim 4, Petitioner relies on Armstrong’s disclosure of using frame numbers to access content indexed by frame. Pet. 59–64. For example, in an excerpt of Figure 2A reproduced below, Armstrong depicts a frame identifier according to Petitioner.



Ex. 1021, Fig. 2A (excerpt). The portion of Figure 2A above depicts a series of frames in “Scene 3” of a video. *Id.* Display 200 is shown as including paused frame 227 along with corresponding menu 224. *Id.* ¶ 31.

Armstrong describes that if play of the video is suspended (i.e., a request is made) at a frame count within a particular range, a specific background frame also within that range is displayed along with a corresponding menu. *Id.* ¶ 52. This is illustrated in Figure 2B of Armstrong, reproduced below.



Id. at Fig. 2B. Figure 2B depicts a series of frames beginning at frame 6600 and ending in frame 12000. *Id.* ¶ 52. As shown, if a request is received when the frame counter is between frames 6600 and 8400, frame 7500 is shown as the “background frame” along with menu 4. *Id.* If instead the frame counter is between frames 8401 and 10200, frame 9301 is shown as the background frame along with corresponding menu 5. *Id.* The background frame for a group of frames may be “a frame pre-selected as a background frame close to and other than the current frame when play was suspended.” *Id.* ¶ 56.

As further shown in Figure 3 (reproduced below), Armstrong discloses that the displayed frame and the displayed menu may be associated with different frame numbers.

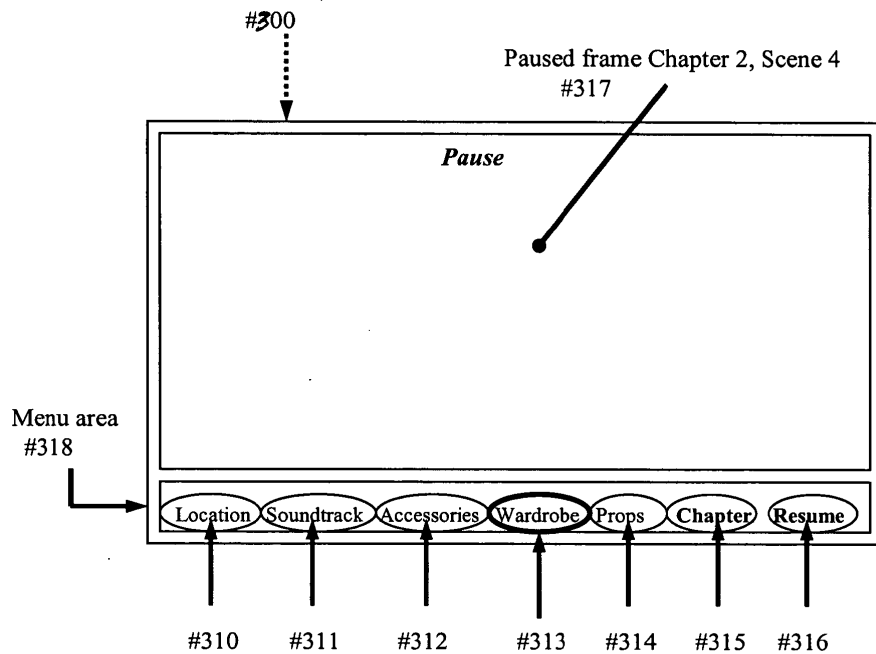


FIGURE 3

Ex. 1021, Fig. 3. Figure 3 depicts how a video screen may appear when the pause or menu button is pressed by the user according to the teachings of Armstrong. *Id.* ¶ 56. Frame 317 may be “the last video frame,” such as “the scene where the video is paused (in this case [shown in Figure 3] for chapter 2, scene 4),” or it may be a “background frame.” *Id.* As discussed above, a background frame may be “a frame . . . close to and other than the current frame when play was suspended.” *Id.* Armstrong indicates, however, that the options shown in menu 318 change dynamically “on a per scene basis,” and that they “are relevant to the content of the scene where the video is paused.” *Id.*

According to Petitioner, these disclosures teach the recited first video frame identifier because the frame number for the paused frame (with which menu 318 is associated) is responsive to the request location, i.e., the point of suspension where the video is paused. *See* Pet. 59–60, 62–63. Petitioner

asserts the recited second video frame identifier is taught by the frame number for the background frame that is “close to and other than the current frame when play was suspended,” because that frame may be prior to the paused frame if, for example, the video was paused after the designated background frame but within the same group of frames, as shown in Figure 2B. *See id.* at 61–63 (quoting Ex. 1021 ¶ 56); Ex. 1021, Fig. 2B.

Petitioner further contends that Armstrong, thus, teaches the displaying of information associated with the first and second video frame identifiers, as recited in claim 4 and as shown in Figure 3. Pet. 64–66. Specifically, Petitioner asserts that menu 318 is information associated with the first identifier (frame number for the paused frame). *Id.* For the recited information associated with the second identifier, the Petition cites frame 317, which may be a background frame—i.e., an image of the frame. *Id.* As shown in Figure 3, it appears both are displayed contemporaneously.

Based on the full trial record and for the reasons explained above, we are persuaded by Petitioner’s analysis and find that Armstrong teaches the “retrieving” and “displaying” limitations of claim 4. Patent Owner advances several arguments, which are unpersuasive for the reasons explained below.

First, similar to its argument regarding the “identifying” step, Patent Owner argues that Armstrong does not teach retrieving a first video frame identifier because, according to Patent Owner, Armstrong’s system identifies the alleged information associated with the first identifier (e.g., menu 318) *before* the request location is identified. PO Resp. 46–48. We find Patent Owner’s characterization of Armstrong to be incorrect. As Dr. Bovik explained, Armstrong teaches identifying the point of suspension *first* via a frame count (i.e., a count of how many frames have been played thus far),

then using the frame count with an index of frames to retrieve a frame number for the current (paused) frame and a range of frame numbers that encompasses the current frame, and finally retrieving and displaying the menu and a “background frame” associated with that frame number and frame number range. *See* Ex. 1002 ¶¶ 178–180; Ex. 1021 ¶¶ 49, 51–53. We find this detailed testimony more credible and deserving of greater weight than the testimony of Dr. Reader on this issue (Ex. 2021 ¶¶ 156–162), which is conclusory and fails to explain how his opinion is supported by record evidence. *See* 37 C.F.R. § 42.65(a).

To the extent Patent Owner argues that Armstrong does not teach retrieving the recited video frame identifiers because the selection of which information (e.g., menu) is associated with any particular frame in the index is pre-determined, we are not persuaded. *See* PO Resp. 47–48; Tr. 115:13–17. As Patent Owner admitted at the oral hearing, neither the claim language nor the Specification precludes pre-determining which information is associated with particular frame identifiers. *See* Tr. 115:18–118:2. Thus, we conclude that retrieving and displaying information associated with a video identifier encompasses retrieving and displaying information that was *predetermined* to be associated with that identifier.

Next, Patent Owner asserts that Armstrong does not teach retrieving a second video frame identifier. PO Resp. 49–50. But its argument is conclusory and unsupported by record evidence. Patent Owner argues that “Armstrong provides the advantages and motivation for not using a paused frame, but instead discloses selecting a different “close in time” frame that is more efficient, superior or beneficial,” but does not explain the relevance of that disclosure. *Id.* at 50 (citing Ex. 1021 ¶ 48). Dr. Reader’s testimony

on this issue (Ex. 2021 ¶¶ 163–168) is equally conclusory, and, consequently, we give it little weight. *See* 37 C.F.R. § 42.65(a). Moreover, the cited disclosure in Armstrong describes advantages to selecting and displaying a background frame (i.e., information associated with the second video frame identifier) with the menu overlay (i.e., information associated with the first video frame identifier), instead of displaying the menu overlay over the paused (current) frame. Ex. 1021 ¶ 48. In other words, Armstrong explains why retrieving and displaying *both* the background frame and menu *contemporaneously* is advantageous (e.g., for greater clarity or contrast)—which supports Petitioner’s contention that Armstrong teaches the “retrieving” and “displaying” limitations of claim 4.

Finally, Patent Owner disputes that Armstrong teaches the “displaying” limitation. PO Resp. 50–57. Again, however, Patent Owner relies on conclusory assertions and attorney argument rather than record evidence. According to Patent Owner, Petitioner is incorrect that Armstrong’s menu teaches “information associated with the first video identifier” and the background frame teaches “information associated with the second video frame identifier,” but Patent Owner does not explain adequately why that is the case. *See id.* at 51.

For example, Patent Owner notes that Petitioner asserts in a different *inter partes* review that Armstrong teaches “initial indications that information is available,” as recited in U.S. Patent Number 9,124,950. *Id.* at 52. No explanation is provided, however, as to why this contention is “inconsistent” with, or “contrary to,” Petitioner’s contentions in the present case. *See id.* at 51–53. Nor are we able to discern any inconsistency given that different terms in different claims of different (albeit related) patents are

involved, and it is unclear why an indication that further information is available (i.e., the menu) cannot itself be information associated with a video frame identifier. Indeed, Petitioner explains how Armstrong’s menu teaches a user request for additional information in the context of claim 9, which illustrates that the menu can teach both. *See* Pet. 66–67.¹² We agree with Petitioner that its positions in this case and the other *inter partes* review are not inconsistent based on the disclosures of the ’282 Patent itself. *See* Pet. Reply 24–25.

Patent Owner also asserts that Petitioner’s contentions are inconsistent with Armstrong’s disclosures indicating what constitutes “information.” *See* PO Resp. 51, 53–54. Although portions of Armstrong are cited, Patent Owner does not explain how those disclosures purportedly define or identify “information.” *See id.* (citing Ex. 1021 ¶¶ 19, 52, 56, 60, Figs. 4, 5). Instead, Patent Owner asserts conclusorily that the cited disclosures demonstrate that a background frame is not “information.” We find more persuasive Dr. Bovik’s credible testimony explaining how the ’282 Patent, Armstrong, and the understanding of a person of ordinary skill support Petitioner’s position that both the menu and background frame of Armstrong teach “information associated with” video frame identifiers. *See* Ex. 1102 ¶¶ 92–93; *see also* Pet. Reply 23–24.

Further, Patent Owner argues that Petitioner fails to explain how Armstrong discloses two menus being displayed contemporaneously because only one menu and background frame are displayed at a time. PO Resp. 54.

¹² Thus, we disagree with Patent Owner’s conclusory assertion that a menu cannot be “information” simply because it is used to retrieve other information. *See* PO Resp. 55.

This argument is not responsive to Petitioner’s actual contention and, in fact, Patent Owner implicitly admits Petitioner is correct. Petitioner does not contend that the information associated with *both* identifiers must be menus; rather, Petitioner relies on the menu *and the background frame*, which are displayed together as Patent Owner admits. Pet. 64–66; *see* PO Resp. 54.

Lastly, Patent Owner contends that a background frame cannot be the “information” recited in claim 4 because it is a “fixed background picture.” PO Resp. 55–57. The only basis for this contention is that the ’282 Patent does not disclose the use of background images as the recited “information.” *See id.* at 55–57. A patent, however, is not required to disclose all possible embodiments in its Specification. As Petitioner explains, the ’282 Patent and the testimony of both experts belies Patent Owner’s view and supports a finding that the background frame of Armstrong teaches “information associated with the second video frame identifier,” as recited in claim 4. Pet. Reply 23–24. We agree.

Based on the arguments and evidence of record after trial, we find Armstrong teaches each limitation of claim 4, and conclude that Petitioner has demonstrated by a preponderance of the evidence that claim 4 would have been obvious over Armstrong.

b. Claims 14 and 19

As noted above, claim 14 is identical to claim 4, and claim 19 also is identical except that it does not recite that the first video frame identifier is retrieved “from a plurality of video frame identifiers.” Petitioner relies on the same arguments and evidence as advanced for claim 4 (Pet. 66), and Patent Owner does not present any additional arguments specific to these claims. For the same reasons discussed above for claim 4, we conclude

Petitioner has demonstrated by a preponderance of the evidence that claims 14 and 19 are unpatentable as obvious over Armstrong.

c. Claims 9, 12, and 16

Claim 9 is substantially the same as claim 4, except that it further recites, “receiving from the user a request for additional information relating to the information associated with the first video frame identifier,” and “enabling a displaying of additional information in response to the request for additional information.” Petitioner argues Armstrong teaches these limitations in its disclosures regarding the menu provided to the user that is associated with the scene where the video is paused. Pet. 66–67.

Specifically, Armstrong discloses that a user may select one of the options in menu 318 in Figure 3, such as “Wardrobe” button 313, which causes the display of text overlay 410 depicted in Figure 4. Ex. 1021 ¶ 60. The text of overlay 410 presents information about wardrobe items related to the current scene. *Id.* Thus, according to Petitioner, these disclosures teach the recited request for additional information (i.e., wardrobe information) and enabling the display of that information. Pet. 66–67.

Patent Owner relies on its argument, discussed above, that Armstrong’s menu overlay does not teach information associated with the first video frame identifier, concluding that “since a displaying of the menu overlay is not the claimed displaying of information, the menu overlay cannot logically enable the display of additional information.” PO Resp. 57–58. This argument remains unpersuasive for the same reasons discussed above. We agree with Petitioner’s analysis and find that Armstrong teaches each limitation of claim 9. As a result, Petitioner has established by a

preponderance of the evidence that claim 9 would have been obvious over the teachings of Armstrong.

Claim 12 depends from claim 9 and additionally recites, “pausing the playing in response to the request for information.” Petitioner identifies disclosures in Armstrong explaining that the user may request information by using the “pause” button, and accessing that information involves pausing/suspending the video. Pet. 67. Patent Owner does not present any arguments specific to this claim. Based on the evidence presented by Petitioner, we find that Armstrong teaches each limitation of claim 12. Thus, Petitioner has shown by a preponderance of the evidence that claim 12 would have been obvious over Armstrong.

Lastly, claim 16 is substantially the same as claim 9, except that (1) it does not recite that the first video frame identifier is retrieved “from a plurality of video frame identifiers,” and (2) the request for additional information relates to the *second* video frame identifier, rather than the first. As discussed above for claim 4, Petitioner has shown that Armstrong teaches retrieving both a first and a second video frame identifier; thus, the first identifier is retrieved from a plurality of identifiers. Further, the Petition cites Armstrong’s discussion of “hot spots” as teaching requesting additional information relating to the second identifier (i.e., relating to a frame prior to the current frame). Pet. 67–68. Armstrong describes using “hot spots” on a still image of a scene such that the hot spots are “certain items in the scene” whereby selecting one—such as a user selecting a depicted bottle or character in the scene—retrieves additional information about the item. Ex. 1021 ¶ 24. According to Petitioner, a person of ordinary skill would have been motivated to modify Armstrong to provide such hot spots in the

background frames presented with menus. Pet. 68. Relying on Dr. Bovik’s testimony (Ex. 1002 ¶¶ 201–205), Petitioner asserts that an ordinary artisan would have recognized that doing so would be beneficial by providing an array of hot spots to lead to information relating to the overall chapter or scene (because background frames are selected based on video frame ranges) to complement the menu overlay, which leads to information relating to specific frames. *See* Pet. 68 (citing Ex. 1021 ¶ 48). We agree with Petitioner’s reasoning and analysis of the evidence, and we find that Armstrong teaches the limitations of claim 16 on that basis.

In response, Patent Owner argues that Petitioner failed to show how Armstrong indicates a user is informed about the presence of a hot spot, or “what information the hot spot itself provides.” PO Resp. 60. Patent Owner also asserts that a hot spot “may only provide a notification that information is available.” *Id.* As discussed above, however, Armstrong describes hot spots as items on-screen that can be selected by the user to obtain additional information about those items. *See* Ex. 1021 ¶ 24; Pet. 67–68. Claim 16 does not recite any limitation that would impose a requirement that a user be specifically notified of the existence of hot spots, or that the hot spots themselves convey any information other than “enabling a displaying of additional information in response to the request for additional information.” Therefore, Patent Owner’s arguments are not commensurate with the scope of the claim.

Additionally, Patent Owner contends that “a hot spot is an alternate embodiment to Armstrong’s menu overlays.” PO Resp. 60. The cited portion of Armstrong, however, does not support this argument. Rather, Armstrong indicates hot spots are “[a] natural *extension* to embodiments of

this invention.” Ex. 1021 ¶ 24 (emphasis added). Dr. Reader’s testimony is conclusory, and we give it little weight. *See* Ex. 2021 ¶¶ 170–172.

Moreover, Petitioner clearly articulated that its position is based on a modification of Armstrong that an ordinary artisan would have been motivated to make. Pet. 68. Patent Owner does not dispute the feasibility of the modification or the motivation to make it.

The only other argument raised by Patent Owner regarding claim 16 is reiterating its argument for claim 4 that Armstrong’s background frame does not teach information associated with the second video frame identifier, which is unpersuasive for the same reasons discussed above. Based on the reasons explained above and the evidence presented during trial, we find that Armstrong teaches each limitation of claim 16, and that Petitioner has shown by a preponderance of the evidence that claim 16 is unpatentable as obvious over Armstrong.

5. *Obviousness Based on Armstrong and Abecassis*

Petitioner asserts that claim 7 would have been obvious over Armstrong in view of Abecassis. Pet. 69–71. Claim 7 is substantially the same as claim 12 except that it also recites, “resuming the playing at a beginning of a video clip that is responsive to the request location.”

With respect to the teachings of Abecassis, the Petition relies on substantially the same contentions and evidence as for its asserted ground based on applying Abecassis to Bergen and Reimer. *See id.* (citing Ex. 1002 ¶¶ 210, 212, 214); *see also id.* at 54–56 (similar arguments for Bergen, Reimer, and Abecassis). These positions are persuasive for the same reasons discussed above for that asserted ground. In addition, Petitioner also notes that Armstrong discloses resuming a video “from the point of time of

suspension, or at a point of time close to that point.” Ex. 1021 ¶ 42; Pet. 69. Further, Petitioner articulates multiple reasons why an ordinary artisan would have been motivated to combine the teachings of Abecassis with Armstrong, including that Abecassis explicitly discloses the benefits of its teaching (i.e., to prevent “the loss of continuity”) and that the combination would amount to little more than the substitution of known elements in similar systems to obtain predictable results. Pet. 70–71 (citing Ex. 1002 ¶¶ 210–214). On the basis of these arguments and evidence, we agree with Petitioner’s reasoning and find that the combined teachings of Armstrong and Abecassis would have taught the “resuming” limitation. We also agree with the rationales articulated by Petitioner as to why a skilled artisan would have been motivated to modify Armstrong with the teachings of Abecassis.

Patent Owner disputes Petitioner’s contentions. PO Resp. 60–64. As an initial matter, many of Patent Owner’s arguments address whether Armstrong teaches the “resuming” limitation or whether resuming at the beginning of the video clip was one of a finite number of options. *See id.* at 61–62. While these arguments address assertions made in the Petition, they do not, however, address Petitioner’s combination with Abecassis. *See Keller*, 642 F.2d at 426 (“[O]ne cannot show non-obviousness by attacking references individually where, as here, the rejections are based on combinations of references.”). Similarly, Patent Owner’s argument that Armstrong does not provide an express motivation to combine it with Abecassis is inapposite given that Petitioner does not rely on Armstrong for a motivation to combine, and Patent Owner does not address most of the evidence of such a motivation that is presented in the Petition. *See* PO Resp. 63–64.

In addition, Patent Owner argues that Abecassis does not teach resuming at the beginning of a “video clip” because, instead, it teaches resuming at the beginning of a “segment.” *See id.* at 64. According to Patent Owner, the ’282 Patent distinguishes between a “segment” and a “clip.” *Id.* at 61, 64. The Specification defines “segment” or “video segment” as “one or more video frames.” Ex. 1001, 5:29–30. “Clip” is defined as “a segment that is smaller than a chapter and usually smaller than a scene.” *Id.* at 3:59–60. Thus, the ’282 Patent itself indicates that a “clip” is a type of “segment.”

While the relevant disclosures of Abecassis refer to “the beginning points of the *segment* in which the pause occurred” (Ex. 1024, 5:6–10 (emphasis added)), we are persuaded and find that a skilled artisan would have been taught by Abecassis that resuming playback at the beginning of a segment encompasses segments that are smaller than a chapter, particularly when considering the background knowledge in the art. *See* Ex. 1002 ¶¶ 210–215; Ex. 1102 ¶¶ 38, 110, 111; Ex. 1101, 147:6–10. In particular, Abecassis itself describes that “the various scenes or chapters 302 of the video are divided into appropriate segments 303,” which indicates its segments may be smaller than a chapter. Ex. 1024, 10:38–41; *see* Pet. Reply 14, 27. Furthermore, we note that the segments in Abecassis are organized by, for example, the depicted characters and location. *See* Ex. 1024, 8:14–19; *see also id.* at 39:64–40:11 (describing a “skip” function that enables a user to skip a depicted person by skipping to the next segment). This is similar to the ’282 Patent’s disclosure that “[a] clip . . . usually depicts the same primary characters within a location,” and “[a] clip’s definition is responsive to a material change in the participation of the

principal characters.” *See* Ex. 1001, 3:60–65. We find credible and persuasive Dr. Bovik’s testimony that the evidence above indicates a person of ordinary skill would have understood a segment in Abecassis to correspond to a “clip” within the meaning of the ’282 Patent. *See* Ex. 1102 ¶¶ 37–38, 44–45, 111; *see* Pet. Reply 14, 27.

For the reasons explained above, we find that the combination of Armstrong and Abecassis teaches each of the limitations of claim 7, and that Petitioner has provided sufficient reasoning for combining those teachings. Thus, Petitioner has shown by a preponderance of the evidence that claim 7 would have been obvious over Armstrong and Abecassis.

6. *Obviousness Based on McIntire and Dey, or McIntire, Dey, and Abecassis*

Petitioner asserts that claims 4, 9, 12, 14, 16, and 19 would have been obvious over McIntire in view of Dey, and that claims 7, 8, and 18 would have been obvious over McIntire in view of Dey and Abecassis. Pet. 12–38. As explained below, we determine that Petitioner has not established by a preponderance of the evidence that these claims would have been obvious in view of these prior art combinations.

McIntire relates to a method and apparatus for annotating media streams, such as television or online video. Ex. 1004 ¶¶ 14–15. This annotation may be accomplished through “mapping [an] item of supplemental content to a segment identifier identifying a number of frames occurring after the segment in which the associated article appears.” *Id.* ¶ 140. This supplemental content is displayed in response to a signal from the viewer. *Id.* ¶ 272, Fig. 8.

Dey relates to a process by which documents relating to portions of a “temporal document” are found “in response to a signal of interest at a particular time during the temporal document.” Ex. 1023, 4:8–21.

Temporal documents may include “video or audio programming.” *Id.* at 2:7–9. Dey notes that “a user may not be able to instantaneously think about the changing material that is being presented, make a decision that he is interested, and give the required signal” to indicate that interest to the system. *Id.* at 7:27–30. Thus, the system of Dey adjusts to take into account the likely timeframe of the user’s interest. *See id.* at 7:36–8:9.

A key dispute between the parties is whether the asserted prior art teaches retrieving a second video frame identifier, and displaying information associated with that identifier, *contemporaneously* with the first identifier and its associated information. *See, e.g.*, Pet. 18–26, 28–29; PO Resp. 20–24. Petitioner relies first on McIntire’s disclosure of identifying “one or more articles appearing in the media stream at *or around* the point in time at which” the user signal (request for information) was received. Ex. 1004 ¶ 310 (emphasis added). The system then “matches *one or more* segments [sic] identifiers identifying segments that correspond to viewer signals to the appropriate supplemental content.” *Id.* ¶ 311 (emphasis added). McIntire also notes that the user’s signal may be received at a later point than when the relevant article appeared in the media stream due to the user’s reaction time. *Id.* ¶ 272. To address this issue, McIntire describes mapping an item of supplemental content to “a segment identifier identifying a number of frames occurring *after* the segment in which the associated article appears” to create a larger window of time in which the user may react. *Id.* ¶ 140 (emphasis added).

As Patent Owner argues, however, each of the challenged claims require that *both* the information associated with the first video frame identifier *and* the *different* information associated with the second identifier must be displayed *contemporaneously*. See PO Resp. 20–22. As noted above, McIntire describes mapping certain supplemental content to *multiple* segment identifiers, i.e., the identifier for the segment/frame depicting the item to which the supplemental content relates, *and* an identifier corresponding to a frame occurring *later* in time. See Ex. 1004 ¶ 140.

McIntire explains that this technique addresses the user delay problem (*id.*)—in other words, the user sees the depicted item in Frame A but, due to reaction time, does not transmit the request for supplemental content about the item until Frame B, which is later in time and which may not depict that item any longer. See *id.* ¶ 272. In McIntire’s system, the supplemental content would be mapped to *both* Frame A *and* Frame B so that when the system receives the request at Frame B, it nonetheless retrieves the supplemental content for the item depicted in Frame A because it was also mapped to Frame B. See *id.* ¶ 140. This enables the system to identify “one or more articles appearing in the media stream at *or around* the point in time at which” the user request was received, because the articles are mapped to identifiers representing multiple frames at or around the time the articles appeared. See *id.* ¶ 310 (emphasis added). But though Frame A and Frame B may be different segments with different segment identifiers, they are both mapped to the *same* supplemental content. See *id.* Thus, displaying that content may be considered displaying information associated with both identifiers, but it is the *same information*, whereas the challenged claims require the information to be *different*.

Petitioner argues that McIntire teaches displaying different information by virtue of the fact that the two segment identifiers it relies on represent two different segments. Pet. Reply 5–6. As discussed above, however, McIntire describes mapping the identifiers to the *same* content, even when they represent different segments/frames.

Next, Petitioner notes that the items depicted in the video change from segment to segment, which creates the user delay problem. *Id.* at 6. According to Petitioner, “the purpose of identifying additional frame identifiers ‘around’ the current location and retrieving supplemental content for multiple [identifiers] is to display *different* information associated with previously depicted items that are not depicted in later locations.” *Id.* Petitioner is correct that McIntire discloses displaying information associated with previously depicted items, which may be different than information associated with items depicted in the current segment (because the items are different). Still, Petitioner has not addressed how McIntire teaches *also* displaying the information associated with items depicted in the *current* segment *contemporaneously*. McIntire’s discussion of the user delay problem teaches that the user is requesting information regarding the *previously* depicted items, not *both* the previous items *and* the current items *contemporaneously*, due to reaction time. See Ex. 1004 ¶ 272. That is why McIntire describes mapping both the previous and current segment identifiers to the information about the *previously* depicted items, not the currently depicted items. See *id.* ¶ 140.

Petitioner also contends that a person of ordinary skill in the art would have known about the user delay problem, and that artisans “were motivated to solve it by providing different supplemental content associated with video

frames before the request location,” which was within an ordinary artisan’s skill. Pet. Reply 6–7. Essentially, Petitioner’s argument amounts to a contention that the background knowledge of a person of ordinary skill would have supplied this limitation even if it was *not* taught by McIntire. Such a theory is untimely and will not be considered because it was not advanced in the Petition. *See* Pet. 28–29; *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016).

Finally, Petitioner also relies on Dey, which indicates that “it is assumed that there is a delay between the material of interest first being presented to the user, and the indication of interest.” Ex. 1023, 7:40–42. According to the Petition, Dey “solves the problem by retrieving supplemental content associated with the immediately *preceding* portion of video (e.g., 30 seconds *prior to* the request).” Pet. 21–22 (emphases added). Additionally, Petitioner asserts in the Petition that Dey discloses ranking of supplemental content, taking into account “all documents associated with the 30 second period *before* the user’s request.” *Id.* at 25 (emphasis added). This emphasis on the portion of the video *preceding* the user’s signal of interest (i.e., request location) is consistent with the user delay problem that is at the core of Petitioner’s arguments—by definition, the user delay problem exists because the user’s expression of interest is *not* related to the *currently displayed* video frame, but instead reflects an interest in a *previous* frame because of the reaction time necessary to signal that interest, as discussed above. If the signal reflected an interest in the *current* frame, the user delay problem would not exist (i.e., no delay). Thus, similar to McIntire, the Petition’s explanation is lacking as to why Dey’s disclosures teach *also* displaying information associated with the *current* frame, much

less doing so *contemporaneously* with the information the user actually intended to request (i.e., relating to a previous frame).

In its Reply, Petitioner attempts to show that Dey discloses that user interest in the video actually is not zero at the time the user signals interest, and that Dey teaches displaying information about the current frame as a result. *See* Pet. Reply 7–8. As an initial matter, we are not persuaded that the evidence cited necessarily supports Petitioner’s contention. For example, Petitioner cites (*id.* at 7) Dey’s disclosure that a user’s interest (represented by weighting function “ $W(t)$ ”) may “decrease . . . until the time of the [user’s] signal,” and may “equal 0 for all times earlier than 30 seconds before the signal of interest is given, and later than the signal of interest.” *See* Ex. 1023, 4:60–65, 5:2–4. These disclosures describe user interest *before* the signal is given (i.e., the request location) and *afterward*, but do not clearly indicate what happens at the time of the signal.

Moreover, these descriptions are consistent with Figures 2–4 of Dey, which are graphs of user interest indicating that interest may decrease to zero at the point the signal is given. *See id.* at Figs. 2–4, 7:49–8:20. Petitioner cites Figure 5 as purportedly showing a non-zero level of interest at the request location (Pet. Reply 7), but the figure is ambiguous given how close the graph is to zero. *See* Ex. 1023, Fig. 5. We note that typically “patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes.” *Hockerson-Halberstadt, Inc. v. Avia Group Int’l*, 222 F.3d 951, 956 (Fed. Cir. 2000). Given Petitioner’s burden of proof, we cannot conclude that this ambiguous evidence constitutes a preponderance supporting Petitioner’s argument.

Petitioner also cites disclosures of Dey referring to very minute intervals of time to argue that a time *before* the request location essentially may be close enough to be considered the request location for purposes of the “displaying” limitation. *See* Pet. Reply. 7–8 (citing Ex. 1023, 8:30–35, 9:56–62). Similarly, Petitioner also cites testimony from Dr. Reader about how a time before the request location can nonetheless be considered the request location for purposes of this limitation due to an “offset.” *Id.* at 8 (citing Ex. 1101, 100:14–101:16, 104:11–17). These arguments are untimely, however, because they are raised for the first time in Petitioner’s Reply. The Petition does not advance any theory with respect to these grounds in which a point in time *before* the user’s request is considered the recited request location. Thus, we do not consider these arguments. *See Intelligent Bio-Systems*, 821 F.3d at 1369.

Lastly, Petitioner asserts that “Dey provides that the time of interest may vary based on considerations which will be apparent to a [person of ordinary skill],” and, thus, the artisan would have understood that the supplemental content should include content mapped to the current frame and prior frames. Pet. Reply 8. Both this argument and the cited testimony from Dr. Bovik are conclusory, however, and are not persuasive as a result. *See id.*; Ex. 1102 ¶ 26.

In sum, we determine that Petitioner has not shown that the combination of McIntire and Dey (or McIntire, Dey, and Abecassis) teaches or suggests the “displaying” limitation recited in each of the challenged claims, and particularly, “contemporaneously displaying information associated with the second video frame identifier that is different from the information associated with the first video frame identifier.” Thus,

Petitioner has not demonstrated by a preponderance of the evidence that the challenged claims are unpatentable as obvious over McIntire and Dey (claims 4, 9, 12, 14, 16, and 19), or McIntire, Dey, and Abecassis (claims 7, 8, and 18).

D. Patent Owner's Motion to Exclude (Paper 28, "Mot.")

Patent Owner moves to exclude certain portions of Dr. Reader's testimony during his deposition (*see* Ex. 1101) under Federal Rule of Evidence 403. Mot. 1–2. More specifically, Patent Owner alleges the testimony in question is “prone to misunderstanding” and “prejudicial.” *Id.* at 1; *see* Paper 30 (“Mot. Reply”), 1–2. According to Patent Owner, Petitioner's questions were purportedly vague and ambiguous. *Id.*

Rule 403 has limited applicability, if any, to bench trials like this proceeding. *See, e.g., Schultz v. Butcher*, 24 F.3d 626, 632 (4th Cir. 1994) (holding that “in the context of a bench trial, evidence should not be excluded under 403” because the court can “hear relevant evidence, weigh its probative value and reject any improper inferences”). Thus, we are not persuaded it should be applied here to exclude Dr. Reader's testimony entirely. Instead, we considered the clarity of Petitioner's questioning of Dr. Reader when assigning the appropriate weight to the resulting testimony.

In sum, we determine that there is no appreciable risk of unfair prejudice, confusion of issues, or other reason to exclude this evidence under Rule 403. Rather, the panel is capable of assessing and weighing this evidence appropriately (and has done so). For the above reasons, we are not persuaded that the testimony at issue should be excluded, and, thus, we deny Patent Owner's Motion to Exclude.

CONCLUSION¹³

For the foregoing reasons, Petitioner has shown by a preponderance of the evidence that the challenged claims of the '282 Patent are unpatentable, as summarized in the following table:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
4, 9, 12, 14, 16, 19	103(a)	McIntire, Dey		4, 9, 12, 14, 16, 19
7, 8, 18	103(a)	McIntire, Dey, Abecassis		7, 8, 18
4, 9, 12, 14, 16, 19	103(a)	Bergen, Reimer	4, 9, 12, 14, 16, 19	
7, 8, 18	103(a)	Bergen, Reimer, Abecassis	7, 8, 18	
4, 9, 12, 14, 16, 19	103(a)	Armstrong	4, 9, 12, 14, 16, 19	
7	103(a)	Armstrong, Abecassis	7	
Overall Outcome			4, 7–9, 12, 14, 16, 18, 19	

¹³ 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 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).

ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the challenged claims of the '282 Patent are held unpatentable in view of the following asserted grounds:

Claims 4, 9, 12, 14, 16, and 19 as unpatentable under 35 U.S.C.

§ 103(a) over Bergen and Reimer;

Claims 7, 8, and 18 as unpatentable under 35 U.S.C. § 103(a) over Bergen, Reimer, and Abecassis;

Claims 4, 9, 12, 14, 16, and 19 as unpatentable under 35 U.S.C.

§ 103(a) over Armstrong; and

Claim 7 as unpatentable under 35 U.S.C. § 103(a) over Armstrong and Abecassis;

FURTHER ORDERED that Patent Owner's Motion to Exclude (Paper 28) is *denied* as set forth above; and

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

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